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CONNECTIVE
CITIES



Connective Cities Dialogue Event

Municipal sustainable energy production and efficiency:
planning and implementing innovative solutions

9 - 11 May 2016 in Würzburg, Germany

Partners of Connective Cities





The participants of the Connective Cities dialogue event in Würzburg, Germany

Disclaimer

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CONNECTIVE CITIES - International Community of Practice for Sustainable Urban Development

Cities are gaining increasing importance globally, and urban actors worldwide are facing similar urban development issues. While local solutions are required, these issues are becoming progressively more relevant at the global level. If on one hand many innovative solutions for sustainable urban development already exist at the local level (for example with regards to energy efficiency, mobility or municipal services), on the other hand these solutions are often not widely known and there is a general lack of systematic access to these practical solutions. The pressing challenges posed by global urbanisation call for efficient and innovative approaches, especially in the areas of good urban governance, integrated urban development, local economic development and municipal services, core thematic areas of Connective Cities.

Connective Cities, the International Community of Practice for Sustainable Urban Development, is a cooperation project between the Association of German Cities (Deutscher Städtetag), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Service Agency Communities in One World (a division of Engagement Global). Connective Cities is supported by the German Federal Ministry for Economic Cooperation and Development (BMZ).

Connective Cities provides demand-based services designed to improve cooperation among urban practitioners at the global level. The platform enhances the sharing of good practice examples, expert knowledge and solution-oriented peer-to-peer consulting, and creates opportunities for partnerships among its stakeholders.

Connective Cities addresses questions on how to achieve sustainable development through innovative strategies and practices. It highlights good practice examples in the overarching fields of good urban governance, integrated urban development, support of local economic development strategies and delivery of municipal services. Connective Cities creates a base for knowledge sharing and the development of transformative solutions in local contexts that are customised to local requirements for sustainable urban development.



Mr Wittkowski presenting the good practice of the City of Hagen, Germany

»It was inspiring to work together in workshops with so many different nations. The problems are the same everywhere - just like in our municipalities and as we discussed together, we had solutions immediately at hand. It was top.«

Hans-Joachim Wittkowski, City of Hagen, Germany

By conducting dialogue events and project workshops, Connective Cities facilitates exchange among urban practitioners on relevant themes, and functions as a platform for networking strategies among peers. To implement its strategy Connective Cities also organises trainings, study tours, virtual discussion forums and webinars. Working within Connective Cities can result in new forms of cooperation among the actors involved. The platform also aims at facilitating the initiation of joint projects among urban stakeholders from various local settings to disseminate innovative solutions in cities.

»I enjoyed the workshop because I met a lot of people from different continents. It was so inspiring because I learnt a lot from the experiences from the other cities and I shared my experience from Skopje and South East Europe. It was nice to connect with all these people and in practice to see how they communicate.«

Marina Petrovska, City of Skopje, Macedonia

Executive Summary

Energy efficiency and production matter for cities, not only because of climate protection reasoning. Actors worldwide are increasingly realising the tangible benefits of saving energy and shifting to renewables: Public and private spending costs can be reduced; local development is boosted by default. Joint efforts make life easier, global experience can be exchanged. This is why the international exchange platform Connective Cities and its initiators, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the German Association of Cities and Engagement Global / Service Agency Communities in One World, organised the Dialogue Event on “Municipal Sustainable Energy Production and Efficiency: Planning and Implementing

Innovative Solutions” in May 2016 in cooperation with the City of Würzburg, Germany. More than 30 urban practitioners from Germany, South Africa, Tanzania, the Palestinian Territories, Jamaica, Serbia, Macedonia and Italy joined together to present their good practices in energy efficiency and energy production. The practitioners shared experiences about challenges and discussed viable practical solutions for their local needs while coming up with creative ideas in joint action planning. The dialogue covered the subtopics »sustainable energy supply approaches and solutions«, »know-how transfer & innovation to achieve sustainable energy goals«, and »improving energy efficiency by changing behaviour«.

Background & Objectives



Mr Stefanovic presenting the case of Kragujevac in Serbia

Transport, industrial and commercial activities, buildings and infrastructure, water distribution, and food production - today's city life and economy are unthinkable without a reliable energy supply. Cities are the hub of energy consumption at the same time, using estimated 60 to 80 percent of the world's primary energy and emitting 50 to 60 percent of global greenhouse gases.

Sustainable energy production and its planning at the municipal level not only present major challenges. They offer significant opportunities to face climate change as well. Particularly in municipalities, characterised by

significant energy use in buildings, transport, industry and households, there is considerable potential to plan for and to produce energy in a sustainable manner and to strengthen energy efficiency. Photovoltaic energy, wind power, biogas and combined heat and power production are just some of the examples that cities around the world have already ascertained as reliable ways to achieve a more sustainable energy supply mix moving towards a greener urban economy.

Along with the creation of new jobs, the transition towards more sustainable energy supply (in German called »Energiewende«) is promoting innovation and new technology, in particular in terms of renewable energies, energy efficiency, grid technology and product innovation.

Practical planning solutions and innovative approaches in urban projects in this area can set off widespread local development and significantly contribute to the global sustainability goals.

In order to pool expertise and experiences to generate ideas enabling a future-oriented urban development in which energy is produced in a sustainable manner, Connective Cities and the hosting City of Würzburg invited more than thirty practitioners from municipal administrations, civil society, the corporate sector and academia to exchange ideas about good practices, discuss challenges and find solutions consulting each other. The Dialogue Event was

held from May 9th to 11th, 2016 in cooperation with the City of Würzburg at the Fraunhofer Institute for Silicate Research (ISC). The Institute is a beacon for innovation around photovoltaic and battery technology, be it in process development or in designing new and smart materials. The participants were able to visit its laboratories, as well as the Bavarian Center for Applied Energy Research (ZAE Bayern), the City of Würzburg's public waste-to-energy plant and a one-stop-shop company for automation bringing solar energy to households and enterprises. Moreover, Würzburg's public transport system was tested.

»It was a proposal of our Mayor to host the Connective Cities Dialogue Event in Würzburg. We want to let the experiences of colleagues from other countries, from other cities leave a mark on us. The event was also a good opportunity for strengthening our relationship with our partner city Mwanza.«

Dr. Bernd Schmitt, City of Würzburg, Germany

Introduction to the Topic

»Climate change is real - and it is our local municipal area which first will feel its impact: be it flooded streets, flooded buildings, be it heat islands with their negative impact on human health. A major part of the greenhouse gas emissions is caused in urban areas. So cities can indeed be expected to come up with sustainable urban future models in view of reducing greenhouse gases.«

Jakob Frommer, City of Würzburg, Germany

Urban infrastructure is particularly volatile to the effects of climate change, while at the very same time cities are responsible for causing most of the world's greenhouse gases - a vicious circle and a historic challenge for cities around the world and indeed mankind. How to plan for and enable future-oriented urban development in which energy is produced and consumed in a sustainable way? In his opening remarks, Jakob Frommer representing the City of Würzburg provided valuable insights into how a city can approach the issue. »In Würzburg we agreed back in 2009 to reduce the CO₂ emissions as a city as a whole by 50 percent by 2020«,¹ he said. The city

The objectives of the Dialogue Event on »Municipal Sustainable Energy Production and Efficiency: Planning and Implementing Innovative Solutions« were as follows:

- Foster learning among participants through the presentation of international energy good practices;
- Show the possibilities of planning for and implementing sustainable energy production and energy efficiency, check the regional applicability of the presented solutions and discuss the respective challenges with the support of the community of practice attending the workshop;
- Strengthen municipalities as central actors in the development of local solutions in sustainable energy production and in promoting energy efficiency;
- Formulate innovative project ideas linking municipal expertise across two or more municipalities that can be further communicated and implemented in the respective home communities.



Alice Balbo and Alexander Wagner introducing the topic and the Connective Cities project

council passed a Climate Action Plan in 2012 detailing, among others, the transition towards cleaner energy production and modernising heat and power generation. Würzburg's combined heat and power plant is a good example. Turning waste to energy the plant not only reduces and recycles waste material but generates power, too, providing Würzburg with income for the city. Participants had the opportunity to visit the plant during a field visit.

¹ www.wuerzburg.de/de/themen/umwelt-verkehr/klimaund-energie
klimaschutz@stadt.wuerzburg.de

Study visit Why wasting energy from waste?

Best Practice at Würzburg's waste-to-energy plant

Würzburg's waste-to-energy plant, built in 1984 and extended in 1998, is one of Germany's most modern and cleanest.

Fed by 31 tons of waste per hour, it reduces masses of waste, helps to recycle materials and recovers energy, too, by combusting: Waste contains about 50 percent of renewable energy resources like wood or paper and 35 percent fossil fuels, hidden f. e. in plastics.

Waste to energy plants saved up to 42 million tonnes of fossil fuels in Europe in 2013.

The energy output of Würzburg's plant is used for electricity and district heating. It can produce up to 25 MW electricity and 28 MW output of heat at the same time; steam comes at 42 bars and a temperature of 415°C. Last year the plant provided 187.5 kWh of energy, thereby saving 45,200 tonnes of CO₂ - the equivalent of 18,800 cars².

A European family produces about 10 kg of residual waste per week - containing enough energy to take 5 min. warm showers a day for a week, warm the home for 8 hours or surf on the internet 24/7.

The plant sells energy, netting 5 to 6 mio EUR a year; the city was able to build a swimming bath and reduce waste bills for the citizens. In fact the yields are even higher, 15 to 16 mio EUR for the city because the expenses for waste treatment costs are already included in the balance - a good public business.

*www.zvaws.de,
contact: info@zvaws.de
Tel: +49-931/ 660 58 0*

see also:
ITAD Interessengemeinschaft der thermischen Abfallbehandlungsanlagen in Deutschland e. V.
www.iitad.de

CEWEP e. V.
Confederation of European Waste-to-Energy Plants
www.cewep.eu, info@cewep.eu

Transforming energy production and consumption at the municipal level is a cross-cutting and complex issue involving many stakeholders. »We definitely need to network to learn from each other within and beyond national borders and it was this realisation that led to the implementation of our climate partnership with our Tanzanian sister-city Mwanza which allows exactly for this mutual learning.«

Municipal Climate Partnerships

The project »Municipal Climate Partnerships« supports professional cooperation between German municipalities and municipalities in the Global South in the fields of climate change mitigation and adaptation. Within these partnerships, the two sides design joint programmes of action that include specific reduction targets and measures for energy efficiency, renewable energy, energy saving and adaptation to climate change. The project has started in 2011 and is being implemented by Engagement Global / Service Agency Communities in One World in cooperation with the North-Rhine Westphalian Working Party on Agenda 21 NRW (LAG 21 NRW), and with Germany's various municipal associations, which are supporting the project. The project is funded by the Federal Ministry for Economic Cooperation and Development (BMZ).

For more information on climate partnerships see:

<https://skew.engagement-global.de/kommunale-klimapartnerschaften.html>

Learning together, pooling experiences from diverse backgrounds for mutual inspiration and initiating cross-sectoral, transcultural collaboration in a joint effort is promising best results when transforming entrenched practices relating to energy supply and use towards a more sustainable system.

Therefore the dialogue event involving experts from municipalities, civil society, as well as from research and academia, coming from emerging economies, industrialised and developing countries, provided just the right platform to jointly generate ideas and share knowledge among peers.

² at 15,000 km per year and car

»Our strategy is based on three basic ingredients, namely energy saving, increasing energy efficiency, and increasing the use of renewable energies.«

Jakob Frommer, City of Würzburg, Germany

Site visit Fraunhofer Institute for Silicate Research ISC - Profile

The Fraunhofer Institute for Silicate Research ISC belongs to Fraunhofer-Gesellschaft, an internationally renowned non-profit organisation with branch offices throughout the world. The Fraunhofer ISC's forerunner was established in 1926 with a view to developing glass, ceramic and construction materials technology for the industry. Nowadays the focus is on innovative multifunctional materials, frequently related to nanotechnology. Fraunhofer ISC researches in order to develop applications and new technologies to advance innovation for new products in the fields of human health and environmental protection. Energy and resource efficiency are the focus of the Silicate Research Institute in Würzburg. The ISC is involved in material and process development as well as in analytics. More than 70 percent of the budget totalling ca. 29 million Euros is raised through contract research from the industry and from publicly financed projects. The remainder is funded by the German government.

www.isc.fraunhofer.de

This is why Würzburg is pleased to have had attracted the **Fraunhofer Institute for Silicate Research ISC**. The Institute, where the Dialogue Event was hosted, focuses on applied research and takes commissions from the industry, the service sector and public administration, explained Marie-Luise Righi, Head of Marketing and Communications to the participants. »Energy is crucial for how we live. The only way to prosper in the future is by ensuring a secure energy supply and responsible use of natural resources.« As decentralising energy production becomes more important in this context, this will require new infrastructure, new methods of transmission and control as well as new storage and supply technologies. This is why Fraunhofer ISC is particularly interested in researching new solutions for electro-mobility, Righi said. Developing safe and reliable batteries is crucial in this field. The venue itself is a showcase for energy-conscious architecture. Structural temperature controls are used to heat or cool the rooms as suitable. Motion-dependent light control is based on daylight sensors. Photovoltaic modules are integrated into the

facade and placed on the roof to provide for two electric car charging stations.

»It's very interesting for us. I learnt about new technologies - they are small, they are not expensive. But it was for the first time that I heard it and it was very impressive for me and could be applied in any country. Electrical cars and bicycles - I did not think that it could be useful in our country. But after this conference I am under the impression to go for such options to protect our environment, to go for renewable energy.«

Suleiman Abu Ghosh, Nablus Municipality, Palestinian Territories

But energy conversion is not an easy challenge to tackle, Righi conceded. New business models are needed. Besides technical challenges and sometimes high investment costs, hearts and minds need to be won for transformation efforts³. Cities are at the very forefront of this endeavour.



Ms Righi from Fraunhofer Institute presenting at the Connective Cities event

German cities are eager to learn from partners in the Global South in this respect. It has often been difficult for developing countries to finance grid infrastructure, especially in rural areas. So decentralised energy supply has sometimes been the only way to provide communities with much needed electricity. Industrialised countries can therefore search experiences from developing partners, whereas new technological innovations from

³ For more information see: www.energy-charts.de and the Fraunhofer Study »What will the energy transformation cost?« <https://www.ise.fraunhofer.de/en/publications/veroeffentlichungen-pdf>

industrialised countries can help to improve renewable energy supply for developing communities.

Charles Amani Kitururu is Environmental Officer of the City of Mwanza, the second biggest town in Tanzania and one of the most dynamic developing urban centres in Sub-Saharan Africa. He briefed the participants about challenges and opportunities in renewable energy use with regard to the Mwanza City Council.

Less than a fifth of the population in the country can access electricity. Biomass accounts for 90 percent of energy supply especially in rural areas - resulting in deforestation. Mwanza suffers from power shortages, despite the fact that renewables like solar, wind, and also geothermal hydropower hold potential. Energy production from municipal waste is promising, while at the same time waste management has been identified as a major problem to tackle anyhow.

Würzburg has established a climate partnership with Mwanza in 2011, a mechanism that has already supported in fostering mutual learning between the two cities.



Charles Amani Kitururu presenting challenges and opportunities in the City of Mwanza, Tanzania

»Now I better understand the challenges that other cities face and I can better advise them on workable solutions.«

Christian Göpfert, City of Würzburg, Germany

The Method- Participatory and Practice-Oriented

Phase I - Thematic introduction

The Connective Cities dialogue events start with a topical introduction to the theme, which at this stage is introduced, contextually categorised and thematically grounded. Here, keynote speakers assume a central role.

Phase II - Exchanging good practices

Good practices serve as process initiators, lay the foundations for discussions and serve as idea stimulators.

The good practices are brought in by the practitioners from their immediate professional or work environment and are structured along key questions: basic issue, institutional background, approach, conclusion and transferability. The idea is to deliver insights into practical action for a local or regional context.



Participants of the dialogue event in one of many interactive sessions in Würzburg

»It is remarkable that irrespective of our geographical locations there are similar challenges and when we come together as one set of people, then we can create solutions to our problems.«

Onigraay Parker, City of Portmore, Jamaica

Phase III - Peer consulting

Peer consulting forms the core of each Connective Cities dialogue event. In addition to the challenges resulting from the presentation of good practices, concrete problems are gathered in the plenary. This enables to address real-life challenges emerging from the immediate environment of the practitioners with a focus on solutions in peer consulting. The aim is to jointly develop practice-oriented solutions for very concrete issues.

»The format is more informative and more effective - ... learnt a lot, shared a lot of ideas. With the information that we have now, our projects may be better implemented and put forward.«

Rob Ferrier, Buffalo City, South Africa

Phase IV - Joint project development

The fourth phase of the dialogue event deals with the development of new project ideas. Setting out from common interests, queries and existing expertise, participants get together and work out new project ideas that are then discussed, put into concrete terms and elaborated. The participants provide input on the specific topic, analyse the prerequisites and specific framework conditions or jointly develop a proposal on the approach to be applied. The result of this step is a joint development of ideas and proposals for innovative measures, spanning from urban development projects to further education and training to address the challenges the practitioners are facing.

The Connective Cities dialogue events⁴ are the first step towards supporting the municipal practitioners in establishing projects of their own in their cities. After the dialogue event Connective Cities continues to support the municipal experts in developing further networks and promotes cooperation by, for example, offering learning programmes, virtual project workshops or further project expert exchange.

Study visits to a windmill, the research laboratories of Fraunhofer ISC, Würzburg's waste-to-energy plant and public transport system, and the Bavarian Center for Applied Energy Research provided insights into local good practice.

Study visit

Good practice at the Bavarian Center for Applied Energy Research (ZAE Bayern)

Research, training, consultation, information and documentation in all fields significant to sustainable energy research - this you will find at the Bavarian Center for Applied Energy Research (ZAE Bayern), which is one of the leading institutes within the field of applied energy research.

Founded in 1991 in Würzburg as a registered, non-profit association, ZAE employs more than 200 scientists, technicians, other staff and students with a budget of 15.3 million EUR (2014).

ZAE promotes energy research for sustainability and engages in public outreach. Participants visited the educational showroom of the »Energy Efficiency Center«, the building, which in itself is an eco-friendly experiment, as well as some laboratories. Taking an integrative approach the Center is a nationally and internationally renowned institute for energy efficiency, energy storage and renewable energies - e. g. thermal and electrochemical energy storage, energy optimised buildings and urban quarters, energy efficient processes, photovoltaics, solar thermal and geothermal systems, thermophysics, nanomaterials, smart grids and energy systems including their optimisation. The Center provides interfaces between fundamental and applied industrial research working with universities, SMEs and the industry. It offers a wide spectrum of research, development and consulting services, metrological services and seminars.

ZAE Bayern is a member of the Renewable Energy Research Association (FVEE - ForschungsVerbund Erneuerbare Energien), a strategic partnership between non-university German research institutes working in the field of renewable energy. It is a founding member of the Energy Campus Nuremberg (EnCN). ZAE, too, is a partner in the network Renewable Energies by the research initiative 'TUM. Energy'

www.zae-bayern.de

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⁴ for further information please see: www.connective-cities.net/en/media-centre/documentations/a-guide-to-our-dialogue-events/

»I will come back to my city with the idea of an energy efficiency information centre because an information centre is very important especially for this topic - energy efficiency and sustainability. In Palestine, you know, we have problems with electricity. The demand is very high and

the available sources are very limited. It is not our source, we don't control it. Sustainable energy is our trend for the future. We have to invest into sustainability because, if we don't, we will face problems in the future.«

Shadia Ibsais, Nablus Municipality, Palestinian Territories

Local Experiences - Good Practices

The Dialogue's theme was divided into sub-topics for three working groups with four presentations of good practices each.

Sub-topic I

Sustainable Energy Supply Approaches and Solutions

Renewable and Fossil Energies - Global Visions and Local Findings

Presented by Dr. Konrad Schliephake, University of Würzburg, Germany

In 2013 renewable energy sources, notably from wind and biomass, accounted for 11.5 percent of energy supply in Germany. The growing distance between locations of production and consumption has prompted the City of Würzburg to boost its use of local renewables.

Researchers at the Department of Geography of the University of Würzburg analysed the situation by empirical methods, as little data on energy supply and use was available. The neighbourhood of Heuchelhof was chosen as a model target area. Using satellite images and ground cartography it was found that here only 2 percent of the locally consumed energy comes from individual photovoltaic devices. Field monitoring provided additional data on daily personal mobility where private vehicles rely on fossil energy. The potential for increase in public transport was analysed. With electricity-driven vehicles (tramways) the share of climate-friendly energy consumption could be increased, but this needs public support. The researchers also evaluated the energy situation at national and local levels in Africa with focus on Mwanza, a Tanzanian city and partner of Würzburg. There, the impact of shifting to solar power (photovoltaic) would be yet more positive in comparison to Germany. With experiences from Würzburg a joint project group (consisting of the Department of Geography and

Würzburg Municipality) was able to present a catalogue of technological and economic measures to enhance Mwanza's energy supply. Würzburg's project group also learned from their Tanzanian counterparts and joined hands for a mutual exchange of experiences.

Both partners felt that public awareness is instrumental to bring about change and they started a campaign in Würzburg including publications and organization of training events, for example seminars for school teachers. In Würzburg as well as in Mwanza, public awareness towards the protection of environment must be raised. »Our activities were guided by the ideas of how our experience could be transmitted to other areas and how Würzburg could profit from experiences elsewhere, first and foremost from the sister city of Mwanza«, Dr Schliephake concluded.

Portmore-Hagen Climate Change Park

Presented by Onigraay Parker, Director of Planning, Development and Environment, Portmore Municipal Council, Jamaica



The cities of Portmore and Hagen, which have been twinned through a Municipal Climate Partnership since the end of 2012, have made similar experiences as

Würzburg. Climate change is recognised as one of the greatest challenges of our time and requires action at all levels to mitigate, adapt and to make communities and citizens resilient to this phenomenon. A wide range of negative effects is associated with climate change. The urban heat island effect negatively affects the health of the population and the increase of temperatures has a direct impact on sea level rise, making this natural hazard a threat to the sustainability of cities. In an effort to raise public awareness on climate change and to positively contribute to the environment both cities developed the idea to jointly build the »Climate Change Park« in Portmore. In 2014 the Portmore Municipal Council and the City of Hagen submitted an application for funding within the Nakopa programme (see info-box) for the development of a climate change park in Portmore. The project was approved later that year.

Nakopa: Partnership Projects for Sustainable Local Development

Partnership Projects for Sustainable Local Development (Nakopa) is a programme of Engagement Global / Service Agency Communities in One World inviting German municipalities to apply for funding from the German Federal Ministry for Economic Cooperation and Development (BMZ) to support development projects implemented in the context of partnerships between German municipalities and municipalities in emerging or developing countries. This offer of funding is designed to encourage all municipalities actively involved in development work to further expand their engagement and make full use of their potential for development cooperation. It is open to all German municipalities that maintain or are in the process of establishing a partnership with a municipality in the Global South.

The government of Jamaica also committed to contribute financially to the project by providing the matching funds required as part of this funding scheme.

The six hectare Climate Change park is planned to be a recreation and learning centre and includes among its components a ceremonial tree plant sector, where parents will get the opportunity to plant a tree for each new-born child. Buildings in the park will be constructed with renewable materials and will also be outfitted with solar technologies and roof gardening to allow CO₂ sequestration. A sustainability component of the joint project includes the development of school programmes integrating climate change adaptation,



Representatives of Portmore and Hagen working together during the event

mitigation and resilience. The Climate Change Park will be a focal educational feature of these programmes. As of summer 2016 the design of the fence of the park has been finalised and built and the landscaping plan and the design of the sewage treatment facility for the park are being finalised.

Some lessons were learned: »Environmental stewardship is paramount in mitigating and adapting to climate change«, Parker said. He stressed that an integrative approach is critical to combat climate change as the impacts affect both the built and natural environment and, last but not least, innovative sustainable solutions are well fit to attract local and international support. Some questions remain: Will the park be completed on time? Will climate change mitigation and adaptation principles become a reality in the park? Can the project be replicated in other municipalities across the world?

Study visit example: True Window of Opportunity

Windows are important when it comes to saving energy in buildings. During a field visit at the Bavarian Center for Applied Energy Research (ZAE Bayern) participants were shown innovative light-weight evacuated glazings with high insulating potential.

www.zae-bayern.de, www.fenstercheck.info

Wastewater Treatment: Nablus - West Energy Supply

Presented by Suleiman Abu Ghosh, Senior Project Manager, Nablus Municipality, Palestinian Territories

Nablus-West wastewater treatment plant is located in arid Palestine. Among others it is set to deliver water for irrigation purposes. This, however, will consume almost three million kW of energy. Energy demands also rise due to the planned extension of the plant from 10,000 m³/day to 28,000 m³ in the future. Even today energy use accounts for more than 40 percent of the overall operational costs. Here, renewable energies become a viable alternative. On April 30, 2016 a contract between Nablus Municipality and the Contractor Passavant Energy and Environment from Germany was signed to install a combined heat and power unit to produce 400 kW of electricity from bio-gas. 4000 kg/day, formerly just flared, can be provided by the anaerobic digester at investment costs of 0.76M EUR, mainly financed through KfW⁵ and 10 per cent local contribution from the Municipality. This will reduce electricity costs for up to 85 percent - saving 322,133 EUR per year resulting in a staggering 35 percent reduction of overall costs to only 0.15 EUR /m³ water. More savings will be made by utilising the potential for solar energy: The German City of Nuremberg is helping in implementing a pilot project regarding some 50 kW photovoltaic solar panels within the framework of a Nakopa Partnership Project.

Solar energy will be used to power wastewater operations to facilities inside the plant and for irrigation purposes. Turning to renewables will reduce the cost of treated

wastewater for the farmers considerably - with much desired developmental and social effect. If in future excess electricity should become available, regulatory and legal frameworks are needed to feed it into the grid.



Mr Abu Ghosh presenting the good practice from Nablus, Palestinian Territories

5 Kreditanstalt für Wiederaufbau (KfW), Germany. The KfW is a German government-owned development bank, based in Frankfurt. Its name originally comes from Kreditanstalt für Wiederaufbau (»Reconstruction Credit Institute«).

Night fishing project in Lake Victoria, Tanzania

Presented by Jacob Ndobu Ruhonyora, Tanzania Renewable Energy Association (TAREA)⁶ Lake Victoria Zone, Tanzania

Development efforts also lie at the heart of the fishing lamp project which was implemented within the framework of the cooperation of the Cities of Würzburg and Mwanza.

Small sardines are traditionally fished from Lake Victoria by attracting them with light from kerosene pressure lamps. This causes high greenhouse gas emissions. The lamps were substituted with solar powered lights, so fishermen and craftsmen were trained in using and servicing the new lamps. It turned out that lamps are quite costly, so micro-finance groups were formed and a renting system on a daily basis initiated. Income generated from this lending system is put into a revolving fund to buy even more solar lamps.

Thus CO₂ emissions were reduced by 5,000-tones/year in the Nyamagana District alone. Apart from climate protection and reducing air and water pollution, deforestation also was reduced. Decline in fish catch had prompted some of the fishing villages to turn to agricultural and mining activities along the lake, cutting trees and producing charcoal, firewood and timber for additional income in order to survive.

The Nakopa funded use of solar lamps helped to cut running costs by 35 to 50 percent for the fishermen, saving them the expenditure of up to 3 EUR for kerosene per night per lamp. They were also able to increase the catch. Solar fishing can improve the standard of living but red tape turned out to cause trouble.

Habits can be quite persistent but people can be convinced by a better technique. »An integrative approach is always the best approach«, believes Jacob Ndobu Ruhonyora.

6 TAREA Lake Victoria Zone, founded in 2001, is an umbrella organisation of civil society actors, supporting and enabling the sustainable growth of the Renewable Energy sector by developing an effective network of members and stakeholders throughout mainland Tanzania

Sub-topic II Working group 2

Know-how Transfer & Innovation to Achieve Sustainable Energy Goals

Network of Energy Efficient Capital Cities in South East Europe

Presented by Marina Petrovska, City of Skopje, Macedonia

When it comes to climate protection and energy efficiency it requires leadership. Five South East European capitals - Zagreb, Sarajevo, Podgorica, Skopje and Tirana joined hands with Freiburg im Breisgau, Germany, to promote change and innovation by raising awareness - the first and main task of the Network of Capital Cities from South East Europe. The Network was established with technical assistance of the GIZ Open Regional Fund for Energy Efficiency.

As spill-over effect, many other cities joined: 2 Albanian cities, 16 Bosnian, 62 Croatian, 9 Serbian, 4 Macedonian and 5 cities in Montenegro. On the regional level the focus is on networking, whereas on the city level the spotlight is on fostering cooperation for implementation issues. Much has been achieved since the cities joined the initiative in 2009. The cities adopted an Energy Management and Environmental Protection Policy. They joined the Covenant of Mayors initiative and accepted commitments according to Sustainable Energy Action Plans (SEAP) which were finalised and adopted by the respective city councils. Energy Management was introduced, teams were formed and trained, energy management offices were set up and Energy Efficiency Info-Centres and Info-Points opened in each capital city. The cities annually organised »Energy Days« and »Energy Weeks« to raise public awareness. »Our goal is to raise awareness about pollution« Marina Petrovska said.

Skopje managed to decrease greenhouse gases by 21 percent compared to 2008. There are plans to invest 428 million EUR into energy efficiency measures by 2020 in several sectors including transport, public buildings and lighting. Light systems shall be switch to LED. A 16 MW waste-to-energy combined heat power plant is to be built, 312 new busses have substituted the old bus fleet, just to name a few examples.

Energy efficiency can help to meet rising energy demands of the growing population. But in general there is a low level of awareness of the importance of energy efficiency in the administration and among the people in general - though there are very positive responses on



Discussion among participants in working groups

social media for top-down initiatives. However, facebooking alone does not do the job.

Concrete actions to address city challenges are needed. The city of Skopje suffers from traffic congestion which leads to increasing air pollution. The lack of alternative transport modes to get around in the city led the city to consider building a bike lane system and to establish two years ago a Coordinative Body for Cycling. It was this new body that developed the Skopje masterplan 2014-2017 which included a 56 km uninterrupted bike lane network across ten districts of the City of Skopje. The goal of the Coordinative Body is to increase the cycling rate of the citizens of Skopje from the current 1.4 to 5 percent by 2017.

In addition, there are several other challenges that the administration of the City is facing. Inadequate access to energy statistics on the local level makes it difficult to plan. Initiatives are lacking at the national level. Financing of projects and activities can be a challenge. Monitoring, reporting and verifying still are issues and legal frameworks could be more energy sensitive.

However, networking has been helping each capital to follow the respective achievements, to share experiences, to get to know good practices and to motivate itself to do better by learning from each other.

Portmore/Jamaica – Climate Partnership – Hagen/Germany

Presented by Hans-Joachim Wittkowski, City of Hagen, Germany

The City of Hagen, Germany and the City of Portmore, Jamaica established a municipal climate partnership in 2012.

Hagen strives to achieve more climate awareness by highlighting the partnership and is trying to initiate bottom-up processes. »We want to involve students in our city Hagen«, explained Wittkowski - through students exchange programmes and translating a theatre play to name just two examples. Portmore-Hagen is a cooperative partnership with bi-directional know-how transfer bringing about new skills at either end.

Within the framework of the partnership both cities developed an action plan which provided for setting up of a „photovoltaic training and pilot plant“ on top of a vocational school in Portmore. Meanwhile the plant is earning some 6,000 USD per month and a new two-year-qualification for solar technicians is about to be recognised officially at the national level.

»We want to involve our industrial companies to support technicians to get trained in Hagen«, says Wittkowski, »- new questions, new ways, new solutions«. The popular Hagen Reggae Festival for climate awareness would not have been possible without Portmore's support; both cities are exchanging musicians and the city of Hagen was able to raise more public visibility and interest for climate-friendly projects. The two cities benefit from the reputation the partnership brings.

Innovatively-funded energy savings contracting – Lorette

Presented by Rian van Staden, Lorette Intelligence GmbH, Germany

Most cities own big buildings, such as schools and city halls, and many of them are older and energy intensive - inefficient, expensive, and hard to fix. Poor energy performance means high energy use and costs. Renovation is being considered, yet financial means are scarce, while needed investments into energy efficiency are considerable and too often no financing mechanisms are available.

Van Staden has an answer: »Be open to new ways of financing.« Crowd funding, including among residents, could be a way forward. Investors cherish safe, long-term

investments with acceptable returns, especially as interest rates are low. Municipalities would benefit from a reduced CO₂ footprint, immediate moderate savings and fair long-term cost reduction - for individual buildings up to 20 percent. Resilience against energy vulnerability in urban areas could be addressed. Energy saving contracting – having private investors undertake energy savings measures in buildings and then share in the savings produced to recoup their investment - is promising, but to facilitate this, cities should accelerate and simplify decision-making and procurement practice.



Mr van Staden presenting his good practice

Bureaucracy often slows down processes. In order to make model-based energy system optimisation⁷ a success, administrators need to be sensitised and trained and inter-departmental cooperation within the municipality should be strengthened.

The support of private households is needed. Metering systems and measuring methods are crucial for success: It is instrumental to correctly determine energy demand and potential supply of a specific urban area. Lorette is working on affordable solutions for this. »Open access to building stock for small and medium enterprises interested in doing contracting – invite us in«, van Staden concluded. »A change of mind-set is needed.«

⁷ Energy systems optimisation refers to the installation of detailed sensor networks that make it possible to improve the energetic performance of energy systems in buildings without the need for major investment (such as component replacement). It also provides data that supports wise decisions should the wish exist to upgrade systems components at a later stage. Model-driven predictive optimisation is a type of energy systems optimisation. It maximises savings while facilitating pro-active rather than reactive maintenance and upgrade regimens.

Würzburg-Mwanza Cooperation “Power-Mwanza Project“ 2016-17

Presented by Amin Amin Abdallah, City of Mwanza, Tanzania

Tanzania’s favourable temperatures and the high solar yield potential can help to address some residual energy problems. »We have 365 sunny days a year in Mwanza«, Amin Abdallah said, but fossil dependency is still an issue. There are grid-connection problems - only 7 percent of rural areas have access to electricity. Tanzania suffers from a shortage of energy. Power cuts are partly related to seasonal influences, too, as hydropower is lacking more and more often due to climate change and extreme weather situations - with all their negative repercussions on the local economy.



Mr Amin presenting the good practice from Mwanza

Autonomous power generation structures are urgently needed.

To prepare for the power project, a SWOT-Analysis was made. It was found that photovoltaic energy and thermal solar energy hold big potential. In order to raise awareness for climate protection solar power generation, pilot projects were developed to demonstrate the potential of solar power production. The idea was to win over investors for large-scale solar power plants and to convince communities. The largest plant with a capacity of 45 kWp was installed at the city hall - showing that solar power is not only for local household consumption but can also become a national source of energy. The quasi-monopolist energy company Tanesco has yet to become more open to local energy production projects. This should not stop Tanzania from grasping the solar age. Time has come to revolutionise the energy sector.

»Use your own best sources for renewable energy« is Amin Abdallah’s motto.

Sub-topic III Working group 3

Improving Energy Efficiency by Changing Behaviour

Heating Energy consumption Optimisation in Kragujevac, Serbia

Presented by Andreja Stefanovic, City of Kragujevac, Serbia

In 2012 energy efficiency certificates for new buildings and renovations became mandatory in Serbia. All multi-family residential buildings constructed before 2012 are practically energy inefficient. But improving their energy efficiency is difficult, given their complex ownership structure.

Against this background, the city of Kragujevac wanted to find out where the need for action is biggest and what interventions should be prioritised. SketchUp and EnergyPlus software were used for modelling sample cases for the consumption of heating energy. The status quo and two additional model cases were analysed, at first estimated heating energy consumption with thermal enveloping by 10 cm thick thermal polystyrene insulating material. In the next step it was simulated what replacing old windows might mean. Results were visualised geographically by displaying five energy classes for buildings, for each of the three model cases - namely status quo, insulating walls and replacing windows. The biggest saving potential turned out to lie in window-replacement of higher buildings from 1971-1980. They showed an average saving potential of 37.61 percent with peaks of over 50 percent. 37.52 percent reductions can be achieved at free-standing buildings built between 1961 and 1970 after thermal insulation on the external walls. Individual improvement of multi-family residential buildings can reduce energy consumption by 22.8 percent, while a combination of improvements can result in saving 31.56 percent of the energy used for heating.

New regulations require energy efficiency standards to be reached in case houses are renovated. Municipalities bear the costs of refurbishing public buildings according to the new energy standards. In private buildings residents need to raise the funds themselves - but there is little motivation to do so: Energy costs are not calculated on the basis of consumption but rather on the basis of the size of a flat. So there is little drive to save energy and

therefore little interest to invest heavily into energy efficiency. Reducing room temperatures and transforming residents' behaviour patterns is therefore a major challenge yet to be overcome.

In Serbia district heating in the two biggest cities (Belgrade and Novi Sad) is powered by natural gas, while in the city of Kragujevac and in several smaller cities district heating is organised centrally and powered by coal which emits great quantities of greenhouse gases into the atmosphere and pollutes the air.

Buffalo City Metropolitan Municipality: planning for a sustainable energy future

Presented by Rob Ferrier, Buffalo City, South Africa

When South Africa developed its sustainability energy policy in the 1990s, energy was cheap. Since then the topic became more important for the people. 1.4 million consumers have been added to the electrical system but no additional generating capacity has been added which has created a power crisis. This has affected all consumers directly as it created the need for the state-owned power system to initiate rotational load shedding: the effect of this was that no electricity could be delivered for some hours to the load shed area.

To assist with addressing the energy crisis, the Provincial Energy Efficient Policy, requests Municipalities to implement renewable energy projects so at least 5 percent of the energy used by the municipality comes from renewable sources.

In addition to cope with energy supply problems, other projects such as energy efficient LED lightening were introduced in public buildings and streetlights. The electricity building was chosen to implement a number of renewable energy and energy efficient measures available to serve for demonstration purposes. For example, the following was installed: solar panels, mini wind turbines, hybrid air-conditioner units, solar geysers and rain water harvesting.

Based on the data gathered and monitored such as energy usage before and after implementation and electricity saved; information and educational materials have been developed in order to bring about changes of behaviour. One of the outcomes of the projects has shown that mind-sets need to be changed.

Funding is important, as it is crucial to have many different energy resources and saving opportunities.

Partnerships are helpful, also to continue training initiatives of consumers and staff.

»One of the main outcomes of the projects is that Buffalo City Metropolitan Municipality wants to lead by example and to show to private and commercial customers what is available and that Going Green WORKS«, said Ferrier. For renewable energy projects to be effective and more easily implemented, national laws need to be changed: Energy generation and purchase of generated power is currently strongly centralised and does not allow for a strong role of municipal energy utility companies to generate their own power.

Study visit example: Buffering and Storing Peak Energy Production, Cost Efficiency through Up-cycled Batteries and Autonomous Monitoring Designs for Renewable Plants

The international Project »Automotive Battery Recycling and 2nd Life (ABattReLife)« explores how used car batteries can be up-cycled to be used f.e. as storage facilities for photovoltaic systems - in order to make decentralised solar energy production economically more viable. This is sponsored by the German Federal Ministry of Economics and Technology.

The Institute is also exploring further ways to make the production of renewables cheaper. Wind farms can produce large quantities of energy but the structural health of rotor blades must be monitored constantly - last but not least because climate change produces extreme weather conditions. It is possible to have this done by autonomous maintenance devices integrated into the blades but these devices need to be powered by electricity. The institute therefore researches the use of non-conventional renewables to harvest smaller amounts of electrical energy from air currents or - e.g. for bridge maintenance - even from the vibrations of the bridge itself. This technology is particularly interesting for all kinds of autonomously operating low-power mobile devices such as communications and multimedia instruments, sensor networks, and security systems. These power applications are based on the fact that some crystalline structures change their electrical potential upon mechanical deformation. This electricity can be harvested by an electromechanical voltage transducer.

www.isc.fraunhofer.de

Innovative energy production system – Next Energy

Presented by Eros Bridi, Harald Oberrrauch and Viktor Baumeister, Next Energy srl, Italy

Many cities lose between 20 to 40 percent of their water supply within their water networks. There is great potential in reducing this loss of resources but also in savings in maintenance costs as well as in generating energy from municipal water systems. The work of the start-up Next Energy is based on these assumptions and focuses on innovation in the field of hydro-electric energy. Its founder, Eros Bridi, has developed a technology called Giralog® which is able to improve the efficiency of the existing territorial water supply networks and recover the amount of energy stored but not used inside small and medium water pipelines (2",4",8"e+). Furthermore inside the Giralog® system there is an innovative hydroelectric turbine which fits operating loads: this means that it is able to utilise both pressure and flow by continuously adapting to the changes of the water supply system and without interrupting the flow running through it. The turbine is equipped with a localised narrowing system that ensures a correct water intake based on the respective needs, avoiding floating valve blocks and reducing the pressure surges that may damage the water supply system. This system continuously produces energy from the uninterrupted water flow due to its capacity to adapt to changeable operating loads (pressure up to a 4" pipe and flow for bigger pipes) as well as of being easily installed. A bypass system ensures the energy supply during maintenance and emergency operations. Finally the hydraulic machine can be equipped with a management system which allows the remote control of the valve and the connection to a monitoring device (for example a smart phone) informing in real time on maintenance issues such as leakages. It is estimated that the system costs can be recovered in around five years from its installation (and depending on several local variables such as local water costs). Areas of application of this technology include: re-powering of aqueducts and industrial systems, powering households of at least 30 housing units, providing energy to antibacterial air devices and water treatment UV lamps to ensure drinkable water or charging electrical devices such as batteries and e-bikes.



Mr Göpfert presenting the activities of the City of Würzburg, Germany at the event

»I heard about ideas in field of renewable energy connected with photovoltaics and re-using batteries. This would be a great opportunity because in Skopje we have around 300 sunny days - so there is opportunity, looking at the experience of other countries.«

Marina Petrovska, City of Skopje, Macedonia

Würzburg: sustainable energy and climate friendly plans & actions for the city

Presented by Christian Göpfert, Climate Protection Officer, City of Würzburg, Germany

Würzburg is aiming at reducing CO₂ by 50 percent until 2020. To achieve this, the municipal climate policy is guided by a normative and a strategic framework: The city council passed the concept »Würzburg 2030« - a vision on how Würzburg should look like in 2030, and commissioned the municipal climate mitigation and adaptation concept. It comprises climatic and energy-oriented analyses and measures addressing two fields of action: Adaptation to climate change, on the one hand, by securing urban ventilation and green infrastructure, and mitigation, on the other hand, addressing the issue of energy and focusing on energy efficiency and renewables as well as on urban traffic. Here Würzburg strives for avoiding traffic and bringing about a modal shift from fossil energy-driven individual traffic to sharing models like bus, tram and other forms of traffic that are ecologically compatible.

In the mobility sector Würzburg has a multi modal mobility concept. Mobility stations offer a link to different modes of traffic (e.g. train, e-bike sharing, car sharing, bus), so that users can choose the most appropriate and adequate vehicle for their journey.

Würzburg now has a repository of concrete project ideas - fostering the involvement of inhabitants, institutions, the mobility sector and economic players. »This is a concept from and for the whole city«, Göpfert said.

Zooming from the city focus to the districts, Würzburg conducted analyses on how three selected districts could save energy, and reduce the energy demand. The result showed a huge potential. Local heat supply analyses were also carried out.

To overcome difficulties in raising public awareness and interest, Würzburg for example identified and trained so-called »energy guides«. They are a good tool to reach out to the citizens, Göpfert said. Rather than being professional energy experts, they are well-known and respected people trusted in their communities where they offer advice and point out problems.

Focus and Outcome of Peer-to-Peer Sessions

»The procedures were new to me - peer-to-peer discussions to transfer knowledge - very, very interesting and I think one benefits much more than if there had been PowerPoint presentations.«

Shadia Ibsais, Nablus Municipality, Palestinian Territories

On the second day, practitioners broke into working groups to raise fundamental challenges and constraints they are facing and to gather advice from colleagues.

One working group sought ideas from peers to counter the disrespect for newly built cycling lanes in the city. Possible approaches discussed to address this challenge were:

- make cycling more attractive: build bike highways; close streets for cars or allow bikes to use part of the pavement: distribute cycling maps to make the lane system known; make cycling sexy: in many cities »bike naked« events have raised the interest of the media about biking, and on climate and mobility;
- discourage parking on cycling lanes with traffic wardens issuing tickets.

Another peer group discussed means to raise awareness for climate protection in traffic vis-a-vis the dominance of cars, which are still regarded as status symbols. Peers' ideas included the importance of addressing and changing mind-sets; focus on changing the status symbol promoting cycling as a modern way of living; and once again: make cycling sexy.



Discussing challenges and possible solutions in small groups

One peer group dealt with the issue of illegal tapping in the municipal electricity grid. Suggested approaches were: start small with one area and try to legalise all consumers there; involve stakeholders, hold a consultation meeting in a notorious neighbourhood and listen to citizens' needs; offer incentives like energy vouchers.



Municipalities, academia and private sector discuss together about urban challenges at the event

One peer group brainstormed ideas regarding the question »Can we offer mobility without traffic?«. Ideas included:

- decentralise - f. e. build more but smaller schools so students do not need to travel or be collected by their parents; allow as many city employees as possible to use their »home offices« for work;
- use innovation in ICT: it can change mobility patterns; have more virtual meetings online; use smart phone apps,
- try car pooling.

A delegate wanted to explore how to cope with an array of intertwined challenges and to look for ways to push the industry to reduce pollution regarding carbon emissions, waste water and waste. Some peers suggested that shifting the frame might help: Consider waste as a resource that can be recycled or used to generate energy, and the problem is turned around; make use of the value of energy, creatively cluster issues like waste and energy; education will be key to achieve a change of mind-set.

One peer group considered action options on energy efficiency from a municipal perspective - better choose technical or legal approaches to the issue, offer carrots or use sticks? Peers' suggestions included technical approaches: Solar technology can be used for heating purposes, too; insulation makes a warm building; make use of the albedo-effect: In hot climate, white roofs make cooler buildings; start with electricity: replace bulbs with LEDs. Some peers stressed the need for a legal framework: set rules, in particular for new buildings. Beyond technical and legal approaches, the exchange included the important aspect to better educate people to change their behaviour; create incentives for private

home owners to save energy and build new houses that save energy.

Another challenge that was presented was how a municipality can produce decentralised energy when it is supposed to buy electricity from a central provider. Here peers suggested associating with as many municipalities as possible and starting to raise awareness on the local level aiming at reform on the national level.

One delegate wondered about leadership issues hindering energy projects as political decision-makers periodically change. Peers' ideas included: do a lot of networking; be free from fear towards hierarchies; propose meetings with new mayors/politicians and pitch your project to them.

»This conference revitalised the importance of combating climate change. I have got a lot of information, knowledge which I'm going to impart back home. It is a reassurance that I've gotten that any challenges that you might encounter, they can be surmounted. I am more infused and energised in making our Climate Change Park in reality. The workshop has been tremendous.»

Onigraay Parker, City of Portmore, Jamaica

Back to the plenary, the participants identified core stumbling blocks and rated them. Most challenging:

- raising public awareness and sustain financing
- lack of reliable data and difficulties in data collection; issues related to streamlining and integration; informing politicians
- technical issues

Project Inspirations: A Workshop of Ideas

At the end of the Connective Cities' Dialogue Event peers consulted each other in order to sketch a range of potential ideas for future projects based on core challenges identified the day before.

Project Idea

- promote cycling in Skopje

Objective

- increase the number of cyclists in Skopje

Envisaged Activities

- arrange regular meetings with all stakeholders
- present activities for building a second bike-lane route
- develop an initiative for city communal officers within the SE Network
- elaborate a campaign strategy
- identify, devote and mark a street exclusively for pedestrians and cyclists
- organise a "Cycling Day" and close streets for cars on this special day

Needs

- exchange with experts from other countries with a cycling culture
- web portal

Project Idea

- save conventional energy in water and wastewater systems

Objective

- reduce costs of operation and maintenance considerably

Envisaged Activities

- capacity building, including training on the job
- empowering local project partners active in renewable energy projects - in order to promote efficient implementation and contribute to building new partnerships

Needs

- build up knowledge to improve monitoring systems by
- study trip
- exchanges of experts
- virtual meetings to follow up on the exchanges

Project Idea

- roll out solar energy locally and throughout the world

Objective

- sensitise the public about sustainable energy from solar systems and raise awareness regarding energy efficiency

Envisaged Activities

- training and educational measures
- capacity building
- media and publicity initiatives
- networking

Needs

- expert advice
- identify cases of best practise
- needs assessments
- feasibility studies
- sustainable funding

Project Idea

- train and raise the awareness of newly elected politicians on energy matters

Objective

- improve their decision-making capacity for an effective strategy on energy

Envisaged Activities

- develop a training programme
- organise study tours and site visits
- energy audit
- invite for a stakeholders' workshop

Needs

- expert advice
- funding
- know-how, material and facilitator for laying out the training programme and running the workshop

Project Idea

- raise awareness regarding the need to reduce heating consumption in buildings

Objective

- promote energy efficiency in heating with the public

Envisaged Activities

- media campaigns and workshops for different stakeholders
- setting up an info centre
- launching a national or local »Heat Down Town Day« maybe in conjunction with a competition for students

Needs

- consultants and engineers specialised in energy efficiency
- data base of possible interventions with a view to transform heating systems and household habits

Project Idea

- encourage people to separate waste

Objective

- recovering energy and resources from solid waste

Envisaged Activities

- invest into waste bins for separation
- establish and enforce legal regulations
- training measures
- media campaign: posters, making use of TV and radio
- training and investing into waste bins for separation.

Needs

- experts for training
- study trip for politicians

Project Idea

- sustaining the fishing lamp project

Objective

- increasing project ownership and empower initiatives for efficient implementation

Envisaged Activities

- create a framework to plan mutual cooperation
- look out for options
- identify and build new partnerships

Needs

- get expertise on new possibilities
- support with engaging the media

Connective Cities will strive to provide support to the further development of several of these project ideas by linking them with appropriate expertise and funding opportunities and by continuing the expert dialogue on the topic of municipal energy among the participants and beyond.

»I will transfer the networking from the Dialogue Event to our Network. I think we will be much more connected in future.«

Marina Petrovska, City of Skopje, Macedonia



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