



Deutsch-Japanisches Symposium
Städte und Kommunen auf dem Weg zu Net Zero
日独シンポジウム
都市と自治体による NET ZERO への道



German-Japanese Symposium

“Cities and Municipalities on the Road to Net Zero”

01. – 02. March 2022
online

Symposium Report

March 2022

Contents

1. Foreword	3
2. Summary.....	4
3. Content and Outcome of the Symposium.....	7
3.1. Keynote Prof. Dr. Peter Hennicke	7
3.2. Session 1: Political Strategies and Framework Conditions for climate neutral Cities.	8
3.3. Session 2: Local Climate Protection measures in Practice: Best Practice Examples from Germany and Japan.....	12
3.4. Session 3: City Decarbonisation: Challenges and Success Factors for effective local Climate Measures.	18
3.5. Session 4: Best Practice Examples and Lessons Learned from Germany and Japan .	20
Session 4.1: Electricity Production from Renewable Energy	20
Session 4.2: Local Energy Production in Practice.....	22
Session 4.3: Communal Energy Management and Energy Efficiency	25
Session 4.4: Energy Focused Building Refurbishment	27
3.6. Session 5: German-Japanese City Partnerships – a success model.	29
4. Bibliography.....	31

1. Foreword

The Corona-Pandemic as well as the Russian war of aggression against Ukraine have confronted us as societies and as citizens, more intensively than before with the fundamental questions about our way of life: – where and how do we want to live, work and meet? Equally, where does our energy come from, and how can we reduce our dependency on fossil fuels?

Faced with the horror of war and the energy crisis we could be misled into thinking that climate action has been put on the backburner. However, the opposite is true. The less fossil fuel we have to import from abroad, the more free, safe and independent we become. With every megawatt we generate through renewable energies, we reduce our CO2 emissions and make a contribution against global warming.

Cities and municipalities have an essential role to play in achieving the Paris climate goals, as policies decided at the national level must be implemented at the regional and local levels. Here, the approaches to solutions are as diverse as the geographic, social and economic facets of the cities involved in this virtual symposium.

Germany and Japan are separated by 9,000 km. However, the two countries are connected by 160 years of diplomatic relations as well as shared values such as the defence of democracy and human rights and the fight against climate change. City partnerships, cooperation agreements and civil society engagements are significant elements of our friendship.

With Germany's current and the upcoming Japanese G7 presidency in 2023, we have a special responsibility to offer solutions to act against global warming on a large and small scale. The activities of the committed, creative cities and municipalities in this symposium can be an inspiration for partners around the world.

Ms Susanne Welter, Head of Economic and Science Affairs Department, Embassy of the Federal Republic of Germany in Tokyo

2. Summary

Both Japan and Germany have recently announced ambitious goals to reach carbon neutrality or ‘net zero’ by 2050 and 2045, respectively. Reaching these goals will require substantial decarbonization efforts, not only on national level, but also on the ground, where cities and municipalities play a crucial role in shaping the transition towards a carbon-free future. Therefore, **local action by and in cities and municipalities will be essential to reach both the net zero goals as well as the targets of the Paris Agreement and to avoid the most substantial consequences of climate change.**

Both governments have already recognized the importance of cities and municipalities on this path and started to implement initiatives. Especially crucial is in this context the Japanese Roadmap for Local and Regional Decarbonization, which was prepared by the government’s “National and Regional Decarbonization Conference”. It aims not only to support people and technology on the journey to net zero, but also envisions the creation of 100 leading local areas to reach net zero by 2030. The ‘model areas’ will be in a variety of different locations, that range from cities to remote islands, and they will showcase the implementation of various decarbonisation strategies that will be relevant for Japan’s 2050 carbon neutrality goal.

In Germany, the “Masterplan 100% Climate Protection” was initiated in 2012 and has since supported more than 40 cities and municipalities on their way to net zero. The initiative, originally started by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMVU), supports selected cities and municipalities with their preparation of a plan to decarbonize by 2050 and with the implementation of related measures in fields such as energy efficiency, renewable energy and circular economy.

Even beyond plans and measures by national or supranational governments, cities and municipalities themselves take on the challenge to reach net zero: In Japan, 696 local and regional governments have already committed to net zero by 2050. In Germany, many cities have likewise declared carbon neutrality goals - with some forerunners like Görlitz, Mannheim, Freiburg or Tübingen pledging to reach net zero by 2030 even. And it is not only smaller cities: even large metropolis like Tokyo or Yokohama or leading German cities like Munich and Berlin have committed to clear net zero goals.

Due to their shared ambition, cities in both countries have already found various ways to cooperate in the climate policy field. At the G7 Environment Ministers’ Meeting in Toyama 2016, both countries have for example agreed on initiating a deep exchange on municipal level in order to foster mutual learning. A multitude of city partnerships have been established between both countries – currently 50 partnerships are registered - which are a sign of the exceptional and long-lasting friendship between Germany and Japan.

Therefore, the joint commitment to reach net zero, the crucial role cities and municipalities will play in reaching these goals and the exceptional friendship that connects cities from both Japan and Germany call for a space that allows the discussion and exchange of net zero strategies and goals. The first German-Japanese Symposium “Cities and Municipalities on the Road to Net Zero” provides a space that brings cities from both countries together to form new friendships, learn from another and have a fruitful discussion along the following guiding questions:

- How can the opportunities of a “Net Zero” society be grasped by local governments, citizens and businesses?
- How can local municipalities and cities engage with citizens on the path to “Net Zero”?
- What are the greatest challenges in implementing climate action on a local level, and what do these challenges look like for specific sectors (i.e., mobility, electricity production, agriculture)?
- How can the federal government best support local governments in becoming leaders in climate action, and what are the necessary political structures?

Across the two conference days, with five sessions and 18 speakers, over 186 participants took part.

With an opening keynote from the German Japanese Energy Transition Council, the theme of international cooperation between Japan and Germany was addressed from the start. Subsequently representatives from government ministries, the **Ministry of Environment of Japan** and the **Federal Ministry for Economic Affairs and Climate Action** from Germany, highlighted the importance of political frameworks for climate action. In joining them for the session, the cities of **Essen** and **Yokohama** made clear the importance of such a framework for municipalities and local communities, with all four representatives highlighting in their words and actions the need for continued cooperation between all governance levels.

The reality of such local climate action came into sharper focus during the second session, where **Kyoto City** and **Freiburg im Breisgau** showcased the progress they have made on local measures, as well as highlighting the work which needs to be done. In a subsequent panel, bringing together speakers from Freiburg, Kyoto, Yokohama and Essen this topic of future work needed on the path to “Net Zero” was elaborated upon.

The second day began with a third session incorporating the viewpoint of academia (**Wuppertal Institute** and **Institute for Global Environmental Strategies**) on the challenges and success factors in local decarbonization efforts. Following on from this, session four offered a closer look at the best-practices and lessons learned from specific sectors in their attempts to decarbonise locally. The cities of **Rostock**, **Toyama**, **Kassel** and **Miyama** presented in two panels on

topics relating to local electricity production. Two further panels, with speakers from the district of **Rottweil**, **Odawara City**, **Tokyo Metropolitan University** and **Deutsche Energieagentur**, offered examples from the energy management and building sectors.

Finally, in the last session and to close the Symposium, **ECOS** brought the focus back to German-Japanese cooperation and highlighted the lessons which could be learnt for decarbonization efforts from the city partnerships between the two countries.

The symposium was organised by adelphi research, a Berlin-based think tank on climate, energy and international cooperation. The event was made possible by the friendly support granted by the German Embassy in Tokio, ECOS consult and the German Chamber of Commerce and Industry in Japan (AHK).

For more news on the German-Japanese Energy Partnership, and to stay up-to-date, you can follow us via the links here:

- Website: <https://www.energypartnership.jp/home/>
- LinkedIn: <https://www.linkedin.com/showcase/the-adelphi-japan-germany-energy-partnership/>
- Twitter: https://mobile.twitter.com/energy_jpn_ger

3. Content and Outcome of the Symposium

3.1. Keynote Prof. Dr. Peter Hennicke



The German-Japanese Symposium was opened with a keynote from **Prof. Dr. Peter Hennicke**, Co-Chair of the German-Japanese Energy Transition Council. He started by emphasising the importance of local action and local networks in the energy transition, whilst also highlighting how the integration of climate change goals and circular economy goals is the only manner in which adequate climate protection can be achieved. Furthermore, in his keynote the challenges faced by both Japan and Germany were contrasted, with many issues being similar but framework conditions often differing. **For both countries, the path to climate neutrality should not stop economic growth, but instead provide growth opportunities on a national and local level. In addition, the role of locally produced energy will be of vital importance.** The emergence of “Energy Cooperatives” or “Community Wind Farms” highlights this further, in particular with regard to the need for local communities to accept and be involved in energy projects. However, local energy production by itself will not be sufficient. Sustainable local development should encompass a broad range of local activities, involving regional businesses, educational outreach programmes and resource protection. **Peter Hennicke concluded by emphasising that climate protection is a task which has to be implemented and solved on a local level to be successful.**

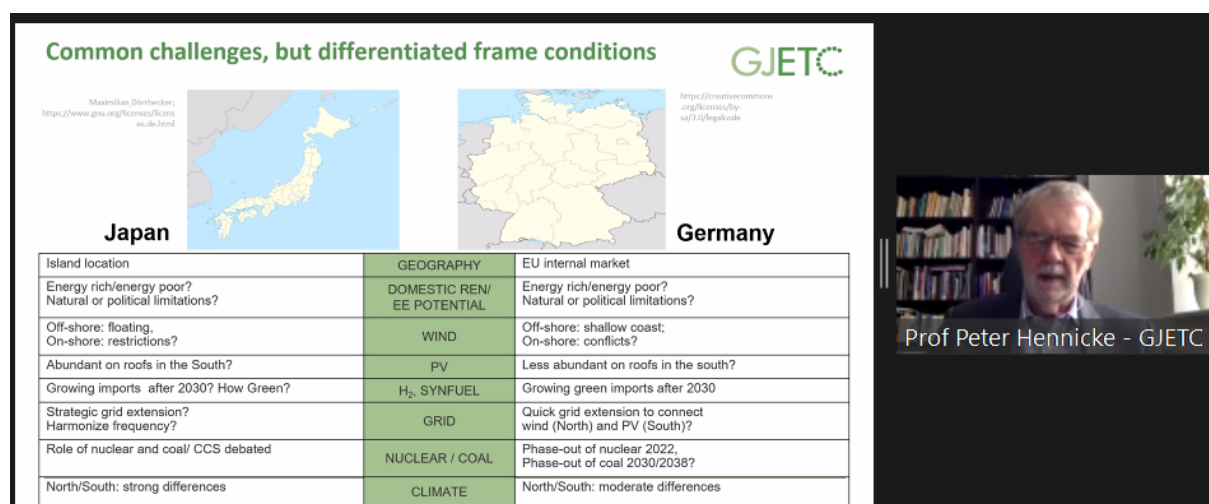


Figure 1: Presentation from Peter Hennicke, GJETC

3.2. Session 1: Political Strategies and Framework Conditions for climate neutral Cities.



Stefanie Schäfter, consultant at the Federal Ministry for Economic Affairs and Climate Action (**BMWK**), presented on the political strategies and frame conditions for climate neutral cities. For Germany, the EU legislation and action sets the initial framework, and over the last years EU ambitions and strategies have been outlined via the EU Green Deal or the "Fit for 55" package. Most German climate goals are aligned with

these strategies. The overarching climate goal, which has been maintained by the current government in their coalition treaty, is to achieve climate neutrality by 2045. Measures to achieve this have recently been fleshed out, with instruments being sector specific and applying to, amongst others, the building, renewable energy and industry sectors. Regarding the communal level, the coalition treaty emphasises the significance of municipal planning. The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection undertook a study on the climate protection measures which local communities could themselves implement. **38 potential measures were identified, which were then categorised as measures which fulfil the role of either regulator, motivator, provider or consumer and role model. If all measures were to be implemented, there would be the potential to mitigate 100 Mio. tons of CO₂eq.** In her conclusion, Stefanie Schäfter emphasised the importance of funding for local administrations, so that they have enough qualified personnel. Two important roles could be Climate Action Managers or Energy Managers, whilst Climate Coordinators can link local work across regions. Equally, the support of the federal government, either via funding or consultation services for the implementation of measures was stressed.

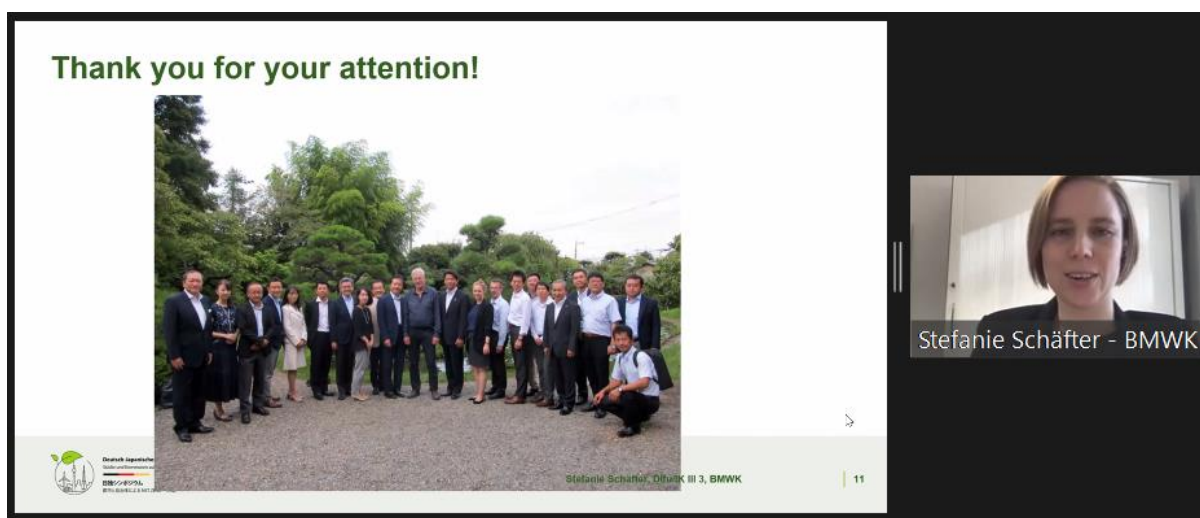


Figure 2: Presentation from Stefanie Schäfter, BMWK



Kai Lipsius, Head of the Green Capital Agency Essen (*Grüne Hauptstadtagentur Essen*), provided an overview of the city Essen and its climate neutral initiatives. **Essen became a European Green Capital in 2017, and since then has worked on a sustainability strategy, which brings together the issues of climate, resources and mobility in the city.** So far, the city has reduced its greenhouse gas emissions by 37.5% (from 1990 to 2018), but still has a way to go in order to reach climate neutrality by 2040, in order to confirm with the Paris climate ambition.

Its task now is to reduce annual emissions by 4,050,000 tons. One method to achieve this is via an Energy and Climate Pact, which is currently being developed. Companies can voluntarily declare their willingness to implement climate protection measures. On a more structural level, there are plans to improve the infrastructure in the city. The district heating network will be strengthened and expanded, whilst local renewable mobility options will be improved upon, in particular public transport and cycle paths. One idea is to establish premium and fast cycling routes, utilising old railway lines to allow cyclists to move quickly through the city. Finally, an important bureaucratic measure will be a yearly evaluation of the climate protection measures, to analyse their progress and effectiveness. If targets are not within reach, then new plans must be developed.

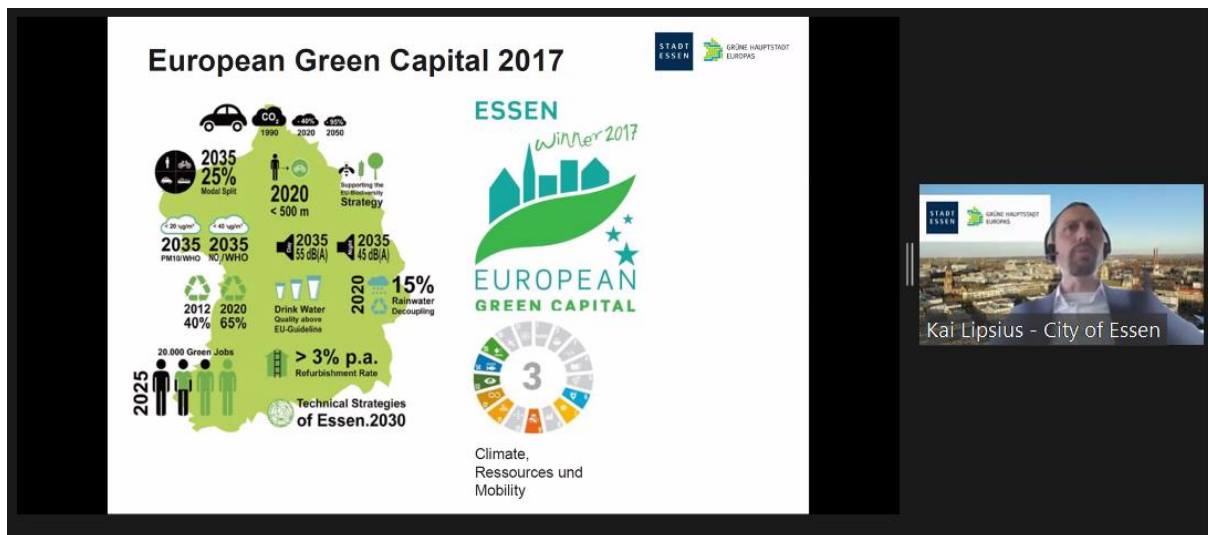


Figure 3: Presentation from Kai Lipsius, Grüne Hauptstadtagentur Essen



Jun Shibuya, Deputy Director, Environmental Strategy Division, from the **Ministry of the Environment of Japan**, presented on the topic, “Climate Protection Schemes for Local Public Entities and State Support”. **There are 696 local governments in Japan which have announced their commitment to net zero carbon emissions by 2050, totalling 118 million people.** Furthermore, based on the *Law Concerning the Promotion of the Measures to Cope with Global Warming*, local public entities (LPEs) have to form climate protection plans. As Jun Shibuya explained, the Ministry of Environment offers support, financial and technical, to LPEs in the

formation of such plans. For instance, a grant scheme is available to local communities so that they can plan ambitious decarbonisation measures. Additionally, the law was recently amended, meaning that from April 2022 the Paris agreement goals will be anchored into law as the guiding principle behind climate neutrality goals. Equally, certification schemes will be introduced, that will promote the use of renewables in local community projects.

Amendment of the Law Concerning the Promotion of the Measures to Cope with Global Warming

The Law Concerning the Promotion of the Measures to Cope with Global Warming was revised. (Announced in June 2021, coming into effect in April 2022)
Main changes are the following:

- Anchoring longterm setting of the course in the law, promoting measures and investment for decarbonization**
 - Anchoring the goals of the Paris agreement and the 2050 Carbon Neutrality Goal as guiding principle in the law**
 - By clearly writing down the direction of climate protection in the law, continuity and predictability of government-led measures increase thus people, LPEs, businesses can accelerate their climate protection actions and innovations.
- Promoting renewables that help revitalizing rural areas**
 - Supporting consensus building by introducing certification schemes that allow communities to certify renewable projects that meet local needs**
 - Communities define frameworks for renewable projects, such as promotion areas, aspects for environment protection, contribution to local economy and society.
 - Communities can approve business plans that are in line with local plans. These are exceptions in administrative processes for business projects if they are in line with communal goals.
 - With active municipal involvement this supports smooth regional consensus building as renewable projects provide solutions for regional challenges.

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Jun Shibuya, Ministry of t...

Figure 4: Presentation from Jun Shibuya, Ministry of the Environment of Japan



Dr. Kazuaki Takahashi, Executive Director for Planning and Coordination Department at Climate Change Policy Headquarters City of Yokohama, provided an overview of the work Yokohama has undertaken on the road to carbon neutrality. Yokohama has had a government department focusing on climate protection for a long time, and recently announced it aims to reduce its emissions by 50% by the year 2030, compared to 2013. As a leader in local government action, it has worked closely with the federal government, and participates as a member in a government conference focusing on the path to zero carbon. Equally,

it recently launched a council of municipalities aiming for zero carbon, with 199 municipalities participating. **Dr. Kazuaki Takahashi emphasised the importance of inter-regional cooperation, particularly so as the city has low potential for the development of renewable energy.** Instead, it has helped finance projects in other regions which could supply renewable energy to the city. Furthermore, as a port city, international cooperation has long been a part of the city’s activity. Two current examples of this are the collaboration with Bangkok and Danang, on developing their environment and climate change plans. Equally, in October 2021 Yokohama organized the Asia Smart City Conference. **Going forward, Dr. Kazuaki Takahashi concluded with the statement, that Yokohama has continued interest in international cooperation, and is interested in working with German cities via its representative office in Frankfurt.**

A screenshot of a presentation slide. The slide title is "Council of Zero-carbon Municipalities" in green text. Below the title is a photograph of a meeting around a long table. The slide contains two bullet points: "Yokohama is participating as a member in a conference set up by the government to achieve zero carbon." and "In February, Yokohama launched a council of municipalities aiming for zero carbon. 199 municipalities are participating in this council." The slide also features the "Zero Carbon Yokohama" logo in the top right corner and a small logo in the bottom left corner. A video inset in the bottom right corner shows Dr. Kazuaki Takahashi speaking. The slide number "4" is visible in the bottom right corner.

Figure 5: Presentation from Dr. Kazuaki Takahashi, Climate Change Policy Headquarters City of Yokohama

In the subsequent Q&A session with the experts, questions focused on the importance of finance, the potential of local renewable energy sources and the methodology behind some of the calculations. Stefanie Schäfter (BMWK) was asked what the main difference between large and small municipalities is. In her view, the key difference among local governments lies not in their size but in their financial capability. Those with less money, tend to have more issues that are difficult to resolve, in part because they have fewer officials. Support should be offered from the government, but also from the regional level. Prof. Dr. Peter Hennicke (German-Japanese Energy Transition Council) asked Dr. Takahashi (City of Yokohama) what the potential for PV is on private and commercial buildings in Yokohama, and whether this potential has been considered in their renewable energy calculations. In his answer Dr. Takahashi confirmed that their potential had been considered within their calculations and agreed with the importance of PV on buildings. However, he also stated that unfortunately in Yokohama many of the buildings are ill-suited for PV use. Finally, a query was made with regards to the Climate Budget for the city of Essen, and whether the principle of “fairness” had been considered in their calculations. Kai Lipsius (Grüne Hauptstadtagentur Essen) confirmed that the climate budget was calculated with the “mainstream” method used in Germany, that does consider “fairness” to an extent, but does not fully incorporate the impact of historical emissions.

3.3. Session 2: Local Climate Protection measures in Practice: Best Practice Examples from Germany and Japan



Aya Nagata, Director of Energy Policy Department, Global Environment Policy Office of Kyoto City, offered an overview on Kyoto’s challenges to reach Net Zero by 2050. Kyoto has long been a frontrunner in Japan for climate action, in part due to the COP3 Conference in 1997, which saw the adoption of the “Kyoto Protocol”. So far, Aya Nagata highlighted how the city has reduced its emissions by 20.7% since 2013, decreased its energy consumption by 29% since its peak in 1997, and increased its solar power generation by 13 times since 2010. Alongside local climate action, Kyoto also has an extensive network with other cities, both within Japan and internationally. It has been involved in the Covenant of Mayors for Climate & Energy, Japan, alongside Japan Climate Initiative and Powering Past Coal Alliance. Aya Nagata noted, however, that there is a lot of work which still needs to be implemented. **As a first step, the city revised in 2020 its Kyoto Ordinance on Achieving Net zero by 2050 and in 2021 formulated the Kyoto City**

Climate Action Plan (2021-2030). The plans seek to make Kyoto not only climate neutral but to sustain its prosperity. Transitions will be needed in the lifestyle of the city's inhabitants, in its businesses, energy sector and mobility sector. Regarding the energy sector, there is little wind potential in the city, but solar potential is noteworthy, and should focus on PV panels on new and existing buildings. For instance, the city is currently working on legislation making it mandatory to install PV panels on new buildings. Furthermore, the importance of renewable energy supply has resulted in a "Renewable Energy Partnership Agreement" with Aizu Wakamatsu City in order to strengthen the energy supply system and ensure that future demands can be met. The city is however, not only working on infrastructure projects, but also has implemented a "Eco-Life Challenge" in all 161 elementary schools since 2000 in order to educate children on the importance of global warming issues and the lifestyle of citizens. **In concluding Aya Nagata referred to the phrase coined by former Chancellor Angela Merkel, "Do you Kyoto?". This question asks us all what we are doing to reach climate goals (which at the time were set out by the Kyoto Protocol). Aya Nagata called for more international cooperation to achieve this.**

The slide is titled "Key Milestones of Climate Change Countermeasures (Kyoto City)". It features a vertical timeline with three main points:

- 1997**: "Kyoto Protocol" was adopted in COP3. Accompanied by a photo of the COP3 conference in Kyoto, Japan, with the text "United Nations Framework Convention on Climate Change Third Session, Conference of the Parties Kyoto, 6 - 10 December 1997".
- 2004**: Japan's first "Kyoto City Ordinance of Global Warming Countermeasures" was established.
- 2015**: Paris Agreement was adopted in COP21. Revision of Kyoto City Climate Action Plan. Accompanied by a photo of the COP21 conference in Paris, France, with the text "Nations Unies COP21 Conférence sur les Changements Climatiques 2015 Paris, France".

At the bottom left, there is a logo for the "Deutsch-Japanisches Zentrum" (German-Japanese Center) and the text "DEUTSCH-JAPANISCHES ZENTRUM". At the bottom right, there is a small number "3". On the right side of the slide, there is a video inset showing Aya Nagata, identified as "Aya Nagata - Policy Depart...".

Figure 6: Presentation from Aya Nagata, Kyoto City



The climate protection measures and policies taken by the city of **Freiburg im Breisgau** were presented by **Franziska Breyer, Head of Bureau of the Deputy Mayor for Environment from the Environmental Protection Office of the city.** She started by highlighting the role of the local population in influencing politics within the region, an element of the political discourse that has long been important within Freiburg. Further to this, Franziska Breyer offered an overview of the climate protection targets and progress that has so far been implemented. **The city has a 60% emissions 2030 target and a 2038 climate neutrality target.** Overall, the climate protection concept encompasses six fields of action: buildings and urban planning, sustainable heat supply, renewable energies, CO₂-free mobility, trade and industry and finally climate-friendly lifestyles. Several 'Lighthouse Projects' were highlighted. The first being the town hall in the Stühlinger district, which has 1350 solar panels on the roof and 850 on the front, as well as incorporating a wooden façade. The second project was the master plan for district heating, whilst a third was the use of industrial waste heat from an industry park for district heating. As the city is rapidly expanding, the availability of housing is a critical topic. The district of Freiburg-Dietenbach has become an example of sustainable urban planning, with low temperature networks, heat pumps, the use of electrolysis for long-term storage of renewable electricity surpluses and a small green hydrogen production site. Renewables is an important topic for the whole city, with solar, wind, hydropower, biomass and biogas all playing a role. Equally, Franziska Breyer drew attention to the increase in sustainable mobility within domestic transport in the city. By 2016, 79% of transport mode choice was either by foot, cycling or public transport, up from 61% in 1982. **In concluding, Franziska Breyer mentioned two important aspects. Firstly, that only by local residents, businesses and governments 'co-producing' a sustainable city can climate protection goals be reached.** Secondly, she highlighted the future work of the Climate Action Offensive Freiburg, which should increase the implementation speed of climate protection measures.

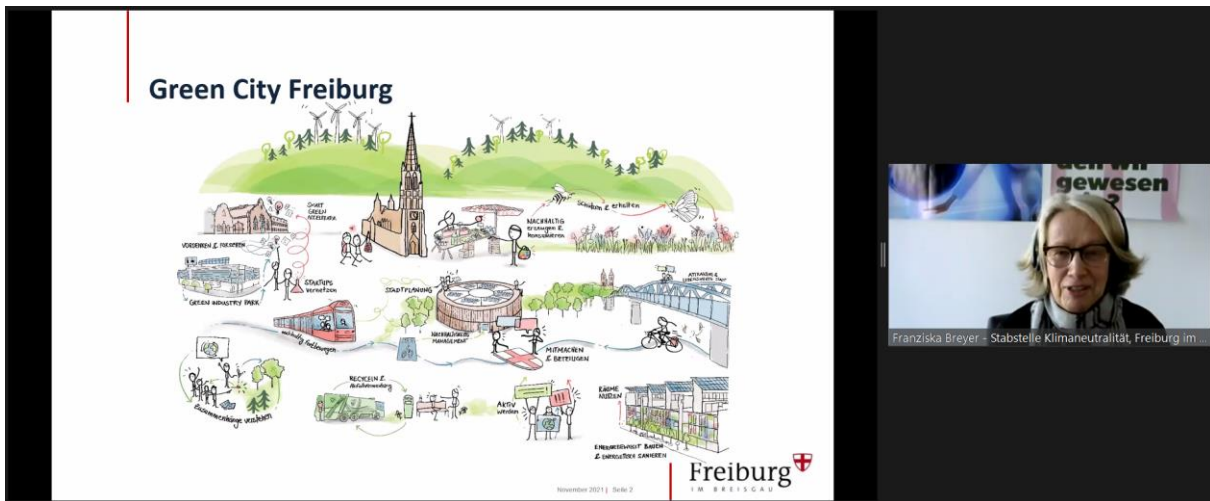


Figure 7: Presentation from Franziska Breyer, Freiburg im Breisgau

The panel discussion **“How can cities and communities reach Net Zero”** was moderated by Gunnar Will from adelphi and brought together speakers from the previous sessions: Franziska Breyer from Freiburg im Breisgau, Aya Nagata from Kyoto City, Kai Lipsius from Grüne Hauptstadtagentur Essen and Dr. Kazuaki Takahashi from Yokohama. The following questions were addressed towards panellists.

To Kyoto: “In Germany, often the triad of regulation, incentives and information is discussed as a necessary combination to achieve climate protection. How do you evaluate these three elements and their relationship to each other?”

In her response, Aya Nagata noted how a policy mix is always involved. Further to this, she emphasised the importance of financing climate protection measures and the trade-off between regulation and flexibility. Regulation offers structure and consistency, which the Japanese tend to follow, but it can restrict creative thinking and implementation.

To Essen: “How does the “Climate Partners” concept function, in particular the inclusion of companies on a voluntary basis. Is their commitment to the climate pact obligatory?”

Kai Lipsius responded by explaining that companies are obliged to implement climate protection measures and to regularly report on their progress. The city also aims to offer companies support via consulting services and financial support, although the latter is not currently agreed upon. Equally, companies which are leading in implementing such measures could gain the branding advantage of a climate label or certificate. So far these climate pact and measures have been taken very seriously by local businesses.

To Yokohama: “Which actor play in your municipality, apart from local citizens, an important role in the practical implementation of climate protection measures?”

Kazuaki Takahashi replied by emphasizing the large population within Yokohama, which in his view meant that it is hard to categorise the community into different groups. Environmental education in schools is one important aspect, but any practical implementation has to involve multiple strands and actors.

To Freiburg im Breisgau: “How can you convince industry, businesses and private households to switch to heating via renewable energy?”

Franziska Breyer emphasised the importance of a cohesive plan, in Freiburg’s case the master plan. Equally, exploratory work is being done with regards to geothermal potential in the area. However, she stated that in the long-term the question will be resolved by producing enough renewable energy for heat pumps. The city is currently working on forming the necessary framework conditions to ensure this is the case.

A closing question was addressed to all speakers: “What makes you confident that your municipality will become CO2 neutral within the planned timeframe?”

Aya Nagata, from Kyoto, responded first with the powerful statement that if CO2 neutrality is not achieved, then the population will not be able to live as they currently are. But equally, the ambition of the local population is what makes her confident this can be achieved. Both Franziska Breyer and Dr. Takahashi agreed that the mere necessity of reaching climate neutrality, alongside the interest and engagement of local citizens makes them confident. In addition, Franziska Breyer was asked to emphasise what she considered worthwhile regarding the German-Japanese partnership. Her response highlighted the importance of intercultural exchange for its own sake, but also that Japan can offer Germany insight into sustainability, as being an island country, it has had to focus on the topic in a variety of ways.

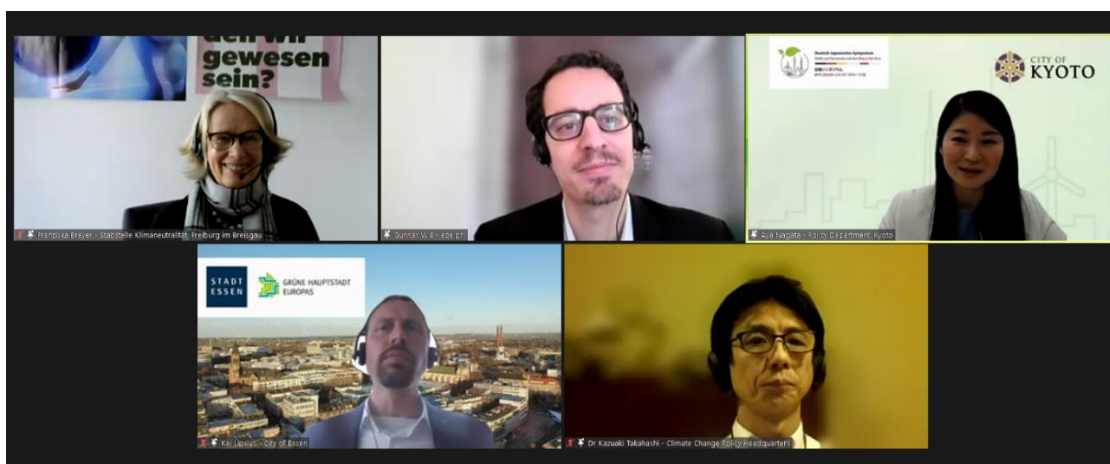


Figure 8: Panel discussion “How can cities and communities reach Net Zero”?

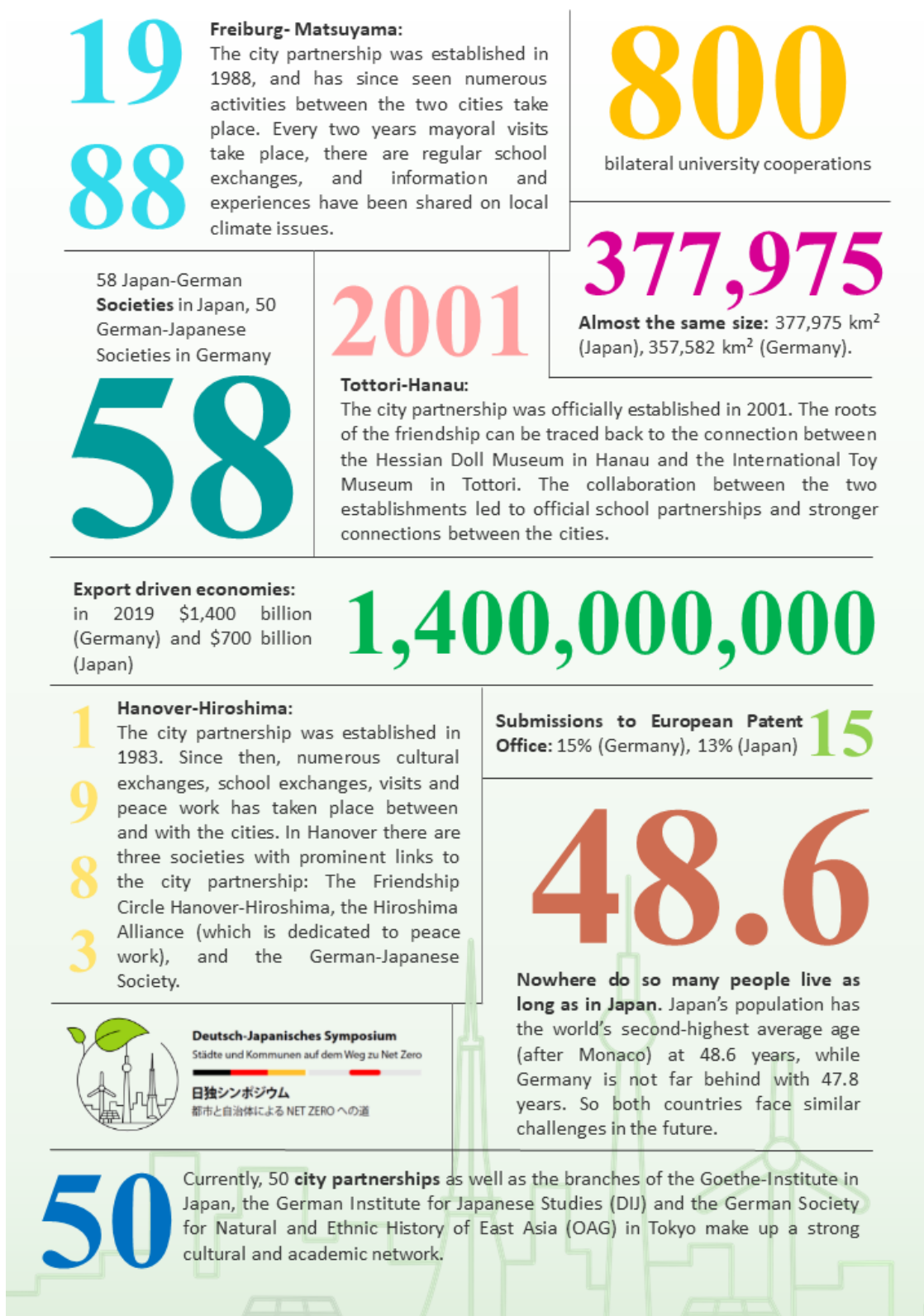


Figure 9: German-Japan Relationship, Sources: Auswärtiges Amt, 2021; Auswärtiges Amt 2019; Deutschland.de 2020; Tottori-Hanau e.V. 2021; Freiburg Matsuyama 2019; Hannover-Hiroshima-Yukokai e.V., 2003

3.4. Session 3: City Decarbonisation: Challenges and Success Factors for effective local Climate Measures.

Decarbonisation efforts will have to involve local communities within both Japan and Germany. Many regions have already begun to implement measures in a wide variety of sectors, including urban planning and energy management. However, the success of such measures often involves the engagement of a complicated array of stakeholders on varying governance levels. Getting the combination of federal support with local action and engagement correct can be a challenge. However, when done right, the energy transition can offer exciting new avenues and opportunities for local economies and communities. In this session, the viewpoint of academia on such challenges is presented.



Anja Bierwirth, Head of the Research Area City Change from the Wuppertal Institute for Climate, Environment and Energy, presented on the topic: “Decarbonising Cities: Challenges and Success Factors of Local Climate Action. She opened her presentation with the question, is Germany’s climate political action sufficient, in order to achieve the Paris Agreement’s targets? Her answer, was that there currently exists both a gap of ambition and a gap of implementation. Equally, there is often a conflict

between the different targets. For instance, the scarcity of skilled workers will affect the implementation of several targets, such as the retrofitting of buildings. Anja Bierwirth continued her presentation by focusing on the restructuring and redesigning of streets and public spaces, a topic which encompasses not only climate protection measures but also climate adaptation. The greening of the city would also affect the mobility infrastructure.

As a final note, the presentation emphasised the importance of the interaction between different governance levels, from the EU to local stakeholders. It is urgently necessary for them to work together in the implementation of climate protection measures. In particular, local populations should be involved in all stages of local implementation. In the Q&A she also emphasised how Germany can learn from Japan, in particular with regards to the mobility sector, where solutions such as improving options for pedestrians and public transport infrastructure are important.

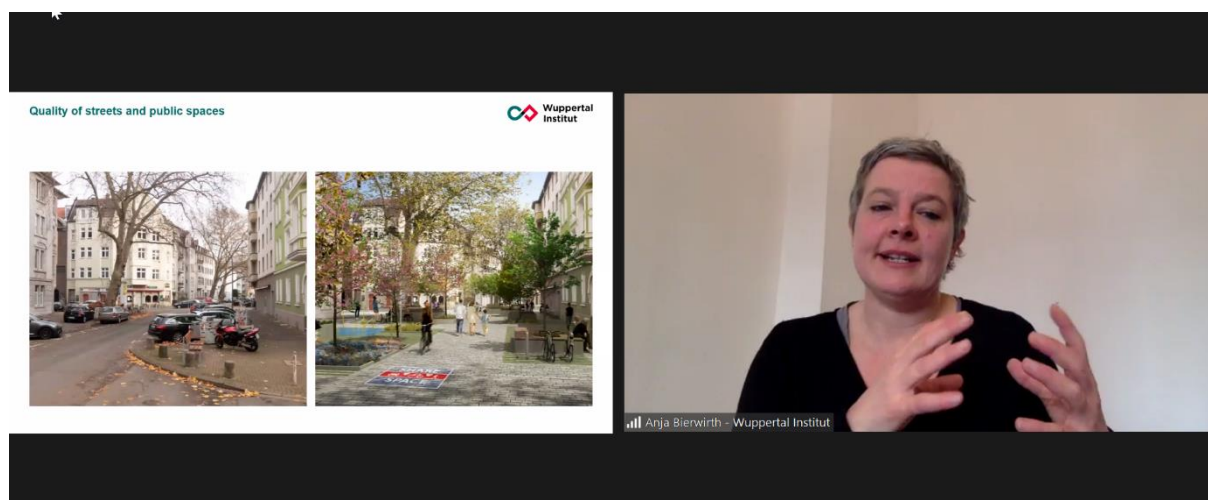


Figure 10: Presentation from Anja Bierwirth, Wuppertal Institute for Climate, Environment and Energy



Dr. Junichi Fujino, Programme Director at the Institute for Global Environmental Strategies (IGES), presented on the topic “Germany-Japan Collaboration”, focusing on the zero-carbon initiative on the local and local level. He referred to a competition for the selection of approximately 100 communities which are trying to become carbon neutral by 2030. The selected areas will be incorporated into a guidebook of Japanese zero carbon model areas. However, as noted by Dr. Junichi Fujino, Japan cannot by itself solve the climate crisis.

The work of COP26 showed the importance of international cooperation to secure 2050 Net Zero, to offer assistance to communities needed to adapt to climate change, to mobilise finance, and simply bring the international community together. Partnerships between Japan and international partners, such as the Zero Carbon Partnerships between Japan and Asian countries, will be increasingly important. Furthermore, climate protection measures can also offer local regions the opportunity to build value-creation chains in their communities and spur the creation of jobs for the region. Agriculture-PV is one industry that has potential for local economies in this manner. Finally, in the Q&A, Dr. Junichi Fujino expressed his interest in an international exchange on the topic of municipal utilities.

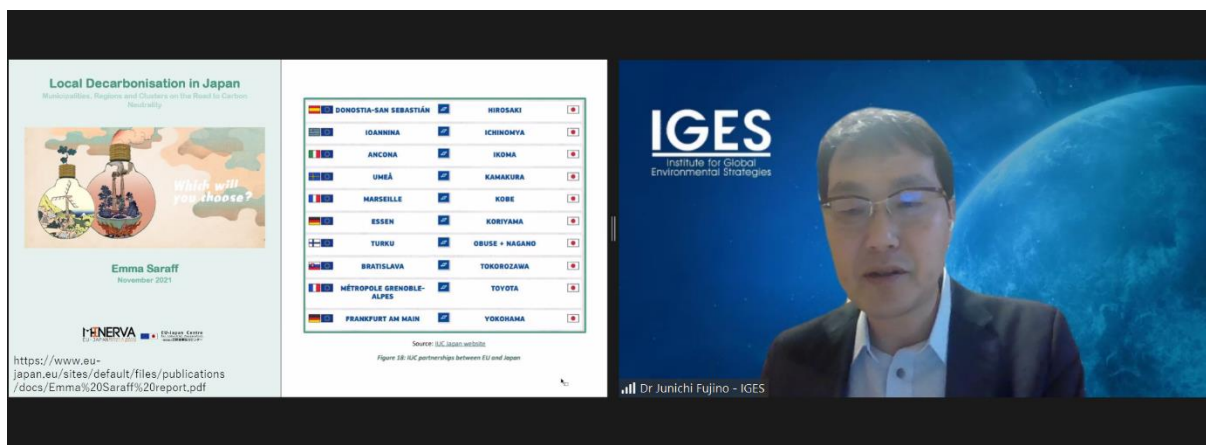


Figure 11: Presentation from Junichi Fujino, IGES

3.5. Session 4: Best Practice Examples and Lessons Learned from Germany and Japan

Session 4.1: Electricity Production from Renewable Energy

The decarbonisation of the energy sector is a central pillar to climate action. Not only is this sector a large greenhouse gas emitter, but the need for renewable electricity will dramatically increase as other sectors undergo a green transition. How can local regions play an active role in this energy transition, and what it means for local economies and citizens are important issues to address.



Kerry Zander, Coordinator of the Climate Protection Unit of the city of Rostock, began the session by presenting on the Solar Campaign for Rostock. By 2020, the power generation in the city consisted of 2.9% energy from solar. **As Kerry Zander stressed, the city needed much more PV systems to achieve its carbon neutrality targets. More information, more best practices and more role models were deemed to be the solution.** The city government decided to undertake four steps to help achieve this. The first was to use PV systems themselves, the second was to build an online geodata portal to offer more information to citizens, the third to create and coordinate a campaign, with the fourth to engage and integrate stakeholders into it. It was important for the city to create and make use of good examples in the city itself.

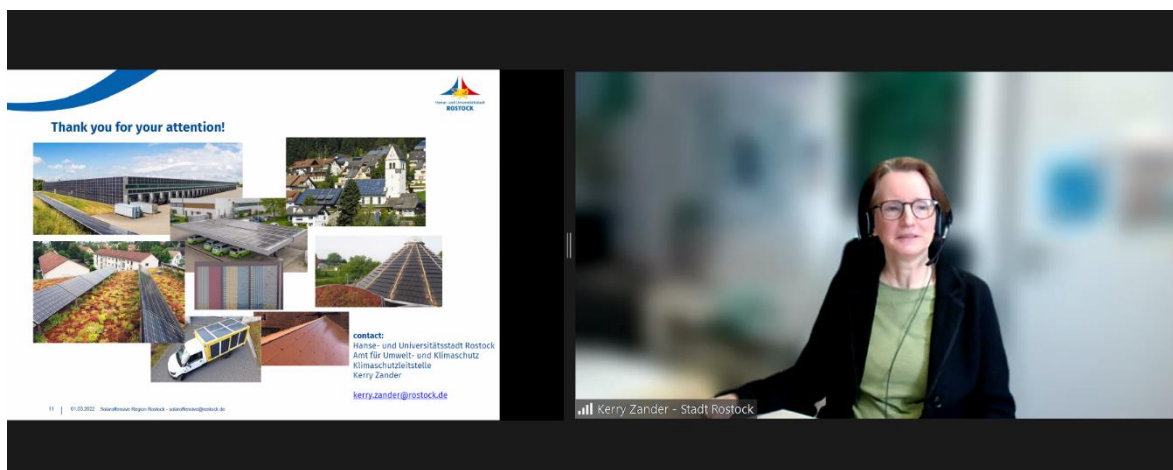


Figure 12: Presentation from Kerry Zander, Rostock



Mitsuharu Toufuku, Senior Deputy Director, Environmental Policy Division of Toyama City, continued the session with a presentation on Toyama’s decarbonisation efforts, emphasising the role renewable energy can play. To begin with, Mitsuharu Toufuku highlighted the importance of urban design in the cities past and future development. Public transport plays a crucial role in keeping the city compact and citizens connected and active within it. With regards to renewable energy, Toyama’s landscape offers the city a great opportunity. **The mountainous landscape surrounding the city means hydroelectric power has much potential, with two micro hydroelectric power plants have already been in operation since March 2012.** Furthermore, stakeholders have been involved in the development of Toyama’s renewable plans. The city opened the first Renewable Energy Hydrogen Fueling Station in the prefecture in January 2020 and the first Commercial Hydrogen Fueling Station in Hokuriku area in March 2020. The city’s plan to reduce greenhouse gases via its Toyama City Energy Vision, involves the expansion of renewables, promotion of energy conservation, revitalization of energy businesses, and collaboration with stakeholders.

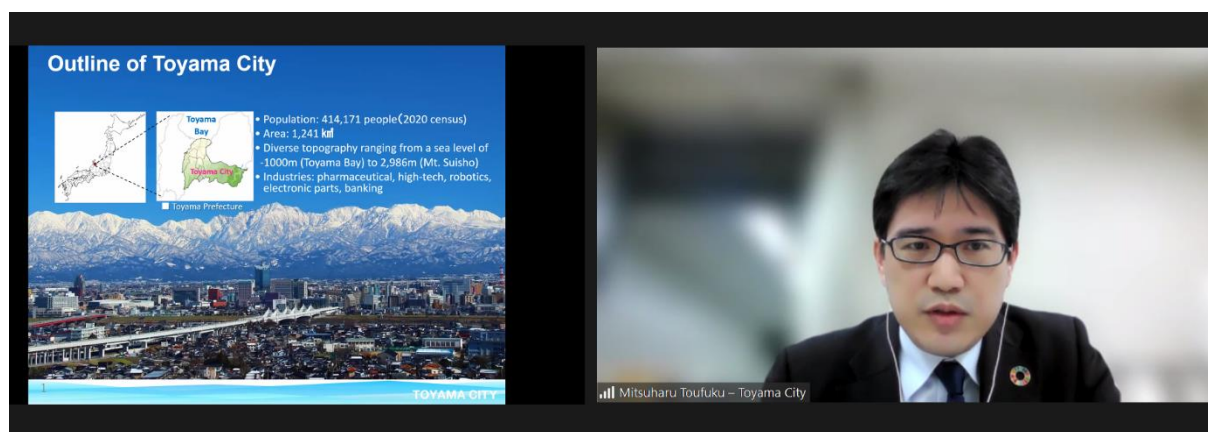


Figure 13: Presentation from Mitsuharu Toufuku, Toyama City

In the discussion the similarity was remarked upon that both Toyama and Rostock have hydrogen petrol stations, and a question regarding the recycling of solar panels was asked. The response emphasised the technical feasibility of recycling and the long operational life of such panels, meaning waste was kept to a minimum.

Session 4.2: Local Energy Production in Practice

One active role local municipalities can have in the energy transition is to build up their own electricity generation capacity. Due to their modular nature, wind and solar offer more advantages to local production than traditional fossil fuels have done so, but nonetheless the production of such energy locally can prove to be a challenge. **In comparing their efforts in local energy production, cities in Germany and Japan can learn from the obstacles faced and successes achieved.**



Bernd Reyer - City of K

Bernd Reyer, Deputy Head of Corporate Office from the city of Kassel, offered an overview of local energy generation in the city. Kassel is currently undertaking a coal-phase out, to be completed by 2025. **Bernd Reyer emphasised how the phase-out touches upon three important topics for the city: security of supply, economic efficiency and decarbonization.** The city aims to produce heating in a CO2 neutral manner, and has hence focused on using sewage sludge and waste wood as a replacement for coal. The first steps have been the construction of installations for the intake of the materials and a belt for the drying of the sludge. Further steps will involve the construction of a new turbine, the boiler conversion and a new flue gas cleaning system. The overall strategy looks to build a district heating system, to expand renewable energy installations in the surrounding Kassel area, and to construct seasonal heating storage systems. As Bernd Reyer noted, this

will involve partnerships between the city and its surrounding areas, involving close cooperation between citizens, municipalities and energy cooperatives.

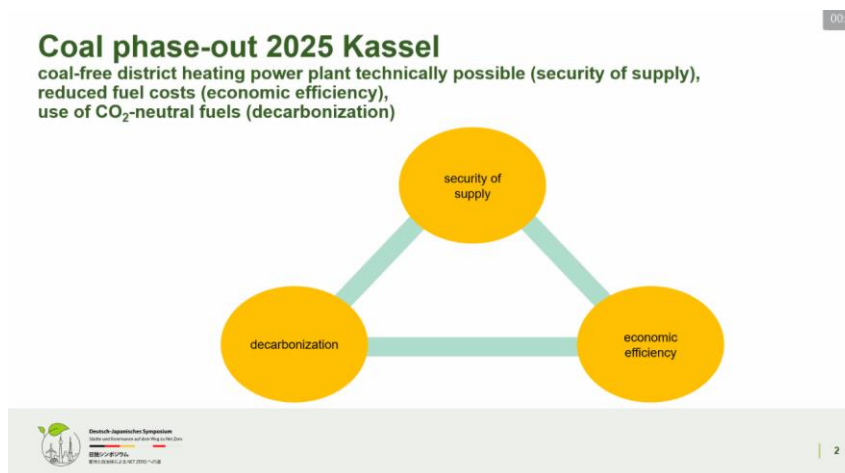


Figure 14: Presentation from Bernd Reyer, City of Kassel



The local energy production and consumption in **Miyama City**, Japan, was showcased by **Minoru Furata, Section Manager from the Energy Policy Division**. The city, as he explained, has certain advantages and disadvantages. The decrease in population, and its ageing population is proving to be a challenge. **However, the city benefits from much warmth and sun, with the average yearly sunlight hours being 2,066 over the past decade.** Renewable energy production has, hence, focused on solar power, with a mega solar power plant having a 5,500kW capacity. The city utilized the national renewables feed-in tariff, first introduced in 2012, as a catalyst for the project. An additional renewable energy project uses biomass from residual waste. **Furthermore, in March 2015, “Miyama Smart Energy” was established, and Miyama became the first community to establish a low-voltage power providing company.** The initial challenge was in convincing the local citizens to switch from the usual large electricity companies to a local community electricity production. Informational exchanges in primary and secondary schools helped raise awareness in the local community. Minoru Furata emphasised, in his final section, how we will all have to work towards a sustainable society in the future.



Figure 15: Presentation from Minoru Furata, Miyama City

After the two presentations, a short discussion was moderated by Roman Sieler, from adelphi. To start with, Bernd Reyer asked Minoru Furata how the electricity was produced and the electricity market regulated in Miyama. In his answer, Minoru Furata explained how the electricity market was liberalised relatively late in the city, and that private households often had direct contracts with large electricity companies. In response, Bernd Reyer was asked about the importance of district heating. He explained how it is a crucial component of energy systems but that currently coal is still a vital factor in electricity production in Germany. From the audience, came a question for Bernd Reyer, the first regarding the sewage sludge system and how it operates. In response, Reyer explained how the sludge system will be used as a first step to move away from CO2 emitting fossil fuels.

Session 4.3: Communal Energy Management and Energy Efficiency

Energy management and energy efficiency are two vital components of a successful energy transition. Local municipalities can make quick and positive contributions to the reduction of energy lost in buildings or the waste of energy in industry processes. Overall, the total demand of energy can therefore be reduced. However, despite the potential gains being large, cities in both Japan and Germany can face difficulties in implementing such measures, coming across financial and social issues.

Roland Stolarczyk, from the **district of Rottweil** began with a presentation on the region's ambitions and policies regarding energy efficiency and energy management. Greenhouse gases should be reduced in all areas of activity under the competency of the local authorities. Waste disposal, building management, and local infrastructure are all topics which are being addressed. **An important first step, which Roland Stolarczyk emphasised, is the measurement and management of energy system. Without understanding the energy needs and usage, the problem cannot be adequately tackled.** Furthermore, he highlighted how the district has been an early adopter of energy management, which has contributed to its energy savings since 2010 in power (18%), heat (25%) and water (9%) usage. In 2019 it won the award "Municipality with excellent energy management".

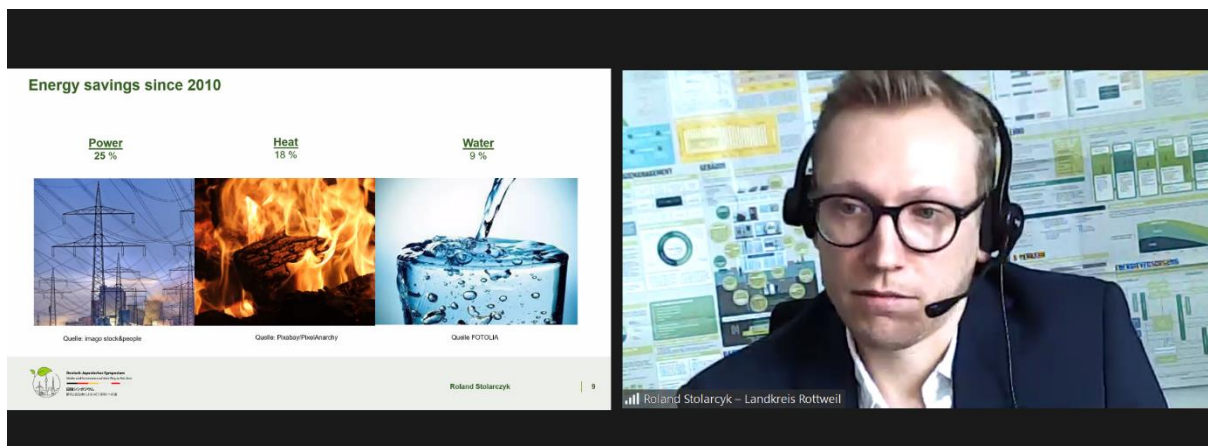


Figure 16: Presentation from Roland Stolarczyk, District of Rottweil



Subsequently, the work of **Odawara City** was presented by **Kazuya Yamaguchi**. The city faced the challenge, particularly after the 2011 Fukushima accident, of establishing a decentralized energy system without much natural capacity for renewable energy. Their five-step plan started with the generation of electricity locally, and was followed by a retail electricity business, a virtual power plant, energy management by EV sharing and a local micro grid. **Of particular importance, is the project to use EVs not only as modes of transports but also as batteries for local energy management. They are charged, when green electricity is available, and when parked offer the potential to be used as local stores of energy.** Their potential for local communities is manifold, and ranges from being a power supply during natural disasters or use as a moving battery or generator for an event.

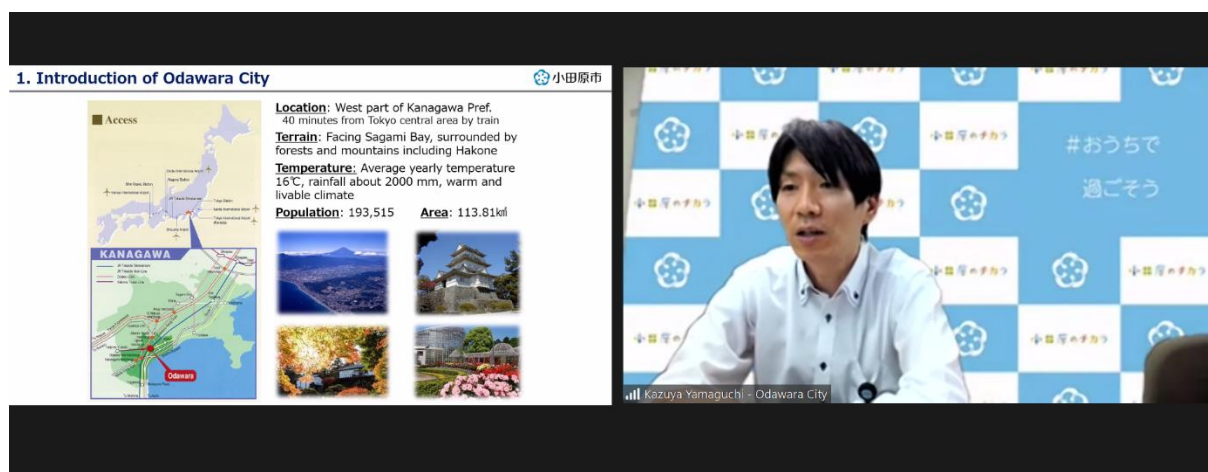


Figure 17: Presentation from Kazuya Yamaguchi, Odawara City

To begin the Q&A, the district of Rottweil was asked about its success factors. In answering, Roland Stolarczyk stressed the importance of partners and clear communication in fostering a wider acceptance of their work. Equally, in response to a question regarding the build-up of local expertise and capacity, he highlighted how Rottweil had utilised federal support programmes, which can take on much of the costs. Equally, if smaller communes cannot alone acquire the necessary funding they could group together to finance energy managers.

Kazuya Yamaguchi responded to the same question regarding local expertise, by also emphasising the importance of local partnerships with local companies. Furthermore, the next steps in the cities plan involve the integration of other transport methods (not just EVs) into the energy management system. Roland Stolarczyk added to this by stating that EVs offer a huge potential for battery storage, but that citizens need to be persuaded to adapt their charging patterns and to charge their vehicles during lunch.

Session 4.4: Energy Focused Building Refurbishment

The building sector offers huge energy saving potential. Efficiency measures could be taken in both Japan and Germany, whose building stock lacks a lot of efficiency, to reduce the overall energy requirements. However, the renovation rate of existing buildings has so far not been high enough, whilst roadblocks have hit the implementation of efficiency measures for the building of new ones. The speakers present on the challenges and opportunities which are emerging in this sector.



Kian Giahi – German

The importance of building transformation was the focus of the next presentation, given by **Kian Giahi**, Consultant Sustainable Construction for the **Energiesprong initiative of the German energy agency (dena)**. To begin with, he highlighted how there are current scalable solutions for an energy transition in the power and mobility sectors, but this is lacking in the building sector. **The challenge Energiesprong is therefore trying to address is how to create a carbon-free building stock. If this challenge can be met, it will have a large impact in reaching climate neutrality.** The workings of the market, however, have so far been insufficient and are not able to fulfil the requirement of 15,000 dwellings per day in the EU. Energiesprong, as Kian Giahi emphasised, could fill this gap in the market. Its vision is to create sustainable, desirable and affordable homes, as a scalable product. A focus on prefabricated modules, involving insulation, solar panels and energy modules, will be key. Currently active in 7 countries, and with strong political support across the EU, the next stage involves preparations for scale and above all a belief in the viability and necessity of this market!

Energiesprong Countries

- Energiesprong Projects
- Projects inspired by Energiesprong

California New York State



Europe



Strong political support

- > 300 M€ funding scheme in Germany
- > Energiesprong stated as model in EU renovation wave
- > 30 M\$ funding for market in NY

Figure 18: Presentation from Kian Giahi, dena



The focus on buildings continued with a presentation from **Prof. Mami Oku** from Department of Urban Science and Policy, Graduate School of Urban Environmental Sciences at the **Tokyo Metropolitan University**, on the energy efficient renovation of buildings in Japan. The Basic Plan on Housing (March, 2021), Basic Plan on Energy (October, 2021) and the Plan for Global Warming Countermeasures (October, 2021), all contain regulatory measures to make compliance with energy efficiency housing standards mandatory. For residential and small-scale non-residential buildings this will come into force from 2025. It is expected that local governments will implement the Building Energy Efficiency Act, promote public awareness on energy efficient buildings and support wider dissemination of zero emission buildings. Energy efficiency will be one of the key focuses, with measures and implementation looking into improving heating, cooling and ventilation systems. As of 2019, 13% of the Japanese housing stock met the latest energy efficiency standards, with as many as 29% having no insulation at all. Furthermore, alongside energy efficiency, seismic resistant buildings are a necessity in Japan, with 40.5 million of Japan’s 50 million housing stock being seismic resistant. Another key focus will be installing solar panels on building roofs, with currently only 7% of privately-owned detached houses having them installed. **In concluding, Prof. Mami Oku highlighted how the key three aspects. First, regulation has been interlinked with construction to improve building efficiency. Secondly, supportive measures (mostly in the form of subsidies) have been provided by local and national governments. Whilst lastly, awareness of building energy efficiency has been raised via the provision of information.**

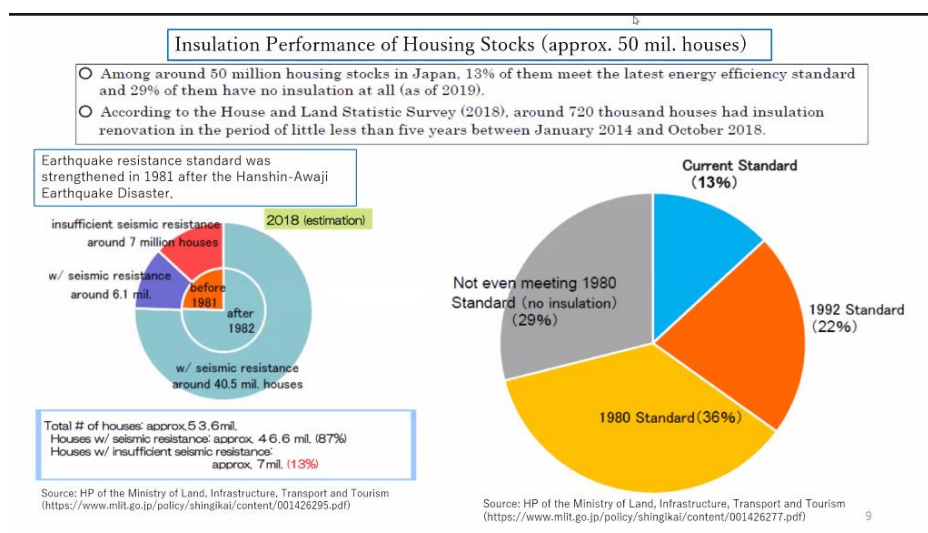


Figure 19: Presentation from Prof. Mami Oku, Tokyo Metropolitan University



Figure 20: Q&A Session

Roman Sieler moderated a brief round of questions, with one addressed at Kian Giahi from the audience, asking if the prefabricated method risks endangering local trade in the building sector? His response stressed that regional companies will undoubtedly have to play a role, in particular with regards to the retrofitting of buildings. This is because the renovations will have to be carried out simultaneously in multiple regions. Unfortunately, the increasing skills shortage in the building sector could lead to a bottle neck which prevents the fulfilment of CO2-neutral building targets.

3.6. *Session 5: German-Japanese City Partnerships – a success model.*



In the final session, **Wilhelm Meemken CEO at ECOS** echoed the spirit of the Symposium in presenting on German-Japanese City Partnerships. His presentation focused on how these partnerships could be a model for success on the road to net zero societies.

ECOS has been working with German and Japanese City Partnerships for over 30 years, and in doing so has witnessed the similarities between them (i.e., technologically world-leading), and differences, where they can learn from each other. Overall, the aim of such partnerships is to learn from the experiences of the other, and combine knowledge in a manner that can benefit society and help against the climate crisis.

Wilhelm Meemken emphasised that the secret to success for such a relationship is to value its worth and to utilise the potential early on. Often such partnerships start off well but then dissipate into nothing, so it is important to find concrete projects quickly in both countries, that can keep the partnership flourishing. Equally, it is vital that some budget has been allocated to the partnership and that it is, to some extent, managed by a dedicated team (even if this be small).

The future offers a multitude of cooperation possibilities between Germany and Japan. Climate Protection and the Energy Transition are two obvious topics, where each side can help the other. Equally, the agricultural and nutrition sectors both have to be addressed with

regards to greenhouse gas emissions, and the concept of circular economy will become increasingly important for both economies.

To conclude, Wilhelm Meemken mentioned that exchanges between Germany and Japan should continue, with one concrete upcoming opportunity being the **German-Japanese Energy and Environment Dialogue Forum**. The event will offer an additional viewpoint on the climate protection activities on municipalities, as well as incorporating perspectives from industry, companies and technological developments being implemented.



Figure 21: Presentation from Wilhelm Meemken, ECOS

To conclude the Symposium, Gunnar Will thanked all speakers for their support, and emphasised to them and the audience that he hopes the German-Japanese exchange can continue to progress and that physical meetings will be possible soon.

4. Bibliography

Auswärtiges Amt 2021: Deutschland und Japan: Bilaterale Beziehungen from <https://www.auswaertiges-amt.de/de/aussenpolitik/laender/japan-node/bilateral/213038>

Auswärtiges Amt 2019: Deutsch-japanische Partnerschaften im Westjapan from <https://japan.diplo.de/ja-de/vertretungen/generalkonsulat/parntnerstadt/971748#:~:text=Die%2029%20Partnerschaften%20zwischen%20deutschen,f%C3%BCr%20dauerhaften%20und%20nachhaltigen%20Austausch>

Hannover-Hiroshima-Yukokai e.V. 2003: Freundschaftskreis Hannover-Hiroshima e.V. from <https://www.hannover-hiroshima.de/>

Freiburg Matsuyama e.V. 2019: Deutsch-Japanische Gesellschaft Freiburg Matsuyama e.V. from <https://www.djg-freiburg.de/>

Deutschland.de 2020: Japan and Germany: Ten facts from <https://www.deutschland.de/en/topic/politics/japan-and-germany-ideal-partners-compared>

Tottori-Hanau e.V. 2021: Partnerschaftsverein Tottori-Hanau e.V. from <https://partner-tottori-hanau.com/>