

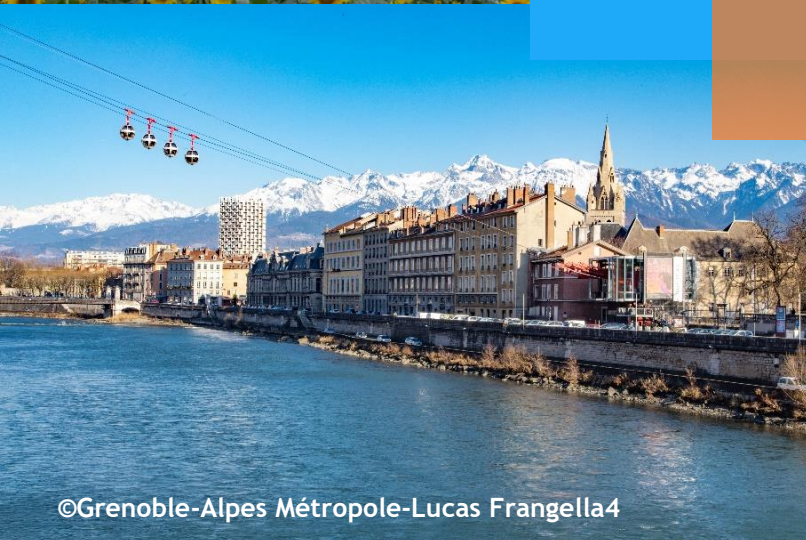
CASE STUDY

Essen (DE) Grenoble-Alpes Métropole (FR) Koriyama & Toyota City (JPN)

IURC - Asia & Australasia



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Thematic Network(s): Ecological transition - Green Deal

Cross-cutting challenge(s): Energy transition - Climate change

Topic keywords: Hydrogen, open innovation

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INTERNATIONAL URBAN AND REGIONAL COOPERATION

Essen (DE) Grenoble-Alpes Métropole (FR) Koriyama (JPN) & Toyota City (JPN)

Essen, Grenoble-Alpes Métropole, Koriyama, and Toyota City are creating a physical and virtual place that helps their private contractors meet innovators, start-ups, and SMEs of the partner cities. The topic they chose to work on is “new energy technologies and hydrogen”.



EXECUTIVE SUMMARY

The two pairings from the former IUC phase, **Essen – Koriyama**, **Grenoble-Alpes Métropole Toyota City**, decided to join forces and form a four-city cluster to address their shared interest to enable small businesses, both young and established, to scale up activities and grow. The challenges they face might be different, but they are determined to cooperate and develop a business environment for their start-ups and SMEs.

To address their respective challenges, which will be shown in detail in the next section, the four municipalities chose to look at the prospects of establishing an industrial environment for their small businesses to grow in the areas of “new energy technology” and “hydrogen”. All four cities have a reputation of being ecologically conscious with Essen and Grenoble-Alpes Métropole being the EU Green Capital, Koriyama and Toyota having declared they would become zero carbon by 2050. Climate change is their shared challenge.

“The program is very useful for cities to share and complement each other's approaches and solutions to common challenges”

Nao Nagashima, Deputy Director, Planning Dept., Toyota City



With respect to hydrogen, Japan, France and Germany all have national hydrogen strategies as well as nationally funded programs. **Essen** has also received funding from the EU for developing regional strategies to build an ecosystem for hydrogen, and companies are serving as experts to the national expert committee.

Auvergne-Rhône-Alpes region which includes **Grenoble Alpes Metropole** is being funded for promoting their Zero Emission Valley (ZEV), a project for fuel cell powered vehicles and infrastructure. In Japan, the Carbon Neutral Port initiative aims to enable port facilities for large imports of hydrogen or hydrogen-derived fuels, is in Aichi prefecture, to which **Toyota City** belongs. Fukushima prefecture which includes **Koriyama**, is serving as a research hub with the largest demonstration site for green hydrogen in Japan, with multiple joint projects between research entities and businesses. A series of social experiments led by a motor corporation has begun in the logistics sector, for example, those on hydrogen fuel cell trucks in collaboration with local companies in the city

Thus, “new energy technology and hydrogen” was chosen as an appropriate topic by the four municipalities at the time they conceived their collaboration under the IURC project. They have worked diligently on the topic ever since.



Figure 1. Fukushima Renewable Energy Institute, AIST©AIST



Figure 2. ©Grenoble-Alpes Métropole-Lucas Frangella2

MAIN CHALLENGE AND SOLUTION

The municipalities are working in tandem to address climate change their shared challenge, but also to resolve their respective challenges which are:

Essen has undergone a significant transformation process, evolving from a relatively rural structure to a city of coal mining and steel industry and then on to the European Green Capital 2017. Today, it is the location for a high concentration of research institutions and corporations that are leading Germany’s energy transition. It is challenged by rising petrol and energy prices amid the Russian invasion, as well as the phasing out of coal.

Grenoble-Alpes Métropole is where the world’s leading research institutions for alternative energy (CEA), neutron research (ILL) as well as an internationally recognized university (UGA) are located. Grenoble-needs to scale-up their SMEs to high growth firms, and is interested in facilitating innovation and energy transitions to build the right business conditions for them to grow.



Koriyama is a city with a well-balanced development of agriculture, commerce and industry. It is the second largest industrial cluster in the northeast part of Japan. The city is especially dedicated to propel efforts to enhance its industrial clusters, and facilitates technology exchanges between research institutes and the private sector in the field of renewable energy and hydrogen. In so doing the city aims to develop a new market and attract foreign investment. The **City of Toyota** is known for its globally famous automotive industry which is going through substantial technical transitions with the advent of artificial intelligence and autonomous driving. The city sees importance in training their young workforce into innovators, thinkers, engineers, designers who can make the transition.



Figure 3. Toho Gas hydrogen fuel station for buses in Toyota City (Oct 12th 2022)



Figure 4. E-world energy and water 2022 in Essen (Jun 8th 2022)

To address their challenges the four municipalities chose to look at the prospects for establishing an environment for their small businesses in “new energy technology” and “hydrogen”. As mentioned, all four municipalities are strategic locations for research and demonstration projects for the topic. ·

“Hydrogen” has the potential of becoming a significant market worldwide, and the presence of Australia, the Gulf countries, and the U.S. was already felt even in 2022 when this project was conceived. For start-ups and SMEs in France, Germany and Japan to become a substantial player in this area, they should possess at minimum innovative ideas, technology and/or digital skills that would support the major players in their countries and beyond. In addition, such start-ups would require connections to the energy suppliers, logistic companies, freight companies and their value chains, who they would supply to (which is rarely the case). This was why the four municipalities concentrated on building a network between their ecosystems based on a trusted relationship to support the start-ups and SMEs. During the two years:

- They carefully designed and conducted their study tours around the dates for the primary energy related technology trade fairs held in each location. The delegation was composed of representatives from the business, academia and government, to form the triple helix (academia-industry-government interactions) which is key to innovation.
- They then co-hosted business seminars and networking events, gathering academic and research institutes, businesses as well as government officials at both the national and regional levels. Online events were complemented with offline events with actual face to face dialogue.
- Around the same time, educational programmes targeting citizens on the topic of hydrogen were developed individually.



- They also worked together to create a physical and virtual place that helps private contractors meet innovators, start-ups, SMEs in their partner cities and discover new solutions on new energy technologies and/or hydrogen.



Figure 5. Business seminar co-hosted by the municipalities under the initiative of Koriyama (Feb 1st 2022)



Figure 6. Business seminar hosted by the Mayor of Koriyama City (Oct 13th 2022)

“The exchange with the various stakeholders helped us to better understand and advance the transformation process towards a digital and hydrogen-friendly society and economy. “

Go Theisen, Project Director, EWG (Essen)



Figure 7: Fukushima Hydrogen Energy Research Field (FH2R)



RESULTS AND IMPACT

It is particularly important to emphasize that the four municipalities continued their dialogue on their shared topic even after the study tours were completed. Their actions, therefore, led to results and impacts that can be grouped into three major themes:

- A. Established a common understanding of new energy technologies and hydrogen
 - The four municipalities were able to gather a substantial amount of information on the technology through the site visits of their study tours, and the technology trade fairs they attended. This allowed them to be ahead of other municipalities in terms of the latest news on strategies, plans, technology, demonstration projects, and policies. Hence, local stakeholders which included research institutes, businesses and citizens, were well versed of the latest developments, amidst the global enthusiasm that was developing for the technology.
- B. Developed an innovation platform for stakeholder dialogue
 - The four municipalities were able to meet the actors of their partner cities in person in multiple occasions. The numerous business seminars, networking events as well as the technology trade fairs served this purpose. Business stakeholders included, Bryck, H2UB, Tenerrdis, JETRO Fukushima, Energy Agency Fukushima.
 - Because of their common understanding of the topic, the four municipalities were able to design a joint open innovation pitch event targeting start-ups, SMEs and large companies looking for solutions or eager to offer ideas on new energy technologies and/or hydrogen. Government involvement in operating the B to B dialogue is hoped to offer a sound environment allowing companies to reap the benefits of knowledge creation, but also prevent any opportunistic behaviour. This (planned) event could develop into a foundation for cross border cooperation for open innovation.
- C. Designed a joint training program
 - In this last stage, the municipalities developed a joint training program for start-ups. This (planned) program is hoped to enhance further dialogue between the four ecosystems expanding the network with the involvement of more businesses.

KEY FIGURES.

150

participants to business seminars and networking events

3

cross invitations to trade fairs

2

Mayoral/Presidential visits to partner municipalities

1

joint pitch event (planned)

1

joint program for startups (planned)

As such, the four municipalities have worked to create a business environment for their start-ups and SMEs in a potentially high growth area while also contributing to the ecological transition of their respective economies. The program also offered insights into new ways of approaching a challenge and overcoming barriers by learning from each other. This experience should be used by the program participants in their future management of their respective municipalities. No doubt a variety of derived results is expected in addition to the key figures above.



TAKE AWAYS

Essen has numerous ongoing hydrogen projects. For example, EBE, Essen's waste management corporation, plans to use hydrogen for garbage collection vehicles, and RUHRBAHN, a bus operator, plans to use hydrogen for buses.

In **Grenoble-Alpes Métropole** a large ecosystem on hydrogen exists. The city is implementing a subsidy system for fuel cell vehicles, test-ride experiences, the installation of hydrogen stations, and the operation of fuel cell buses.

Fukushima prefecture, which includes **Koriyama**, plans to match energy demand with energy supply from a variety of renewable resources and hydrogen. To do so, a green hydrogen demonstration facility, FH2R (Fukushima Hydrogen Energy Research Field) was constructed.

Aichi Prefecture which includes **Toyota City**, has established an accreditation system to certify hydrogen that emits less carbon dioxide (than the benchmark) during production, transportation to support businesses working to establish a low-carbon hydrogen supply chain.

LESSONS LEARNED

Having a 4 cities study visit is a great opportunity to develop face-to-face relations with partners while visiting each other. This format should be developed.

Grenoble-Alpes Métropole

Toyota City was able to learn about the policies and initiatives of other cities through the IURC program and the mutual visits with our partner cities during the study tours.

Toyota City

It was a good opportunity for Koriyama City to gain contact with European ecosystems/clusters and learn how they approach start-ups and SMEs. Our local companies benefited from learning of advanced initiatives.

Koriyama City

We would like to see the collaboration evolve and branch out into further activities that involves the government, industries and the citizens of each municipality.

Essen

THE IURC PROGRAMME.

The International Urban and Regional Cooperation (IURC) programme enables cities in different global regions to link up and share solutions to common problems. It is part of a long-term strategy by the European Union to foster sustainable urban development in cooperation with the public and private. Through engaging in IURC, cities will have the chance to share and exchange knowledge with their international counterparts, building a greener, more prosperous future.

The IURC programme is an opportunity for local governments to learn from each other, set ambitious targets, forge lasting partnerships, test new experiences. Its activities will support the achievement of policy objectives as well as its activities will support the achievement of policy objectives as well as major international agreements on urban development and climate change, such as the EU Urban Agenda, the UN Sustainable Development Goals, and the Paris Agreement.



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