FY2020 City to City Collaboration for Zero-carbon Society

Decarbonization in Smart City Development Project in Yangon Region (Phase 2) Report

March 2021

NTT Data Institute of Management Consulting, Inc.

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CHAPTER 1 Overview and Background of Work

- 1.1 Overview of Work
- (1) Purpose

The Paris Agreement, which is a legal framework on equitable and effective countermeasures on climate change after 2020, was adopted at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) held in December 2015 in Paris, France, which was attended by all countries. The Paris Agreement proposed to pursue efforts to keep the global temperature rise well below 2 degrees centigrade and to limit the temperature increase even further to 1.5 degrees centigrade compared with preindustrial levels, and required all parties to advance their efforts towards decarbonization. In addition, the COP21 decided that it would recognize the activities of non-state entities such as cities, as well as welcome the efforts of all non-governmental entities (cities, other local governments, etc.), and invite them to scale up their efforts.

At the following COP22 held in Marrakesh, Morocco in November 2016, the adopted Marrakech Action Proclamation for Our Climate and Sustainable Development also reinstated that the climate is warming at an unprecedented rate and that there is an urgent duty to address this. It also recognized global action and economic transformation that involve municipalities as well as governments to be positive opportunities for further prosperity and sustainable development.

These conferences were succeeded by the COP23 hosed by Fiji and held in Bonn, Germany in 2017, and the COP24 held in Katowice, Poland in 2018, then the COP25 held in Madrid, Spain in December of this fiscal year, 2019. Through these conferences, Japan has shown the world its proactive stance towards decarbonization.

Cities are a hub of activities that support socio-economic development, and are inhabited by a large number of people. About 50% of the world's population lives in cities that account for less than 2% of the world's total land area, and that percentage is expected to increase to 70% by 2050. As of 2006, more than 70% of the world's CO2 emissions are estimated to come from cities, and cities play a major role in mitigating climate change. As such, steadily implementing climate change measures, including in suburban areas, and reducing greenhouse gas emissions are critical to achieving the goals of the Paris Agreement.

This project is a continuation of the FY2019 City-to-city Collaboration Programme conducted in partnership between Kitakyushu City and the Alliance Stars Group of Companies (hereinafter the Alliance).

In the previous fiscal year, the following two research and review activities (Figure 1-1) were conducted for the Eco Green Smart City Project (hereinafter the EGSC Project), a large-scale smart city development project led by the Department of Urban and Housing Development of Myanmar's Ministry of Construction, which will serve as a bridgehead for the establishment of a decarbonized society in the country. These activities were carried out under the collaboration between Kitakyushu City, which has experience and knowhow in the formation of a decarbonized society, the Alliance, and the Department of Urban and Housing Development of the Ministry of Construction. This partnership was joined by NTT Data Institute of Management Consulting, and the Alliance's business partner and environmental advisor for the EGSC, Myanmar Business Central Corporation (hereinafter MBC).

1. Formulating a decarbonization plan for the EGSC Project by leveraging Kitakyushu City's know-how in decarbonization planning



2. Identifying decarbonization projects by capitalizing on the Alliance's network

Figure 1-1: Project overview and structure

Based on the activities of the previous fiscal year, this fiscal year's project worked on formulating JCM projects for the facilities and other relevant structures that will be developed in the future in accordance with the EGSC development plan. The project also carried out activities for the operationalization of potential JCM projects and application to similar projects by capitalizing on the Alliance's network identified in the previous fiscal year.

(2) Work Content

As aforementioned, this study worked on formulating JCM projects for the facilities and other relevant structures that will be developed in the future in accordance with the EGSC development plan (Activity 1: Formulating JCM projects). The project also carried out activities for the operationalization of potential JCM projects and application to similar projects by capitalizing on the Alliance's network identified in the previous fiscal year (Activity 2: Operationalization of potential projects and application to similar projects).

(2) -1 Activity 1: Formulating JCM projects

Since the EGSC master plan has already been developed, the decarbonization plan formulated in the previous fiscal year was prepared to put together points to consider when developing various facilities, infrastructure, and other relevant structures in the EGSC according to the urban development plan, mainly

from the perspective of environment and energy to promote the introduction of equipment and other relevant instruments that contribute to the reduction of greenhouse gas emissions, reuse and recycling of waste, etc. (Figure 1-2).



Figure 1-2: Decarbonization plan formulation

In addition, based on its experience of overcoming pollution, fostering environmental industries, and making progress in achieving sustainable development, Kitakyushu City has compiled a series of steps (Kitakyushu Model) for developing urban planning and other master plans based on the steps including the following: formulating a vision, analyzing the background (e.g. challenges and effects), setting goals, target values and others, and formulating strategies (planning), so that cities in emerging countries can develop sustainably without experiencing pollution.

The review on the decarbonization plan was carried out using this Kitakyushu model's sustainability framework as a reference. The draft was prepared by the Japanese side, and discussions proceeded in the form of feedback given from the Myanmar side, after which an agreement was reached on the decarbonization plan. The decarbonization plan is outlined in Figure 1-3.

Theme	Objective	Target value KPI		Pilot project
Energy	 Increase the efficiency of energy use. Expand the use of decarbonized energy such as renewable energy. 	 Aim to reduce CO2 emissions from management of buildings (compared to the Building Regulations Part L 2010). Increase the share of renewable energy in energy use. 	Reduce CO2 emissions by 15% compared to the Building Regulations Part L 2010.	 Energy saving projects for buildings, shopping malls, hospitals, schools, etc. within the EGSC Projects for introduction of equipment for renewable energy within EGCs (solar, biomass,
Water	Securing water sources is top priority. Improve the efficiency of water supply and sewage management, and reduce pollutants in water sources. Promote the reuse of treated water.	 Bring the self-supply ratio of water sources to about 40%. Reduce cost by 20% through improvement of efficiency in energy use, etc. Bring the utilization ratio of recycled water to 30%. 	 Ratio of self-supplied water sources to procured water sources Energy efficiency of water supply and sewage management Utilization ratio of recycled water 	Development and operation of efficient water supply and sewage systems Upgrading sewage treatment to enable reuse of treated water
Waste management	 Reduce the volume of landfill waste by reusing (including energy recovery) the waste generated in the city as much as possible. 	Prevent 85% of waste from being sent to landfills.	Volume or ratio of waste not sent to landfills	Optimization of waste disposal
Transport	Mitigate traffic congestion Realize compact city	Reduce the extension of traffic congestion by 5% compared to Yangon's average	Frequency and volume of traffic congestion Utilization ratio of public transport	Implementation of digital operation projects such as automated driving Implementation of projects for introducing AI-powered traffic jam mitigation system
Environmenta I protection	Monitor air, water quality, soil, etc.	Establish environmental standards for air, water quality, soil, etc.	Environmental standards have been set for each of air, water quality, soil, etc.	Monitor air, water quality, and soil

Figure 1-3: Decarbonization plan overview

While the EGSC Project is currently in Phase 1 where housing for low-income families is being developed, the project's development is essentially being pursued by inviting co-investors who endorse the Alliance's concept, and leveraging the co-investors' investment funds, etc. As such, if investors actually participate in the project, the facilities and other structures to be developed may change according to the investors' intentions. Therefore, discussions were held with the Alliance in order to maintain the effectiveness of the formulated decarbonization plan, and an agreement was reached to position MBC as the environmental advisor, and NTT Data Institute of Management Consulting as JCM's advisor in the future.

Based on this agreement, the project made a proposal on reducing CO2 emissions for the facilities and other relevant structures that will undergo development in accordance with the EGSC development plan, and promoted formulation and operationalization of JCM projects.

The facilities to undergo development according to the existing development plan are as shown in Figure 1-4. Moreover, these facilities and other relevant structures are planned to undergo development in three phases, as shown in Figure 1-5.

Meanwhile, there is still a risk that the Alliance will not be able to easily find the co-investors it expects due to the decline in willingness to invest in Myanmar given the factors such as the Rohingya issue, and the overall economic impact of the novel coronavirus, among others. As such, research and review proceeded with close attention to the development plans in the surrounding areas of the EGSC since some of the development plans may collaborate with the development plans in the surrounding areas.

	Landuse	Acre	96
10-11	Public service zone	16	1.0
	Commercial zone	45	2.7
	Mixuse zone	47	2.8
1 mar 1	Hotel zone	27	1.6
	Media village	152	9.0
1000	Agro-park	131	7.8
	Golf resort	400	23.7
	Low cost housing zone	38	2.3
1	Mid-High density housing zone	105	6.2
	Exclusive housing zone	72	4.2
	Farm residential zone	38	2.3
	Hospital zone	8	0.5
	School zone	29	1.7
	Pagoda	5	0.3
	Park and lake	92	5.5
	Traffic zone	6	0.3
	Rest camp	50	2.9
	Green	138	8.2
	Canal	37	2.2
1	Infrastructure	23	1.4
1000	Road	227	13.5
	Total*	1,685	100.0

Figure 1-4: Facilities to undergo development



Figure 1-5: EGSC development plan

(2) -2 Activity 2: Operationalization of potential projects and application to similar projects

The EGSC Project is a long-running urban development project, and is currently in the process of actively looking for investors. Therefore, it is highly likely that it will require some time to identify specific projects that are eligible for JCM equipment subsidies. As such, the activities for FY2019 worked on identifying JCM projects by capitalizing the Alliance's network to identify projects eligible for JCM equipment subsidies in a relatively short period of time. As a result, a total of three projects with prospects for application of the joint

crediting mechanism (JCM) were identified. Two of the projects are feasible in the short term, and one is a mid- to long-term project. These projects are outlined in Table 1-1 below.

Company/project	FY2019 Field study result overview	Short-term/mid-
		to long-term
Company A/Introduction of PV &	• Interested in PV that is installed on the	Short-term
Regenerative Burner	roof of battery factories.	
	• Detailed power generation volume and	
	cost calculations and discussions conducted	
	based on the drawings.	
	• Owns metal melting furnace (burner), and	
	is currently considering the possibility of	
	introducing regenerative burners.	
Company B/Introduction of	Planning to construct a new hospital.	Short-term
generator	• Planning to install generators to provide	
	stable medical services.	
	• Considering to introduce cogeneration for	
	the generator. Also interested in energy	
	saving of the entire facility and the	
	installation of PV on roofs.	
Company C/PV equipment	• Already secured a 120 acre land near the	Mid- to long-
installation	EGSC for the installation of PV equipment.	term
	• Waiting for the contractors' proposals to	
	conduct the preliminary field study to check	
	how many panels can be installed and how	
	much it would cost.	
	• The final scale of the power generation	
	facility is expected to be 30MW, and there	
	is demand for incrementally increasing the	
	scale. (Starting with installation of	
	equipment at about 10MW)	
	• In addition to the EGSC region, it is also	
	considering the possibility of supplying	
	electricity to industrial parks with South	
	Korean capital.	

Table 1-1: Overview of projects identified in the previous fiscal year

Based on the above results of the previous fiscal year's activities, this fiscal year's activities continued to promote early operationalization (e.g. application of JCM equipment subsidies) for projects with short-term feasibility. It was also decided to carry out continuous follow-up on mid- to long-term projects, and apply JCM equipment subsidies in line with the facilities and equipment in the EGSC, among other activities. The activities also included identification of similar projects by capitalizing on the Alliance's network.

Among the projects identified in FY2019, activities for Company B's new hospital development project in particular aimed at achieving early operationalization. Company B is currently collaborating with Japanese medical institutions, and is aiming to promote the development of hospitals that provide advanced medical services for women and children, which are in high demand but few in number in Myanmar. The project has commissioned the basic design of the hospital to a design company with extensive experience in designing hospitals in Japan. Final touches of the overall concept have been drawn out, and the detailed design is also largely finalized (Figure 6). There is a strong desire to introduce as much Japanese technology as possible, and the project has received a letter of interest.



Figure 1-6: Exterior image of the new hospital

(3) Implementation Methods of the Work

Implementation methods of Activity 1 and Activity 2 for this fiscal year is as follows.

	Activity items	Activity content
1	Checking the EGSC development	Checking the development status of the EGSC Project and the
	status	facilities that will be developed, and utilizing the findings for
		new project identification, application to similar projects, etc.
2	Review and research for practical	Conducting review and research of the technology to be
	application of the projects	applied for the feasible projects identified in the previous
	identified in the previous fiscal	fiscal year.

(3) -1 Activity 1: Formulating JCM projects

	year	
3	Concretizing the potential projects	Examining the project implementation structure and other
		aspects for the projects reviewed in the previous item.
4	Researching the possibility of	Researching the projects that can be implemented in
	collaboration with development	collaboration with the projects within the EGSC, upon
	projects in the surrounding area	confirmation of the development status of the areas around
		the EGSC.
5	Review and confirmation work for	Conducting preparatory work (reviewing schedule, checking
	project implementation	type of contract, reviewing implementation structure, and
		identifying challenges) if applying for JCM equipment
		subsidies. Additionally, confirming the intentions of the
		business partners.

(1) -2 Activity 2: Operationalization of potential projects and application to similar projects

	Activity items	Activity content
1-1	Identifying equipment for energy-	Extracting and identifying the technologies that can be
	saving and renewable energy to be	introduced, upon checking and discussing the detailed design
	installed in the new hospital	of the new hospital.
1-2	Establishing a structure that takes	Confirming the intentions of the local businesses upon
	JCM application into	reviewing the project implementation structure, etc., in
	consideration	preparation for the application for JCM equipment subsidies.
1-3	Economic evaluation, etc.	Confirming the intentions of the local businesses upon
		clarifying the investment amount, payback years, internal
		profit, etc.
2-1	Identifying projects for the rollout	Identifying similar projects by capitalizing on the network of
	by capitalizing on the Alliance Star	the group, which is also a master developer of the EGSC.
	Group's network	
2-2	Conducting initial technical,	Identifying the Japanese technologies to be applied and
	economic, and other evaluations	confirming their advantage.
	for the identified projects	Additionally, confirming the intentions of the local businesses
		upon clarifying the investment amount, payback years,
		internal profit, etc.

(4) Implementation period

September 7, 2020 – March 10, 2021

(5) Implementation Structure of the Study

As shown in Table 1-2, the study was conducted under the collaboration between Kitakyushu City and NTT Data Institute of Management Consulting.

Operator		Role
Kitakyushu City	•	Discussion with the Alliance
	•	Provide support for the formulation of the decarbonization plan by
		leveraging Kitakyushu City's know-how
NTT Data Institute of	•	Discussion with the Alliance
Management Consulting	•	Providing supporting for the formulation of the decarbonization plan
	•	Technical and economic review of the specific potential projects
	•	Coordinating the work

Table 1-2:	Implementation	structure
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(6) Study schedule

The three-year project plan estimated for this project is as shown in Figure 1-7.

		2019 - 2021 (3 years	;)				2022 -
						:	Executing the action plan Application to the identifie
	FY2019		FY2020 (2nd	year: this proj	ect)		2021
Activity plans	Activity results	Activity plans	April - June	July -	October -	January -	(3rd year)
Activity 1: Building a long- term inter-city collaborative relationship and formulating a plan for low- carbonization of the Eco Green Smart City (EGSC)	The decarbonization plan was reviewed using the Kitakyushu model's sustainability framework as a reference, and an agreement was reached with Myanmar on the decarbonization plan • An agreement was reached to position MBC as the environmental advisor, and NTT Data institute of Management Consulting as JCM's advisor in the future	Activity 1: Formulation of JCM projects for various facilities that will undergo development in line with the EGSC development plan	Launching the project in the country · Meeling with the Modify with the Modify of the Colligning local information, etc. Revising (where the	Checking the EGSC development status · Reviewing the 30MW PV project, etc.	Checking the EGSC development status Detailed study on 30MW PV project and other project and other potential projects decarbonization	Concretizing the potential projects Possibility of collaboration with development projects in the surrounding area	Concretizi ng the projects Operation alization
Activity 2: Activities for the formulation of JCM projects	The following three projects were identified when seeking decarbonization projects by capitalizing on the Alliance's network 1 Company A/Introduction of PV & regenerative burner 2 Company B/Introduction of generator 3 Company C/PV equipment installation	Activity 2: Activities for the operationalization of potential projects for JCM application by capitalizing on the network of the Alliance identified in the previous fiscal year, and activities for application to similar projects	Introducing energy-sa hospital • Identifying the techr design of the hospital • Establishing a struc- etc. Application to similar p Identifying projects by • Conducting technica projects, etc.	ving and renewable ene nologies to be introduce: ture that takes JCM app r opjects capitalizing on the Allian al, economic, and other e	rgy equipment in the new d based on the detailed silication into consideration, nee Star Group's network evaluations for the identified	Consideration years) JCM ec Application/op project Consideration years+) JCM (Application/op project	for short-term (1 to 3 uppment subsidies erationalization of the for mid- to long-term (3 quipment subsidies erationalization of the
Preparing the report			•Contra	N	Aonthly report		
		· · · · · · · · ·	1.1		5 (C	•This fiscal year's	

Figure 1-7: Estimated study schedule

1.2 Background of Work

1.2.1 Overview of the Targeted Region

To the south of Yangon Region lies the city of Yangon, the former capital and largest city of Myanmar, and Yangon Region is home to 7.36 million people (as of 2014), which accounts for about 14% of the country's entire population. The city of Yangon, which is the center of Yangon Region, has seen population growth and

urbanization as the center of Myanmar's economic development following the recent rapid democratization, influx of foreign capital, and private sector development. However, the supply system for the social infrastructure that supports urban life has not been sufficient for the population growth, and this has become a bottleneck for economic activity. The basic economic policies announced by the government of Myanmar in July 2016 included "prioritizing the development of basic infrastructure" and "urban construction from the perspective of long-term environmental protection," requiring urban development that takes into account both perspectives of economic development and environmental protection.

According to the National Spatial Development Framework Plan released by the government of Myanmar, the development concept focuses on the two regions of Yangon and Mandalay, as well as the Special Economic Zones (SEZs). The subplan of this, which is the 2040 master plan for Yangon Region, is being drawn by JICA and KOICA respectively. The government of Myanmar is setting out to perform tasks such as revising its urban planning and legal systems by drawing on the master plans prepared by both sides.

The Yangon master plan prepared by JICA is aimed at newly creating Greater Yangon based on the field study of Yangon, with the city of Yangon at the center of it and the urban area expanding into the suburbs of the city. The main themes of the plan include the development of Central Business Districts (CBDs), development of the suburban areas, and urban development oriented towards public transport.

Under the slogan of "Yangon 2040 The Peaceful and Beloved Yangon –A City of Green and Gold," the following four elements are laid out as the core elements of the vision for the development of Greater Yangon in 2040: "To be an International Hub City", "To be a Comfortable City", "To be a Well-Managed Infrastructure City", and "To be a City of Good Governance", as shown in the figure below.



Source: The Project for the Strategic Urban Development Plan of the Greater Yangon, Final Report (April 2013) Figure 1-8: Development vision for Greater Yangon 2040

The future urban structure plan of the master plan is as shown in Figure 1-9 below. In addition to the development of a CBD in the south where current urban functions such as administration, finance, and commerce are concentrated, the future plan is to carry out decentralization mainly in CBDs and develop sub-

centers (New Town in the legend of the same figure). As for the direction of urbanization, considering the prospect of a short-term urban development in the "northeastern suburban area", driven by the plan to build a new international airport in the northeast of Yangon, a detailed plan is being prepared on the area in question. The is to prevent excessive urban development by creating an "outer ring growth belt" along the outer ring road in the city of Yangon, and to build an efficient urban infrastructure while finding a balance with the environment through preservation of green areas and agricultural lands.



Figure 1-9: Future urban structure plan

1.2.2 Position of the EGSC

The proposed development site of the EGSC (Figure 1-10), which is the target of the project's study, is located in Hlegu Township in the suburban area in the northeast. As an expressway stretching from central Yangon to the northern region of Myanmar runs through the area, the area serves as the gateway of Yangon. Moreover, the area has a great potential as a sub-center of the future metropolitan, when looking at its transportation nodes and natural environment, as it is located on the outer ring road plan of the metropolitan, while also being rich in nature and home to prime farmlands that have irrigation systems in place.

The Urban and Housing Development Department of Myanmar's Ministry of Construction is planning large-scale urban development in four areas in the country. The Eco Green City Project is one of them, and this is a project that is in line with the future vision laid out in the Urban Development Master Plan of the Greater Yangon prepared by JICA. The project is also attracting attention as the first ever urban development project that involves the Yangon Region Government.

The development image of the EGSC Project is indicated in the figure below. The project is implemented through a public-private partnership between the Department of Urban and Housing Development of Myanmar's Ministry of Construction and the Alliance, which is a local private company. The development site is approximately 1,453 acres of land, and is planned to undergo development in three phases over 16

years from 2019 to 2035, according to the original plan. The project's research activities were carried out in collaboration with Myanmar Business Central Corporation (hereinafter MBC), a business partner of the Alliance that has no capital relationship with the company, but has extensive experience in collaborative work. As MBC has a large network of local companies, collaborating with them will make it easier to formulate JCM projects that follow the Eco Green City development plan, and to discuss with businesses and other relevant entities that may expand into the city. Moreover, the study was conducted with the idea that proposing advanced Japanese technologies to the developers through MBC would increase the chances of identifying decarbonization projects from companies in the Alliance's network.

The EGSC Project is the first large-scale urban development project that is based on the Urban Development Master Plan of the Greater Yangon, and has become a high-profile project within the country. If this project can achieve low-carbon urban development by introducing Japanese technologies through the JCM scheme, there is a high possibility that it can be applied to other sub-centers within the metropolitan area and to urban development projects outside the region.



Figure 1-10: EGSC Image

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2.6 Review and Confirmation Work for Project Implementation

CHAPTER 2 Activity 1: Formulating JCM projects

2.1 Overview of the Activity

Based on the results of the previous fiscal year's activities, this activity continued to promote early operationalization (e.g., application of JCM equipment subsidies) for projects with short-term feasibility. It was also decided to carry out continuous follow-up on mid- to long-term projects, and apply JCM equipment subsidies in line with the facilities and equipment in the EGSC, among other activities.

Meanwhile, as for the EGSC, there was still a risk that the Alliance will not be able to easily find the coinvestors it expects due to the decline in willingness to invest in Myanmar given the factors such as the Rohingya issue, and the overall economic impact of COVID-19, among others. As such, research and review proceeded with close attention to the development plans in the surrounding areas of the EGSC. For these reasons, the activity worked on identifying specific projects aimed at reducing CO2 emission by capitalizing on the Alliance's network to identify projects eligible for JCM equipment subsidies in a relatively short period of time.

2.2 Checking the EGSC Development Status

Due to the impact of COVID-19, the schedule for the EGSC development has been pushed back more than expected, including the delay in the construction of housing for low-income families, for which work has already started. Moreover, attracting foreign investors for the EGSC has also proven difficult, which has led to a change of strategy: where funds have been collected mainly from foreign investors, domestic investors are now also to be targeted in parallel to this.

As a result of these efforts to attract investors, it was confirmed that among the many development projects planned for the EGSC, the following two projects are beginning to make progress in their activities to carry out development work. Details about these projects are described in Chapter 3, Activity 2: Operationalization of Potential Projects and Application to Similar Projects.

No.	Development project
1	Development of infrastructure (water supply) within the EGSC
2	Development of a logistics hub in the EGSC

Table 2-1: Progress check of projects within the EGSC

2.3 Review and Research for Practical Application of the Projects Identified in the Previous Fiscal Year

The projects identified in the previous fiscal year and the review findings up to the previous year are as follows. Company B's new hospital development project listed in the table below is in the phase of having largely finalized the detailed design as of last fiscal year, where there is a strong desire to introduce as much Japanese technology as possible. As such, a plan was made to consider establishing a system for applying JCM equipment subsidies and examining its economic implications for Company B ah ead of the other two

projects. Details about considerations regarding Company B are described in Chapter 3, Activity 2: Operationalization of Potential Projects and Application to Similar Projects.

No.	Project	Estimated	schedule	for
		operationalization	l	
1	Introduction of PV & regenerative burner to Company A	Short-term (within	n 1 to 3 years)	
2	Introduction of generators to Company B	Short-term (within	n 1 to 3 years)	
3	Introduction of PV equipment to Company C	Mid- to long-term	(3 years+)	

Table 2-2: List of projects identified in the previous fiscal year

2.3.1 Details of the Projects Identified in the Previous Fiscal Year

(1) Introduction of PV & regenerative burner to Company A

Founded in 1996, Company A is a leading manufacturer of lead-acid storage batteries in Myanmar. In addition to automotive and industrial standby batteries, the company manufactures and sells special-purpose storage batteries. Its storage battery brand is one of the biggest names in Myanmar.

The company has great interest in the system of JCM, and is specifically interested in introducing the following two technologies.

① PV

② Regenerative burner

For the PV system, drawings of the company's factory roof were obtained (Figure 2-1, Figure 2-2), and an estimation has been made on the scale to which the system can be installed (Figure 2-3).



FRONT ELEVATION

Figure 2-1 Scale of Company A's roof



Figure 2-2 Shape of Company A's roof



Figure 2-3 PV system that can be installed on Company A's roof

As a result of the calculations, it was estimated that approximately 0.6 MW of PV equipment could be installed. When the solar radiation conditions in Myanmar were taken into account, the amount of electricity generated in a year was estimated to be about 960 MWh. Based on these figures, the expected reduction in CO2 emissions was estimated to be around 2,800 t-CO2 with the legal operating life for the plant as 9 years.

In addition to PV equipment, the company is also considering to simultaneously install both regenerative burners described in (2), and PV equipment on the roofs of factories of affiliated companies. The company is interested in introducing regenerative burners because the metal melting furnace in the storage battery manufacturing plant, which is the company's main plant, does not have a waste heat recovery system.

If the project can expand in scale by this way of combining PV with other projects, it will be put in a position where application for JCM equipment subsidies can be considered.

Coordination with potential main operators is underway, with the aim to establish the scheme shown in Figure 2-6.

As for financing, the company is primarily self-funding the investment, given its strong business performance. Caution should be applied, however, to the presence of competition for PV equipment, given the fact that proposals have also been made by Chinese companies. Moreover, since Company A is a private company, it is possible to have a negotiated contract if it becomes the project's joint operator.



Figure 2-4 International consortium scheme

(2) Introduction of PV equipment to Company C

Company C is an affiliate of the Alliance that was established in 2013, and is responsible for energy-related tasks. The company performs the construction and management of generators throughout Myanmar, and has experience in constructing several hydroelectric power plants.

In the EGSC, there are plans to promote the use of renewable energy wherever possible, and eventually install 30MW PV equipment on its site (or a nearby site). The driving force behind this ultra mega-solar

power project is Company A. The electricity from the mega-solar power plant will be supplied to the EGSC, with a view to also supply the Korean industrial park that is being developed nearby with this electricity (see Figure 2-5).

Company C has shown great interest in applying JCM to this mega-solar power project. However, as the expansion of the EGSC development will be timed to coincide with the discovery of investors, the development of mega-solar power will also be timed to coincide with the development of EGSC facilities. For this reason, the project has been positioned as a medium- to long-term project, for now.



Figure 2-5: Supply plan for electricity and other resources in the EGSC

2.3.2 Points Reviewed This Fiscal Year

Although each company has an intention to continue the efforts in JCM application, detailed discussions for these projects have been postponed this year due to the impact of COVID-19.

However, follow-up continues to be given to each company through MBC, and a systemhas been put in place to allow the discussion to immediately move ahead when the situation improves.

2.4 Concretizing the Potential Projects

As with Section 2.3.2, this section's detailed discussion has also been postponed. Follow-up continues to be given to each company through MBC, and a system has been put in place to allow the discussion to immediately move ahead when the situation improves.

2.5 Researching the Possibility of Collaboration with Development Projects in the Surrounding Area

As a result of research performed through the Alliance's network and marketing activities targeting Japanese companies, two projects with potential for collaboration were identified. Details of these projects are described in 0 and 2.5.2.

The possibility of collaboration is high for the installation of PV equipment in the industrial park using the third-party ownership model, as agreement has been secured with the Japanese company that operates the industrial park on the terms related to the application of JCM.

Table 2-3: Identified projects with potential for collaboration

No.	Project
1	Installation of PV equipment in the industrial park using the third-party ownership model
2	Large-scale development of the Western Yangon

2.5.1 Installation of PV Equipment in the Industrial Park Using the Third-Party Ownership Model

Since Myanmar has not been able to receive ODA assistance due to the long period of economic sanctions imposed by the international community, the country has lagged far behind the ASEAN countries in its development of infrastructure such as roads and electricity. The deteriorating low-capacity infrastructure of the country had become a major obstacle for foreign companies to expand their investment in Myanmar, making the improvement of its poor infrastructure an urgent task for Myanmar.

Projects to develop core infrastructure such as roads, electricity, and railroads through yen loans have already started, and the Japanese industrial park that received yen loans to develop its surrounding infrastructure is now in full operation.

However, the country's electrification rate remains low compared to other ASEAN countries, stalling at around 40 percent as of 2019. While the national power grid is forecast to be able to meet large-scale electricity demands in the near future, the development of villages with a small number of households distant from the national power grid will inevitably be delayed, leading to a decline in their standard of education.

Furthermore, Myanmar is home to ethnic minorities such as the Rohingya people. The persecution and other problems brought against the Rohingya people have forced them to live in refugee camps, where infrastructure is reportedly poor with no electricity.

Meanwhile in Japan, PV is becoming widely adopted and its price is also decreasing thanks to the FIT (Feed-In Tariff) system. Currently, the cost of electricity produced by rooftop PV equipment is equal to or lower than the cost of electricity purchased from the grid. As a result, a PV business with third-party ownership (TPO model) is becoming widely adopted in Japan, where a third party that is not the homeowner rents the roof from the owner of the house, installs the PV equipment on the roof, and sells the generated electricity to the homeowner. With third-party ownership PV, the buyer of the electricity (the owner of the TPO model project scheme Advantages



house) can enjoy further price advantages as they do not have to pay the wheeling charges and the FIT surcharge (see Figure 2-6 below).

Figure 2-6: Business overview of the third-party ownership model

Some organizations have been established to support the electrification of areas without electricity around the world through application of this third-party ownership model. Specifically, GOOD ON ROOFS is using the third-party ownership model and collaborating with businesses to contribute to improving the electrification rates in areas with poor electricity infrastructure such as those mentioned above, where it is difficult for people to lead healthy lives. An overview of GOOD ON ROOFS' activities is provided below, as well as in Figure 2-6.

- ① Renting the roof of a partner company and installing PV equipment using the third-party ownership model
- ② GOOD ON ROOFS pays rent for the roof to its partner companies
- ③ Partner companies pay electricity bills and partial contributions (often put towards rent for the roof) to GOOD ON ROOFS
- ④ Electricity bills and partial contributions are used to help tackle social issues



GOOD ON ROOFS is collecting contributions by installing PV equipment through the third-party ownership model in collaboration with the industrial parks near Yangon, and is considering using the collected contributions for initiatives such as installing PV equipment in Rohingya refugee camps. Discussion about the business model is currently underway with the operators of the industrial parks, while a review is being carried out on whether it is possible to install PV equipment through the third-party ownership model in Myanmar. If there are no major problems, concrete project plans will be formulated, including the application of JCM equipment subsidies.

The project is believed to also be consistent with the philosophy of the SDGs.

2.5.2 Large-Scale Development Project of the Western Yangon

In April 2018, the Yangon Region Government established the New Yangon Development Company, a special-purpose company, as it decided to develop a new city in an area of 20,000 acres on the opposite bank of the Hlaing River that flows west of Yangon. The city is modeled after Shenzhen in Guangdong Province of China, Incheon in South Korea, and Iskandar in Malaysia, and will be developed as a "private sector priority project" that is linked with the China-Myanmar Economic Corridor.

This large-scale development project of the Western Yangon is aimed at developing industrial zones, bridges, residential areas, and other relevant infrastructure, and was initially planned to be led mainly by companies from outside Myanmar. However, the selection process for companies outside Myanmar was criticized, mainly by domestic companies within Myanmar, for not being transparent, following which the

invitation calling for participation by interested businesses reopened.

A consortium of construction companies in Myanmar affiliated to the Alliance is also planning to join this call for participation, among other businesses. Through MBC, JCM is currently being presented to the said member companies of the consortium, and the idea of applying JCM to the installation of equipment is also being proposed to them in the event that they are chosen for the project.



Figure 2-6 Area covered by the large-scale development

2.6 Review and Confirmation Work for Project Implementation

Although discussions for the implementation of the projects discovered in the last fiscal year have been postponed, a system has been put in place to allow the discussion to immediately move ahead when the situation improves.

Among the newly discovered projects, the project to install PV equipment in the industrial park using the third-party ownership model is at the stage of beginning detailed discussions with the affiliated companies, and initiatives aimed at crystalizing the project plan will proceed from the following fiscal year.

Proposal suggestions and discussions will also take place for specific initiatives for the large-scale development of the Western Yangon, if the consortium in Myanmar is selected for the project.

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CHAPTER 3 Activity 2: Operationalization of potential projects and application to similar projects

3.1 Overview of the Activity

As described in the previous chapter, Company B's new hospital development project is in the phase of having largely finalized the detailed design as of last fiscal year, where there is a strong desire to introduce as much Japanese technology as possible. As such, a plan was made to consider establishing a system for applying JCM equipment subsidies and examining its economic implications for Company B ahead of the other two projects that were identified last year.

The activity also included working towards JCM application by capitalizing on the Alliance's network to identify similar projects for the rollout.

3.2 Identifying equipment for energy-saving and renewable energy to be installed in the new hospital

3.2.1 Points Reviewed in the Last Fiscal Year

Company B, which is working on this project, is a Myanmar conglomerate established in 1995. Its business started with trading, and has since expanded to include logistics, mining development, agriculture, real estate development, construction, as well as healthcare services. Company B is currently collaborating with Japanese medical institutions, and is aiming to promote the development of hospitals that provide advanced medical services for women and children. The basic design of the hospital has been commissioned to a design company with extensive experience in designing hospitals in Japan. Final touches of the overall concept have been drawn out, and the detailed design is also largely finalized (Figure 3-1).



Figure 3-1: Layout of the new hospital

The company has great interest in the system of JCM, and plans to install generators in the new hospital to provide stable medical services. There are plans to introduce decarbonized high-efficiency generators as a promising option for these generators, and the company has shown interest in applying JCM to their installation. As the company is currently collaborating and discussing the details with the Japanese design company that designed the hospital, the possibility of applying JCM is increasing.

As for investment in the construction of the hospital, there is a plan to establish a special purpose company (SPC) which will be co-funded by Japanese companies. The SPC will be in charge of driving the construction of the hospital.

3.2.2 Points Reviewed This Fiscal Year

Although Company B has the intention to continue its efforts in JCM application, detailed discussions have been postponed as the company has also been affected by COVID-19 and taken time to collect investment funds.

However, follow-up continues to be given to each company through MBC, and a system has been put in place to allow the discussion to immediately move ahead when the situation improves.

3.3 Establishing a structure that takes JCM application into consideration

As with Section 3.2.2, this section's detailed discussion has also been postponed. Follow-up continues to be given through MBC, and a system has been put in place to allow the discussion to immediately move ahead when the situation improves.

3.4 Identifying projects for the rollout by capitalizing on the Alliance Star Group's network

Two projects with potential for the rollout within the EGSC have been identified by capitalizing on the network of the group, which is also a master developer of the EGSC. Details of each project are described in the following sections.

ruoles i lachtinea projects with potential for conaceration

No.	Project
1	Development of infrastructure (water supply) within the EGSC
2	Development of a logistics hub within the EGSC

3.4.1 Development of infrastructure (water supply) within the EGSC

In addition to investors from the West, the Alliance is working to find investors from Japan, China, South Korea, as well as from within Myanmar. The new industrial park with South Korean capital undergoing development near the EGSC indicates an interest in the EGSC from South Korean companies and other relevant entities, and a Memorandum of Understanding on the development of infrastructure (water supply) was signed in October 2019 by a consortium of three major overseas construction companies.

This water supply development plan is in line with the EGSC master plan, and is currently in the process of a feasibility study (FS), undergoing detailed examination of water sources, piping locations, specifications of equipment to be installed, etc. (Figure 3-2 to Figure 3-6)

Future schedule based on the plan moving forward is shown in Table3-2.

Status	Schedule	Content
In progress	June 2020 - August 2021	Start feasibility study
Planned	2021 - 2022	Basic/detailed design
Planned	Around mid-2022	Conclusion of the contract
Planned	End of 2023	Begin construction

Table 3-2 Schedule for water supply development

Project	Feasibility Study on the Water Treatment Plan City (EGC) in Yangon, Myanmar	nt & Wastewater Treatment Plant Project for Eco Green
Location	Hlegu township, Yangon Region	
Consortium	3 construction companies	A BANK
Period	2020, 6 - 2021, 8 (14 months)	TOMILES
Budget	Undisclosed	Sell as Selection of A
Central Government & Project Owner	Ministry of Construction (MOC) Alliance Stars Group of Companies (ASG)	
Project Cost	Undisclosed	Services Par
Type of Project	To be decided	
Construction Period	2021 ~ 2024 (Tentative) (Basic & Detailed desigh , Construction)	
Dumpus of Desired	· Supply safe and clean water to the region of	of Eco Green City
Purpose of Project	· Safely treat wastewater coming from EGC	

Figure 3-2: Project overview

	Plan of Facility	Location of Project area
ltem	Context	
Location	© Eco Green City (EGC)	Eco Green City Layout
Population	o 200,000 (2028)	A Ca
Area	0 1,453 ac (5.89km)	
WTP (Water Treatment Plant)	Undisclosed	
WWTP (Westewater Trestment Plant)	Undisclosed	Caden Konsey
Remark	 City Concept : An eco-friendly smart city that blends complex cultural facilities, commercial facilities, and residential areas Residential area is under construction 	LESENC VIT Read Read Read Read Read Read Read Read

Figure 3-3: Overview of the plant to be built



Figure 3-4: Layout of the water treatment facility



Figure 3-5: Layout of the wastewater treatment facility (1)



Figure 3-6: Layout of the wastewater treatment facility (2)

The Kalihtaw Dam located north of the EGSC and the YCDC canal that runs through the EGSC, among others, are considered for use as water sources.

Using the Kalihtaw Dam directly comes with concerns about increased construction costs, as this would require piping that would stretch for about 10 km. However, since the above-mentioned industrial park is already connected to Kalihtaw Dam, the construction cost could be reduced if the existing pipes of this industrial park could be connected with the EGSC. As such, discussions are being carried out, including on collaboration with industrial parks also in mind. (Figure 3-7)



Figure 3-7: Ideas of collaboration with industrial parks with foreign capital

The use of water flowing from the Kalihtaw Dam to the neighboring industrial park and the YCDC canal that passes through the EGSC will require negotiation with the operators of these facilities. Since the EGSC is a large-scale development, there are concerns that the operators will not be able to secure the amount of water they require if water sources are to depend on the above site alone, and this would not be consistent with the concept of the EGSC regarding water ("Bring the self-supply ratio of water sources to about 40%.", "Bring the utilization ratio of recycled water to 30%.") either.

As such, in addition to the above-mentioned water sources, there are also considerations for utilizing rainwater, groundwater, etc., by installing reservoirs, as well as utilizing recycled water obtained from wastewater treatment facilities. An overview of points currently being considered is shown in Table3-3.

	Water	Piping	verview	Reference
	sources			
А	Kalihtaw Dam	Connect the	Easy to maintain and manag	e the facility as it Figure 3-8
		existing pipes of	only requires connection from	nthe existing pipes
		the industrial	of the neighboring industrial	park to the water
		park with the	supply facility in the EGSC.	
		water treatment	Negotiation is likely to be di	fficult if all water
		facility in the	sources are to depend on the	industrial park, as
		EGSC	the industrial park is concerne	ed that they will not
			be able to secure sufficient ar	nounts of water.
			Not consistent with the conce	ept of the EGSC.
В	Kalihtaw Dam	Connect the	Not consistent with the conce	ept of the EGSC. Figure 3-9
		Kalihtaw Dam	No need for negotiation with	the industrial park.
		with the water	Increase in the costs for const	ruction and facility
		treatment facility	maintenance/management.	
		in the EGSC		
С	YCDC canal,	Connect the	Easy to maintain and manage	the facility as it is Figure 3-10
	irrigation and	YCDC canal	a connection to the canal that	at runs through the
	drainage	with the EGSC	EGSC.	
		water treatment	It is unclear whether sufficien	it amounts of water
		facility	resources can be supplied fo	r the operation of
			the EGSC.	
			Negotiation is likely to be di	fficult if all water
			sources are to depend on the	e YCDC canal, as
			YCDC in charge of opera	ting the canal is

Table3-3 Options considered for securing water sources

				concerned that they will not be able to supply	
				sufficient amounts of water to the city of	
				Yangon.	
			•	Not consistent with the concept of the EGSC.	
D	YCDC canal,	Connect the	٠	Use the YCDC canal as the main source of	Figure 3-11
	rainwater,	YCDC canal		water, and use alternative sources of water	
	groundwater,	with the EGSC		(rainwater, groundwater, recycled water) to	
	recycled water	reservoir, and		supplement any shortage.	
		connect the	•	Consistency with the concept of the EGSC is	
		reservoir with		achieved by maximizing self-sufficiency.	
		the water	•	Negotiation with the YCDC is required for the	
		treatment facility		connection.	
Е	Kalihtaw	Connect the	٠	Use the water flowing from Kalihtaw Damtothe	Figure 3-12
	Dam,	existing pipes in		neighboring industrial park as the main source	
	rainwater,	the industrial		of water, and use alternative sources of water	
	groundwater,	park with the		(rainwater, groundwater, recycled water) to	
	recycled water	EGSC reservoir,		supplement any shortage.	
		and connect the	•	Consistency with the concept of the EGSC is	
		reservoir with		achieved by maximizing self-sufficiency.	
		the water	•	Negotiation with the industrial park is required	
		treatment facility		for the connection.	
F	Kalihtaw	Connect the	٠	Use the water flowing from the YCDC canal and	Figure 3-13
	Dam, YCDC	existing pipes in		Kalihtaw Dam to the neighboring industrial park	
	canal,	the industrial		as the main source of water, and use alternative	
	rainwater,	park and YCDC		sources of water (rainwater, groundwater,	
	groundwater,	canal with the		recycled water) to supplement any shortage.	
	recycled water	EGSC reservoir,	•	Consistency with the concept of the EGSC is	
		and connect the		achieved by maximizing self-sufficiency.	
		reservoir with	•	Negotiation with the industrial park and YCDC	
		the water		is required for the connection.	
		treatment facility			



Figure 3-8: Options considered for securing water sources (Option A)



Figure 3-9: Options considered for securing water sources (Option B)



Figure 3-10: Options considered for securing water sources (Option C)



Figure 3-11: Options considered for securing water sources (Option D)


Figure 3-12: Options considered for securing water sources (Option E)



Figure 3-13: Options considered for securing water sources (Option F)

With regard to this water supply development plan, detailed discussions on JCM application are currently underway by communicating with the consortium companies through the Alliance. Specific proposals include suggestions to use inverter-equipped pumps, which are not always readily available in Myanmar, for pumps that are indispensable for transporting drinking water, and to install PV equipment as a necessary power source on top of relevant facilities for water supply. South Korean companies, including those planning to invest, have a certain level of interest in energy-saving and decarbonization, and are currently relatively positive about the application of JCM. Continuous follow-up will be given on this matter.

3.4.2 Development of a logistics hub within the EGSC

As previously stated, the Alliance is working to find domestic investors in addition to overseas investors. As a result, a Memorandum of Understanding has been signed by domestic investors in August 2019 for the development of a logistics hub. This will bring advanced technologies to the development.

The logistics hub is in line with the EGSC master plan (Figure 3-14), and 133 acres of land is planned to undergo development within the EGSC. This logistics hub is expected to become the center of logistics for the EGSC. (Figure 3-15)







Figure 3-15 Overview of the logistics hub

Proposals are also made for this development by communicating with relevant companies through the Alliance, with suggestions including the installation of PV equipment on the roofs of buildings within the logistics hub, and the electrification of various mobility technologies.

3.5 Conducting initial technical, economic, and other evaluations for the identified projects

Currently, agreement on the application of JCM has been obtained with the main operators for the [development of infrastructure (water supply) within the EGSC], and for the [logistics hub in the EGSC].

Further reviews and studies will be conducted on the technologies to be applied, and the implementation system for JCM application will be reviewed and its challenges identified.

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Chapter 5 Workshop Participation

5.1. Workshop on City-to-city Collaboration Program

(1) Overview

Created a video for brief introduction (on-demand) of the individual projects at the Workshop on City-to-city Collaboration Program (Seminar on City-to-city Collaboration) hosted by the Ministry of the Environment. Also attended a closed seminar open only to those affiliated to the program.

(2) Dates

Brief introduction of individual projects (on-demand): Wednesday, January 27 - Wednesday, February 3, 2021

Closed seminar: 2:00pm - 4:00pm on Monday, February 1, 2021

(3) Details

The material used for making the video, and the minutes taken during the attendance in the closed seminar, are attached below.

Brief Introduction of Individual Projects (On-demand)

Dates: Wednesday, January 27 - Wednesday, February 3, 2021

The Seminar on Creating Zero-carbon Societies through City-to-city Collaboration hosted by the Ministry of the Environment is usually held in late January every year, bringing together people, from Japan and overseas, affiliated to projects that were adopted for the city-to-city collaboration program. However, given the situation with the COVID-19 pandemic, this fiscal year's event was held fully online.

With the purpose to promote mutual understanding among the program participants and to share information widely on the 20 projects adopted this fiscal year, videos introducing each project were made available on demand for a week, before and after the seminar that was held on Monday, February 1. There were a total of 233 viewers who watched these videos. (As of Monday, February 1, published by the bureau)

The material used for making the video is attached below.



Agenda

- I. Project Overview
- II. Activity 1 : Formulation of potential projects applicable to JCM, based on decarbonizing plan
- III. Activity 2 : Commercialize the projects found last year + Rolling out similar projects

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I. Project Overview (1/2)

Realization of Eco-Green Smart City (EGSC) in Yangon Precinct.

Population growth and urbanization

- Due to the recent rapid democratization, the influx of foreign capital, and private development, Yangon has been experiencing population growth and urbanization as the center of Myanmar's economic development.
- However, the supply system for the social infrastructure that supports urban life is not sufficient to cope with population growth, and it has become a bottleneck for economic activity.

Urban development plan

- The basic economic policy announced by the Myanmar government in July 2016 includes "priority development of basic infrastructure" and "urban construction from the perspective of long-term environmental protection".
- Urban development is required to take into account both economic development and environmental protection perspectives.

City-to-city Collaboration

2)

- With the support of Kitakyushu City, which has experience and expertise in the development of a decarbonized society, we will
 conduct surveys and other activities aimed at developing projects that will lead to the acquisition of JCM credits in smart cities,
 targeting EGSC projects promoted by Urban and Housing Development Department.
- The EGSC project is the first large-scale urban development project in line with the Yangon Urban Area Development Master Plan, and has attracted a lot of attention in the country. If this project can realize decarbonized urban development by introducing Japanese technology through the JCM scheme, there is a high possibility that it will be able to expand to other sub-centers within the urban area and to urban development outside the district.

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I. Project Overview (2/2)



II. Activity 1: Formulation of potential projects applicable to JCM, based on decarbonizing plan

- Due to COVID-19, development of EGSC is delayed. However, there is some progress.
- It was confirmed that the infrastructure (water supply) of EGSC is being planned to develop by foreign companies.
- JCM application is under consideration for this water supply development project from the planning stage.

Water supply development project

EGSC started to find out not only foreign investor, but also domestic investor.





III. Activity 2: Commercialize the projects found last year + Rolling out similar projects (2/2)

- Status of existing projects are as follows.
- Companies visited last year are being followed up through MBC.
- Since it is difficult to visit Myanmar, activities to find similar projects are being conducted in collaboration with MBC.

Company	Industry	Visiting in FY2019	JCM applicable equipment
Company A	Manufacturing	1st, 2nd Visiting	 PV Regeneration burner
Company B	• Hospital	1st Visiting	Generator

Companies visited last year

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Closed seminar

Attended the Seminar on Creating Zero-carbon Cities through City-to-city Collaboration hosted online by the Ministry of the Environment between 2:00pm - 4:00pm on Monday, February 1, 2020.

The purpose of the event was as follows.

- Sharing and increasing awareness of the results and other relevant matters of the FY2020 cityto-city collaboration program and the Asian Development Bank's (ADB) Japan Fund for the Joint Crediting Mechanismprograms
- ② Networking among operators and local governments and exchange of information on mutually complementary projects
- ③ Sharing and increasing awareness of information on government support programs for the next fiscal year
- (4) Exchanging opinions on the trends of international attitude following the pandemic, and how study should be conducted during the pandemic

93 participants from Japan (including the organizer) and 54 participants from overseas partner cities registered to attend the seminar.

時間	内容
14:00	主催者挨拶 環境省 地球環境局 国際連携課 国際協力・環境インフラ戦略室 室長 杉本 留三
14:05	脱炭素社会の構築に向けた支援メニューの概要
	 ・ 脱炭素社会の構築に向けた日本の施策 環境省 地球環境局 国際連携課 国際協力・環境インフラ戦略室 室長 杉本 留三
	・ JCM 関連動向や設備補助事業採択案件の傾向等について 環境省 地球環境局 地球温暖化対策課 市場メカニズム室 国際企画官 小圷一久
	 JCM 日本基金(JFJCM)の紹介 アジア開発銀行(ADB) 持続可能な開発・気候変動局 気候変動・災害リスク管理課 環境・気候変動専門官 藤井 進太郎
	質疑応答
14:55	【パネルディスカッション】コロナ禍での海外展開の進め方
	パネリスト:
	- 環境省 地球環境局 国際連携課 国際協力・環境インフラ戦略室 室長 杉本 留三
	- 北九州市 アシア也炭素化センター 国際連携推進担当課長 有田 雄一 - 日本工堂鉄 環境技術部 部長代理 石川 腎
	- (㈱オリエンタルコンサルタンツ・海外事業部 藤井 雅規
	- (㈱エイチ・アイ・エス 法人営業本部 商社事業グループ GBA・レンタル HS 事業 所長 篠原 優花 - (㈱エイチ・アイ・エス 法人営業部 セールスマネージャー 江添 健介
	ファシリテーター:
	- IGES 北九州アーバンセンター プログラムディレクター 林 志浩
	質疑応答
	閉会(16:00)

Table 4-1: Closed seminar program

• 2:00pm Organizer opening remarks (5 minutes):

Director of the International Cooperation and Sustainable Infrastructure Office, International Strategy Division, Global Environment Bureau, Ministry of the Environment: Mr. Ryuzo Sugimoto

- In 2020, the social climate changed drastically through the pandemic. At this turning point in history, there is a need to transform social economy into something more sustainable and resilient in pursuit of the SDGs, rather than returning to the pre-pandemic social climate.
- In October 2020, the Prime Minister, Mr. Suga declared in his policy speech that the country would aim to achieve virtually zero greenhouse gas emissions and realize a zero-carbon society by 2050. This indicates that cities will play more and more important roles in the realization of a zero-carbon society. As of 2018, only four local governments had declared to become zero-carbon cities, but now this number has jumped to over 200, covering a population of over 90 million.
- The Ministry of the Environment is also creating model cases of successful decarbonization in preparation for a carbon-zero "domino" project that would be rolled out throughout the country in a domino-effect style.
- A zero-carbon society cannot be achieved by Japan alone, and only by successfully applying the efforts of Japanese local governments in other countries can we contribute to the global decarbonization.
- The Ministry of the Environment launched the city-to-city collaboration program in FY2013, and this year marks the program's eighth year. First round of applications were received in FY2020. A record number of 20 projects were adopted in total, including the second round of applications. Proposals were also made on new overseas partner cities and new initiatives.
- 2:05pm: Overview of the support programs for creating a zero-carbon society (50 minutes): Announcements were made by the Ministry of the Environment and the Asian Development Bank. These organizations expressed their willingness to provide various types of governmental and financial support to help achieve the SDGs and green recovery from the pandemic, rather than simply aiming for a zero-carbon society.
 - (1) Japan's Measures for Creating a Zero-Carbon Society
 Mr. Ryuzo Sugimoto, Director of the International Cooperation and Sustainable

Infrastructure Office, International Strategy Division, Global Environment Bureau, Ministry of the Environment

In 2020, there was a possibility that the international momentum for climate policy measures would be lost due to the impact of the pandemic, such as the COP26 being postponed. After the decision was made to postpone COP26, Minister of the Environment, Mr. Koizumi proposed the Platform for Redesign 2020, an online platform for ministerial-level meetings about the recovery from the pandemic, and environmental issues such as climate change. Member countries of the United Nations Framework Convention on Climate Change (UNFCCC) were invited to this meeting, which was jointly organized by the Ministry of the Environment and the Secretariat of UNFCCC. Ministers and deputy ministers from 46 countries participated in the meeting, which was designed for promoting international solidarity and maintaining momentum for climate policy measures. The meeting confirmed that many countries are striving for a more sustainable and green recovery from the pandemic, with consideration given both to the current coexistence with the virus, and the post-pandemic future.



According to the trends of each country's measures against COVID-19 and climate change, compiled from the information registered on the online platform, measures taken by these countries included sustainable transportation, renewable energy deployment, circular economy, waste management, and other measures in the building sector. These trends indicate that climate policy measures are not just about the energy problem, but also require transformation of the urban structure. There is also a need for synergy between climate policy measures and measures against the pandemic.

- Following the Prime Minister, Mr. Suga's policy speech, the National-Local Decarbonization Council was established to provide a framework for the national and local governments to collaborate in pursuing a zero-carbon society. The council will formulate a roadmap for the realization of a zero-carbon society by 2050, focusing on areas that are closely related to local initiatives and the citizens' lifestyles.
- 2025 Policy Program for Promotion of Overseas Infrastructure Systemwas compiled in December 2020 as a government-wide guideline for overseas development. The goal is to develop high quality infrastructure overseas, which would contribute to achieving carbon neutrality and the SDGs.
- A wide range of support, including policy dialogue, support for legislative development in partner countries and for individual projects, will be given to enable overseas development of environmental infrastructure. To promote a zero-carbon society, these support measures are being packaged at various levels: national government, industrial sector, cities, and individual projects. The systems supporting these efforts financially are JCM and Co-innovation.



- The city-to-city collaboration program is designed for realizing a zero-carbon society through collaboration between Japanese cities and overseas partner cities. In 2020, a total of 20 projects were adopted, and new countries also participated in the project, including Chile, the first from Latin America, and Palau.
- The city-to-city collaboration program is not limited to individual projects, and is also expanding into the area of policy formulation. Tokyo and the City of Kuala Lumpur in Malaysia have gone from developing systems related to energy efficiency to introducing municipal-level policies.
- It is possible to expand the program from city-to-city collaboration to a JCM equipment subsidy program. Moreover, Co-innovation is supporting the development of new technologies, products, and business models by utilizing Japan's elemental technologies and know-how. The system can also support the formulation of projects tailored to the needs arising from the city-to-city collaboration program.
- In recent years, the use of ICT technology has also gained prominence. There has been a case where used EV parts were remanufactured into new EVs in Cambodia.
 There is also a growing need for remote, no-contact, and other technologies for life in the pandemic.

- An international forum on zero-carbon cities is scheduled to be held in March 2021, so that Japan's efforts, such as those described above, can be introduced to and shared widely with the world.
- (2) Trends related to the attitude towards JCM and trends in projects adopted for the equipment subsidy program

Mr. Kazuhisa Koakutsu, Senior Coordinator of the Office of Market Mechanisms, Climate Change Policy Division, Global Environment Bureau, Ministry of the Environment

- There are many projects in the JCM equipment subsidy program that spun out of the city-to-city collaboration program, and these are gaining prominence for fighting global warming in the time of the pandemic.
- The Ministry of the Environment has implemented 177 JCM equipment subsidy projects in the past. In the breakdown, the highest number of projects was related to renewable energy (47%), followed by energy efficiency (43%), and a wide range of other sectors including waste, transportation, forest management, and CFC gas countermeasures.
- With regard to renewable energy, the number of solar power generation projects is on the rise on different scales, from those installed on the roofs of houses and other buildings, to large-scale projects reaching several hundred MW. New renewable energies such as geothermal power and biomass power are also on the rise, and zerocarbon efforts are accelerating in many countries.
- There are many cases where initiatives related to resource recycling and the management and proper disposal of urban waste have led to the introduction of waste power generation. Currently, there are enquiries from several countries, including Myanmar.
- ♦ Areas that are expected to grow in the future include the transportation sector and energy efficiency (e.g., introduction of energy-efficient products in factories).



There are also JCM cases in the areas that are gaining prominence in the pandemic. The pharmaceutical industry also has cases of JCM application related to manufacturing facilities for disinfectants and hygiene products. In addition to this, there is also technology for remote operation of equipment overseas, etc.



- ☆ The Ministry of the Environment has implemented 162 JCM equipment subsidy projects in the past, and has secured a total budget of 9 billion yen in FY2020 for three years until FY2022. The ministry plans to request the same amount in FY2021.
- ☆ A JCM equipment subsidy project for the recovery and destruction of CFC gas was also carried out in FY2020. This project targeted automobiles and home appliances, and is gaining more partner countries besides Thailand and Vietnam.
- In the example of Da Nang City in Vietnam and Yokohama City, the initiative has installed pumps and other equipment in water treatment plants. With the MRV methodology being approved in FY2020, the project is now at the stage of registering for JCM.
- ☆ In the example of Semarang City in Indonesia and Toyama City, the initiative is aiming to operate public buses using CNG gas. With the MRV methodology being approved in both countries in December 2020, the project is now working towards registering for JCM.
- In the example of Ho Chi Minh City in Vietnam and Osaka City, the initiative has installed energy-efficient equipment in hotels and other facilities. Installation of equipment has reportedly been delayed due to the impact of the pandemic, but it would be preferable if the initiative could proceed with the early installation in 2021. As exemplified here, the impact of the pandemic on-site is substantial. The impact of

the pandemic must still be taken into account when carrying out projects in FY2021 and onwards.

- In the example of Phnom Penh in Cambodia and Kitakyushu City, the initiative has introduced hybrid power generation equipment of biomass and solar power generation. While this has also been affected by the pandemic, the Ministry of the Environment plans to support the initiative.
- An example of smart city development in Yangon, Myanmar is introduced, although this is not a project that spun out of the city-to-city collaboration program. Japanese companies are also taking part in this development project by utilizing the JCM equipment subsidy program. In the future, the introduction of smart cities and composite technologies will be an important theme for cities.
- As part of the JCM Global Partnership, efforts are being promoted in areas such as formulation and implementation of zero-carbon projects, execution of Article 6 of the Paris Agreement, and contribution to the SDGs.
- ✤ For those who have specific needs and solutions, support is given on formulating projects through the JCM Global Match.

(3) Introduction of Japan Fund for the Joint Crediting Mechanism (JFJCM)

Mr. Shintaro Fujii, Environment and Climate Change Specialist, Climate Change and Disaster Risk Management Division, Sustainable Development and Climate Change Department, Asian Development Bank (ADB)

- ADB was established in 1966 as an international development financial institution. The combination of finance and knowledge has contributed to the promotion of good policy and driving regional cooperation and friendship building. The commitment line for 2019 was approximately \$21.6 billion.
- One of the seven priorities listed in Strategy 2030, ADB's long-term strategy released in 2018, was "Tackling Climate Change, Building Climate and Disaster Resilience, and Enhancing Environmental Sustainability". The ADB has set two target values for this task: (i) at least 75% of ADB's operations support climate change mitigation and adaptation by 2030; (ii) climate finance from ADB's own resources will reach \$80 billion cumulatively from 2019 to 2030. Achieving these targets is als o crucial for recovery from the pandemic.



- One of the carbon market programs being implemented by the ADB is JFJCM. The program is funded by the Ministry of the Environment, and operates as a trust fund.
 Grants are provided for projects financed by ADB, when these projects utilize JCM.
- ♦ JFJCM targets 11 countries in the Asia-Pacific region. Both sovereign and nonsovereign loans can be used for them, and the maximum amount of subsidy that can be offered is 10% of the total project cost, or \$10 million, whichever is less.
- In the past, there have been six projects that applied JFJCM, all of which were sovereign loans. Technologies eligible for the subsidy include batteries, energy management, wastewater treatment, power lines, solar power generation, build ings, and waste power generation.
- Most recently, JFJCM was applied to a waste power generation project in the Maldives. The waste power generation facility built through the DBO method can process 500 tons/day, and is expected to generate 12MW of electricity.
- The current final disposal sites are not properly managed, and open-dumping is causing waste to overflow into the sea, while open-burning is causing health and environmental problems. In order to tackle these problems, efforts to improve the environment and enhance public health will be carried out through sustainable waste management by addressing the series of waste management stages from collection, transportation, and treatment, to recycling.

Case study: Waste to Energy in Maldives

Project name	Greater Male Waste to Energy Project		
Financing	\$151.13 million (including \$10 million from JFJCM)		
Technology supported	Waste to energy plant (incineration)		
Description	The project will establish an integrated regional solid waste management system in Greater Male consisting of collection, transfer, treatment using advanced waste-to-energy (WtE) technology, disposal, recycling, and dumpsite closure and remediation. The WtE facility can process 500 tons/day with up to 12 MW power generation and will be implemented through a design-build-operate (DBO) contract.		
Location	Thilafushi, the Maldives		
Emission reductions	40.4 thousand tCO ₂ /yr (estimate) *Average of emission reductions for 20 years		
Current dump	Planned WtE plant		

- \diamond The three initiatives implemented in this project are as follows:
 - (1) Build waste management facilities, including waste power generation facilities, that can cope with climate change
 - (2) Repair existing final disposal sites

(3) Strengthen the capacity of waste management, and raise awareness of the 3Rs and waste power generation

- In the preparatory phase of this project, staff from the Clean Authority of Tokyo visited the site to provide technical guidance, under the coordination of the Ministry of the Environment. Capacity building by Japanese local governments is crucial.
- This project has also generated co-benefits that contribute to the achievement of the SDGs. First, a reduction in the total amount of waste can reduce the volume of landfill, improve health problems and marine ecosystems, and extend the life of existing final disposal sites.

In addition, waste power generation will reduce the use of diesel oil, and contribute to energy security. As seen in this example, low-carbon technologies not only contribute to mitigating climate change, but also create a variety of co-benefits for local communities.

It is believed that the city-to-city collaboration program is very effective in addressing the challenges of developing countries with regard to building capacity for project and policy formulation. ADB loans and JFJCM grants are very effective as financial resource options in carrying out projects after the feasibility study conducted by the city-to-city collaboration program.

• 2:55pm: [Panel discussion] How to move forward with overseas development during the pandemic (60 minutes):

After an opening explanation was given by Mr. Hayashi, facilitator at the Kitakyushu Urban Centre, IGES, various projects were introduced by the managers of companies and local governments who worked on city-to-city collaboration programs between cities and businesses during the pandemic. During this event, a panel discussion was held concerning changes in climate policy measures and methods for proceeding with overseas investigations during the pandemic, while also exchanging comments with overseas partner cities. Lastly, H.I.S. Co., Ltd. held a discussion concerning remote investigations overseas.

- Kitakyushu Urban Centre, IEGS, Programme Director: Mr. Shiko Hayashi
 - With the start of the year 2020, global decarbonizing initiatives are picking up speed. Along with this, decarbonizing initiatives within individual cities have also accelerated rapidly. Within Japan, the number of cities announcing their commitment to be "Zero-Carbon Cities" has increased. On the international level, also, cities participating in initiatives such as the UNFCCC Race-to-Zero Campaign and ICLEI Daring Cities 2020 are on the increase.
 - During the last three years, FY2020 saw 20 city-to-city collaboration programs adopted, the greatest number to date. However, due to the pandemic in FY2020, with restrictions on overseas travel, various difficulties have surfaced in proceeding with these projects. As the green recovery needed to overcome the climate change crisis progresses in a post-COVID society, IGES is calling for the "Triple R Framework" (Response-Recovery-Redesign) and is spreading information to promote green recovery.



- Advance hearings were held prior to this seminar between the participating overseas cities and domestic local government operators. As a result, many opinions were expressed sensing issues in overseas cities during the pandemic over changes for moving towards decarbonization, the state of green recovery, and grasping urgent needs. However, in hearings with operators and local governments, issues raised were the lack of ability to probe deeply in online discussions, the difficulty of gathering information, the struggle to form a sense of relationship among the parties involved, obstacles to understanding the project site, and decreasing opportunities for investment.
- Taking these into consideration, in this panel discussion I would like to discuss the following two points in particular: 1) the changes to climate policy measures in overseas cities during the pandemic and the circumstances regarding need for green recovery; and 2) how to proceed with overseas investigations during the pandemic.
- Development Corridor Iskandar and Kitakyushu City Project:
 Mr. Yuichi Arita, International Partnerships Promotion Director, Kitakyushu Asian Center for Low Carbon Society, Kitakyushu City
 - Kitakyushu City, which is located approximately 1,000 miles southwest of Tokyo, is

 a city with a population of approximately 950,000. Located on the northernmost tip of
 the island of Kyushu, it harmonizes urban functionality with an abundance of nature.
 In 1901 a government-operated steel mill was established; the city is known for iron

production and manufacturing industry, and businesses such as Nippon Steel and Yaskawa Electric Corporation operated in this area.

In the 1960s, it suffered serious environmental pollution, but that was overcome through a partnership between private companies and the government administration. Based on this experience, international environmental cooperation with developing nations in Asia, struggling with similar environmental problems, was formed beginning in 1980.

While receiving assistance from the Ministry of the Environment and JICA, we received many visiting experts and trainees, carried out investigations necessary to enter the field of environmental technology, and built numerous networks with Asian cities.

- Today I would like to introduce the city-to-city collaboration program between Kitakyushu City and the Iskandar Regional Development Authority (IRDA) in Malaysia. This project has been ongoing since FY2019, and is an investigation project regarding the greening of the development corridor Iskandar.
- ♦ The development corridor Iskandar is located in Johor, Malaysia, and is a high priority regional development project area promoted by the Malaysian government.
- In the FY2019 project, IRDA was progressing steadily with the initiatives indicated in the low-carbon society blueprint formulated in 2012 together with the international research teams of Kyoto University and others, and confirmed that they were in the process of considering moving to the next step.
- This fiscal year, taking into consideration the keywords which will be IRDA's future targets: industry symbiosis, eco-town, and waste power generation, and as an effort to discover potential development projects qualifying for JCM based on the investigation results of last year's city-to-city collaboration program, we are working on the following 3 initiatives.

Initiative 1) Working towards the realization of an eco-town that is symbiotic with industry

Initiative 2) Working towards the introduction of waste power generation Initiative 3) Work towards discovery of potential JCM projects



In initiative 1), we are aiming towards the realization in the Iskandar region of a project that unifies eco-town initiatives with industry symbiosis.

The unification of eco-town initiatives with industry symbiosis, as shown in the diagram, indicates a state where the waste matter and raw garbage from some factories becomes materials and fuel for other factories, and the reused energy becomes a carbon-free energy source such as biomass energy. In FY2020, with the cooperation of our local partner IRDA, we gathered inventory data from local factories, and worked on planning a pilot project for FY2021. For initiatives 1) and 2), matching between factories is being carried out according to plans which a recycling business in Kitakyushu City helped create, based on the results of the workshop which IRDA held locally in October. More than 100 participants attended the workshop from local companies and local governments, and we received factory inventory data from 30 companies.

In initiative 2), investigations are being carried out in the areas of technology, systems, and economic factors, in preparation for the introduction of waste power generation, which IRDA considers to be the next major theme. The companies in charge of these areas are Nippon Steel Engineering for technology, IGES for systems, and NTT Data Institute of Management Consulting for economic factors. Currently,

studies are proceeding based on information on local waste composition obtained through IRDA and the local consul.

- For initiative 3), continuing from FY2019, there is a search for high-potential, scalable JCM projects. Follow-up is being carried out on the potential JCM projects discovered in FY2019 by email and phone. Also, due to the difficulty of visiting the site in person, we are working to discover promising potential projects in cooperation with local Japanese businesses.
- Yangon and Kawasaki City Project, etc.: Mr. Masaru Ishikawa, Deputy Manager of Environmental Science & Engineering Dept. Nippon Koei Co., Ltd.
 - ♦ In FY2020, Nippon Koei carried out seven city-to-city collaboration programs.
 - Due to the impossibility of visiting the partner city during the pandemic, investigations were carried out using various networks. While carrying out online meetings, we gained cooperation from our own local subsidiaries, local consultants and local Japanese subsidiaries, progressing in negotiations, bridging gaps, and working to eliminate miscommunication.



In consideration of the pandemic, we are moving forward with projects, together with involved parties in Japan and our partner cities, with attention to points such as the following.

- ① While maintaining the objective of the city-to-city collaboration program, we are revising our approach to work processes. In order to get an accurate grasp of the situation and accomplish our original objectives even in circumstances such as city-wide lockdowns and restrictions on activities, we are revising our plans and approach in accordance with the circumstances of the parties involved.
- ② We are providing support towards the realization of a green recovery from the pandemic and of a decarbonized society. We are sharing knowledge and expertise of Japanese local governments and private businesses in consideration of the pandemic and post-COVID.
- ⁽³⁾ We are holding online meetings and discussions, making use of the specialties and strengths of Japanese local governments. In the case of the collaboration between Yangon in Myanmar and Kawasaki City, Kawasaki City employees are giving video lectures on topics about which Yangon has shared information or expressed an interest. In order to deepen understanding, it is important to not only hold meetings and share documents, but also to have a lecture system.

We also hold the Kawasaki International Eco-Tech Fair every year, in which Kawasaki City presents technologies and so on from companies located in the city. Up until FY2019, business matching with a view to the future was conducted on location in Kawasaki City, but in FY2020, it was held online due to the pandemic. Making use of this opportunity, and thanks to the assistance of Kawasaki City, the Kawasaki International Eco-Tech Fair served as one link through which we were able to call upon Yangon and Jakarta and share information with them.

④ Based upon the cooperation and opinions of Japanese local governments, we are carrying out initiatives through the networks of local private businesses and local consultants drawn up by each city. Without being able to meet directly in person on location, it is difficult to get a thorough grasp of problems, so we are offering as much support as possible using local resources.



- (MC comments) I believe that the progress in conducting investigations using networks of a variety of local subsidiaries and local consultants, and the flexibility of revising approaches and work processes in connection with an understanding of the changing needs of local cities during the pandemic and the need for green recovery in a post-COVID society, will be very effective for proceeding with these projects. (Mr. Hayashi)
- Quezon City and Osaka City Project; Ulaanbaatar City and Sapporo City Project
 : Oriental Consultants Co., Ltd., Overseas Business Division: Mr. Masanori Fujii
 - Two projects are currently being conducted: a project to promote energy-saving air conditioning systems and CFC disposal plans as part of a collaboration between Quezon City and Osaka City, and a project to create a low carbon society in cold regions as part of a collaboration between Ulaanbaatar City and Sapporo City.
 - Quezon City is proactively making efforts to combat climate change, including participating in the C40 (group of global cities leading efforts for climate change). In 2018, a MOU was signed with Osaka City and mayoral level policy conversations have been held on two occasions. In 2019, the cities conducted studies and produced reports on the feasibility of a JCM equipment subsidy

project to save energy in air conditioning, and on the state of CFC recovery, reuse, and destruction in the Philippines. The cities plan to hold policy conversations in February 2021 as they move toward renewing their MOU.

- \diamond In the 2020 survey, two main items were studied.
 - Considering means to improve energy-saving in air conditioning in city agency facilities and to optimize CFC disposal.
 Based on the results of the 2019 study, the city is deliberating a model project scheme and an application for a JCM equipment subsidy project. In 2020, the city also conducted studies on the current status of non-agency private facilities, such as shopping malls, hotels, etc., in order to install more energy-efficient air conditioning.
 - ② Osaka City shares its knowledge and information about the Japanese legal system to assist in the environmental policy of Quezon City. Quezon City is currently acquiring detailed information about air conditioners and studying the requirements to adopt a JCM equipment subsidy project in order to deliberate an energy-saving model project.

The specific items being studied include economic value, the model for future popularization, current issues, and the requirements for an application to the JCM equipment subsidy project. In February 2021, Osaka City and Quezon City will conduct mayoral level conversations. On February 19, an online workshop will be held with Quezon City as the two cities aim to formulate the 2021 plan.



- Issues within the 2020 project include the inability to study and analyze air conditioners used in shopping malls and hotels due to travel restrictions, as well as difficulties in operating online workshops. These issues are being solved through remote meetings and studies that utilize local staff and air conditioner manufacturers. The cities are also recruiting representative companies for the JCM subsidy project.
- In the Ulaanbaatar City and Sapporo City project, Sapporo City shares its experience and knowledge on energy saving and environmental improvement in cold-region cities with Ulaanbaatar City, Mongolia, which is the only cold weather region of the JCM signatory countries. The cities aim to achieve a Zero Carbon Society by taking efforts for cold weather residences, renewable energy, and energy saving fields.
- Sapporo City is proposing to apply its environmental policy initiatives to the residences around the New Ulaanbaatar International Airport, public agency buildings, and buildings of private companies in Ulaanbaatar City.
- The cities are conducting a document review of building specifications on the ground, holding meetings between persons in charge in Ulaanbaatar City and Japanese companies that have architectural technology for cold regions such as

experience of working in Mongolia, and running workshops to introduce the technology of Sapporo City.



- One issue was that the main person in charge of the project on the Ulaanbaatar City side changed due to a mayoral election in late October 2020, and it was difficult to get in contact with the new person in charge. In addition, flights from Mongolia were suspended and Ulaanbaatar City went into lockdown at the end and start of the year due to the pandemic, making it impossible to make on-site visits and conduct the study according to plan. Furthermore, government officers could no longer be contacted after resigned en masse and the construction of the new airport was postponed to July 2021 due to the impact of the pandemic.
- Utilizing local Mongolian staff, an online workshop was held in January 2021 with private companies in Sapporo City in order to address these issues. Even as communication with Ulaanbaatar City grew difficult, Sapporo City and local staff contacted the deputy mayor of Ulaanbaatar City, who attended a meeting with them. Even if travel restrictions and lockdowns continue in the future, there are plans to use local staff to proceed with remote study interviews and efforts with affiliated companies.

- Comment from overseas partner city: Mr. Boyd D Jouman (IRDA)
 - We asked him about the changes to zero-carbon opportunities due to the pandemic, trends of green recovery for post-COVID society, and new needs for city collaboration
 - The low-carbon blueprint for the development corridor Iskandar is steadily making progress. National institutions are working together, especially in the energy sector, for a green recovery in post-COVID society. Specifically, renovations are being conducted to save energy in buildings.
 - In proceeding with the city-to-city collaboration programs, while there are difficulties in shifting everything online, this also increases the number of participants and has the benefit of enabling efficient information transmission and networking.
- (MC) I believe that the biggest change in the study due to the pandemic was the travel restrictions. What specific issues were there and what means did you use to address them? In promoting zero-carbon society in overseas cities, how do the city-to-city collaboration programs and each company/municipality contribute?
 - ∻ (Kitakyushu City) We believe that the biggest changes were being unable to conduct hearings directly on-site and see the situation on the ground. However, the local partner cities are all making very proactive efforts. Since there are movement restrictions on the ground, there are some parts that have not made much progress, but we believe that it is effective to request that they carry out the study. There are venture companies that provide remote digital communication systems in the city. These allow us to lower the hurdle and instruct local workers remotely by sharing on-site images with a smartphone or other device. While we are proactively collaborating with local partners, we believe that it is necessary to interact directly with locals to uncover new local partners we can trust, a prerequisite for this study, and construct a relationship. Since we are unable to search for new topics that may lead to the next project, dig deep into issues, or make realizations, the idea of fewer opportunities to interact directly with our partner city is a major source of concern. It is difficult to imagine that there will be fewer opportunities to create a zerocarbon society in a post-COVID world. We believe that city-to-city collaboration programs conducted jointly by local municipalities with overseas cities are an extremely valuable opportunity. We also think that being able to

respond flexibly to on-site changes is also an extremely powerful tool. However, Japan does not maintain an overwhelming advantage in terms of technology as it is competing with Europe, the US, China, and Korea. It is necessary to make proposals to partner cities that are more attractive, including economic merits and collaboration with other municipalities, so that the project is not limited to being a simple exchange.

- (Nippon Koei) Since we cannot interact in person, we are unable to directly confirm our counterpart's response. As a result, it feels like the speed the partner city is willing to proceed with the project has slowed and their mindset has grown more conservative. Due to the pandemic, it feels like they want to proceed with matters by the shortest route. We are making efforts to remove unnecessary steps from preparations that previously included multiple stages, and ensure that measures lead to actual actions and connect to goals by the shortest route. As a result, proposals without a clear vision or impact have been filtered out, leaving only those that are higher quality.
 Based on these changes, the approach to goals, such as long-term strategies like the Paris Agreement, are extremely important. It is necessary to properly grasp the achievements of each municipality in Japan and the needs of local governments and cities, and to proceed with a green recovery that includes the
- (Oriental Consultants) There are elements of the project that will not be able to proceed because they cannot be addressed without conducting a hearing in person on the ground. However, it is possible to absorb some of this impact with regular communication using diverse IT tools (communication tools such as messenger, etc.).

implementation of a JCM equipment subsidy project.

Even if it is possible to deliberate the agenda for online meetings beforehand, we believe that it is important to communicate directly in person in order to dig deeper into discussions and proceed to the next steps. The project tends not to proceed smoothly if there are not merits for the partner city and local person in charge compared to communicating in person.

The partner city is also deliberating policies for coexistence with the virus, so the budget and focus of efforts is aimed on recent COVID-19 measures. One question is how much they can focus on city-to-city collaboration programs. However, since the local need for this project has not disappeared, it is necessary

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to clearly communicate the high economic efficiency and positive environmental impact of this project, so that the local partner will continue with it without hesitation.

- (MC) I understand that it is necessary for the entity operating the project to make proposals that bear fruit as quickly as possible by clarifying the vision, effects, merits and so on through diverse communication tools, because the opportunities for interaction have decreased due to the pandemic.
- Demonstration of overseas remote study:
 Director of Global Business Advance, GBA and Rental H.I.S., Corporate Sales
 Division, H.I.S. Co., Ltd.: Ms. Yuka Shinohara
 Sales Manager of Corporate Sales Division, H.I.S. Co., Ltd.: Mr. Kensuke Ezoe
 Conducted stream with the Ulaanbaatar branch office to demonstrate Rental
 H.I.S. (on-site remote study service)
- Assistant Director of the International Cooperation and Sustainable Infrastructure Office, International Strategy Division, Global Environment Bureau, Ministry of the Environment: Mr. Satoshi Watanabe
 - When soliciting applications for city-to-city collaboration programs in the future, we are considering establishing evaluation metrics other than carbon emission reduction volumes. For 2021, applications will be solicited in March 2021.
 - In order to make attractive proposals for overseas partner cities, it is extremely important to share information with each country. There are plans to hold an international forum related to creating zero-carbon society in cities in March 2021.

END

APPENDIX A_プレキックオフミーティング資料

国際連携課 国際協力・社会インフラ戦略室 御中

環境省 地球環境局

令和2年度 低炭素社会実現のための都市間連携事業 ヤンゴン管区スマートシティ開発における脱炭素化促進 事業(フェーズ2)

プレキックオフミーティング資料 2020年6月3日(水)

株式会社エヌ・ティ・ティ・データ経営研究所 社会基盤事業本部 社会・環境戦略コンサルティングユニット



- 今年度プロジェクトの目的
- 調査事業概要
- 今年度事業計画
JCM適用案件の組成活動、候補案件の事業化に向けた活動および類似 案件の水平展開活動を実施し、脱炭素化プロジェクトの実現を目指す

今年度プロジェクトの目的

今年度の活動	活動概要		目的
適用案件の組成 活動	エコグリーンスマートシティ(EGSC)の開発 計画に則り今後整備が進んでいく各種施設 等を対象としたJCM適用案件の組成活動 (EGSC周辺の開発計画との連携も含む)		 EGSCの整備状況にあ わせたJCM適用案件 の創出(※COVID-19の影 響などを考慮し、EGSC周辺 の開発計画と連携を図る)
候補案件の事業 化•水平展開活動	2019年度に発掘したアライアンス社との ネットワークを活かしたJCM適用候補案件 の事業化に向けた活動及び類似案件の水 平展開活動		 ・昨年度発掘した案件の早期JCM適用 ・来年度以降の新規案件発掘
出典:環境省殿への当社提出資料	4(2020)を基に作成 ⑥ 2020 ト	ITT DATA	INSTITUTE OF MANAGEMENT CONSULTING, Inc. 3



ヤンゴン管区におけるEco-Green Smart City (EGSC)の実現を目指す

- ヤンゴン市は、昨今の急速な民主化や海外資本の流入、民間開発により、ミャンマーの経済開発の中心地として人口増加と都市化が進んでいる。しかし、人口増加に 対して都市生活を支える社会基盤インフラの供給体制は十分といえず、経済活動のボトルネックとなっている。
- ミャンマー政府が2016年7月に公表した基本的な経済政策の中には、「基本インフラの優先的な整備」、「長期的な環境保護の視点に立った都市建設」が挙げられており、経済発展と環境保護双方の視点を踏まえた都市開発が求められている。
- ・ 上記達成のため同国建設省住宅局が進める、大規模スマートシティ(EGSC)開発プロジェクトを対象として、脱炭素社会形成に関する経験■ノウハウ等を有する「北九州市」の支援のもと、スマートシティ内においてJCMクレジット獲得につながる案件の形成等を目指した調査活動等を実施する。
- EGSCプロジェクトは、ヤンゴン都市圏開発マスタープランに沿った大規模都市開発の第一号案件であり、国内の注目度が高い。本事業で、JCMスキームを活用して 本邦技術を導入することにより、低炭素な都市づくりを実現することができれば、都市圏内のほかのサブセンターや、管区外の都市開発に横展開できる可能性は高い。



昨年度と同様に、代表事業者(日本企業)とミャンマー企業とで国際コン ソーシアムを形成する(1/2)

・代表事業者(日本企業)とミャンマー企業とで国際コンソーシアムを形成する。

・日本の環境省JCM設備補助事業を活用する(補助金:初期設備導入費の最大50%)。



昨年度と同様に、代表事業者(日本企業)とミャンマー企業とで国際コン ソーシアムを形成する(2/2)

<u>現地法人の初期投資を抑えるための実施体制</u>

- ・代表事業者(日本企業)とミャンマー企業とで国際コンソーシアムを形成する。
- ・日本の環境省JCM設備補助事業を活用する(補助金:初期設備導入費の最大50%)。



今年度調査の概要・具体的な実施方法は以下の通り(1/3)

適用案件の組成活動

	活動項目	活動内容
	● EGSC開発状況確認	EGSCプロジェクトの開発状況、今後整備が進んでいく各種施設を確認し、新規案件発掘・水 平展開等に活用する。
流 れ	2 昨年度発掘した案件の 実用に向けた検討・調 査	昨年度発掘した実現可能性のある案件につい て、適用する技術の検討・調査を行う。
	3 候補プロジェクトの具体 化	上項目で検討した案件について、事業実施体 制等を検討する。
	2 周辺の開発案件との連 携可能性調査	EGSC周辺の開発状況を確認の上、EGSC内の 案件と提携して実施できる案件を調査する。
	4 事業実施に向けた検討、 各種確認	JCM設備補助への応募を行う場合は、その準備を行う。また、共同事業者への意思確認を併せて行う。

今年度調査の概要・具体的な実施方法は以下の通り(2/3)

<u>候補案件の事業化</u>

	活動項目	活動内容
	1 新設病院へ導入する省 エネ型設備・再エネ設備 の特定	新設病院の詳細設計を確認・協議した上で、導入可能な技術を抽出・特定する。
流 れ	² JCM適用を視野に入れ た体制構築	JCM設備補助申請に向け、事業実施体制等を 検討したうえで現地企業の意向を確認する。
	3 経済性評価等	投資額・投資回収年数、内部収益等を明らかに した上で、現地企業の意向を確認する。

出典:環境省殿への当社提出資料(2020)

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今年度調査の概要・具体的な実施方法は以下の通り(3/3)

水平展開活動

流 れ	

	活動項目	活動内容
	水平展開に向け、アライ アンス社のネットワーク を活かした案件発掘	EGSCマスターデベロッパーでもある同グルー プのネットワークを活用し、類似案件を発掘す る。
2	発掘案件に関する初期 的な技術評価、経済性 評価等の実施	適用される本邦技術を特定し優位性を確認す る。投資額・投資回収年数、内部収益等を明ら かにした上で、現地企業の意向を確認する。



JCM適用 案件の水	案件の組成活動 に平展開活動を実	」、候禰柔 ミ施する(いた 当初計画	E化に向け i)	「た沽」のよ	らよび類似
	20)19~2021年(3ヵ	年)			2022年~
						■ アクションブランの逐行 ● 発掘案件の横展開
活動計画	活動結果		2020年度(27	5年目:本事業)		2021年
2019年度	2019年度	4~6月	7~9月	10~12月	1~3月	(3カ年目)
活動①: 長期的な都市間 連携の関係性構 築およびエコグ リーンスマートシ ニ (「COSO)の低	 ・北九州モデルのサステナビリティフレームワークを参考に脱炭素化 言期的な都市間 連携の関係性構 築およびエコグ リーンスマートシ ・北九州モデルのサステナビリティフレームワークを参考に脱炭素化 計画を検討し、脱炭素化計画についてミャンマー側と合意を得た。 ・将来的にMBC社を環境面でのアドバイザーに位置付けること、また、 		 ・現地キックオフ ・EGSCの開発状 況確認 ・30MW太陽光 プロジェクト等の 検討 	 ・第2回現地調査 ・EGSCの開発状況確認 ・30MW太陽光ロジェクト、その他の候補プロジェクトの詳細調査 	 第3回現地 調査 ・候補プロ ジェクトの具 ジェクトの具 第辺の開発 客件との連携 	プロジェ フトの具 事業化 本化
炭素化に向けた	NITテーダ経営研究所をJGMのア ドバイザーに位置付けることを合意	脱炭素化に	可能性			
計画策定						
活動②: JCM適用事業の	 アライアンス社のネットワークを生かし、脱炭素化案件の発掘した結果、以下の3案件を発掘した ① A社/PV=リジェネバーナーの 違入 	新設病院への省エネ •病院の詳細設計を置 •JCM適用を視野に入 •経済性評価 等	型設備や再エネ設備の 皆まえた導入技術の特定 れた体制構築	- 尊入 -	短期 JCM 書業C	・ 引(1~3年以内)での と備補助 D適用・事業化
 組成に向けた活 ② B社/発電機導入 ③ C社/太陽光発電設備設置 		↓ 水平展開活動 ・アライアンススターグループのネットワークを生かした案件発掘 ・発掘案件に関する技術評価、経済性評価等の実施			中長 備補胆 事業の	期間(3年~)でのJCM設 か D適用・事業化
現地調査			●第1回	●第2回	●第3回	
報告書の作成		●契約	J	, 月次報告	●報	告書提出
御省との打合せ		●中間打合わせ	●中間打合わせ	●最終打合せ	(※打合せは、 必要に応じて追加)	
出典:環境:	省殿への当社提出資料(2020)			© 2020 NTT DA	TA INSTITUTE OF MANAG	EMENT CONSULTING, Inc. 1

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COVID-19の影響でプロジェクトは活動が停滞しているが再開見込み ヤンゴン管区周辺地域の案件も含め検討・実施する

ミャンマー国内情勢および本プロジェクトの進捗1

ミャンマー国内の情勢	 ・ 国際線の空港は全て閉鎖している。間もなく再開するとの噂あり。 ・ 現在は自主ロックダウン中。5人以上の集会は原則中止。建設などは再開する見込み。工場はフェイスシールド着用の上、既に稼働再開している。 ・ 5月15日に緊急事態宣言は終了。(レストラン等もオープンし、経済活動再開) ・ 依然、海外からの来訪者は21日間隔離+7日間自宅待機が必要。
現地訪問に関して	 全日空含む日本からの便は7月~見込み。 国を挙げたプロジェクトであり、負傷者等出したくないため、EGSCプロジェクトは大幅に遅延。 現地訪問は早くとも7月以降となる見込み。 MBCとの打ち合わせはWebにて随時実施予定。
ヤンゴン管区周辺地 域の案件に関して	 このような状況にも関わらず、アライアンス社のネットワークを通じて発掘したEGSC 周辺のシンガポール政府ファンドの案件は停止していない。現状、7月までに国との 調印を目指している。 共同出資者がいなければ本年度の案件継続が難しくなるため、ヤンゴン管区周辺 の案件も含めて検討・実施する。
病院開発に関して	 5月に出資金を集約・着工予定であったが、作業員が出勤できないため作業は停滞中。 COVID-19の影響で現地で投資家が集まりづらくなってきている。
脚注1:5月14日時点の情報 出典:MBCへのヒアリングを基に当社作成	© 2020 NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.



補足資料

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出典:前年度キックオフミーティング資料(2019)

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エネルギー分野において想定している活動内容、導入技術

内容 ミャンマー国建設省が進める大規模スマートシティ開発プロジェクト「Eco Green City Project」を対象として、低炭素社会形成に関する経験・ノウハウ等を有する「北九州市」 の支援のもと、スマートシティ内においてJCMクレジット獲得につながる案件の形成等を 目指した調査活動を実施する。

- 具体的には、エコグリーンシティ内に建設される高密度住居、大規模商業施設、バス ターミナル、オフィスビル、病院、ホテル等に対して太陽光発電設備や高効率空調・給湯 設備、コージェネレーション設備の導入、エリアー体のエネルギーマネジメントシステム の導入による低炭素化や、エリア内から排出される廃油や廃棄物の燃料化など、エリア 内の資源循環による低炭素化を目指した調査活動を実施する。
- 想定技術 太陽光発電システム+大型蓄電池 . 高効率チラー、高効率照明設備

 - 自動制御システム等 • コジェネレーションシステム
 - 高効率設備の導入(ポンプ、電動機等)
 - 水耕栽培技術

 - 太陽光や水圧・水落差エネルギーを活用した設備の導入

出典:前年度キックオフミーティング資料(2019)

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JCMを通じた技術導入実績

■太陽光発電、高効率チラー、廃熱回収発電

実施期間	導入技術	納入 場所	概要説明
平成27年4月~平成29年1月	太陽光発電	マレーシア	クアラルンプールに存する新設ビルの屋上に高効率太陽電池を設置し、CO2の排出削減を実 現する。
平成28年9月~平成29年10月	廃熱回収発電	タイ	バンコクの郊外のセメント工場を対象に、廃熱回収発電システムを導入し、CO2排出削 減につなげる。
平成28年2月~平成28年9月	太陽光発電、 高効率チラー	ベトナム	ホーチミン近郊に新設される大型ショッピングモールを対象に太陽光発電システムを導入し、C02排出削減を実現する。
平成28年10月~平成30年6月	太陽光発電	コスタリカ	ベレン市において、大規模太陽光発電所の導入を通じてCO2の排出削減を実現する。
平成28年11月~平成31年1月	太陽光発電	カンボジア	プノンペン都に新設される大型ショッピングモールの屋上に、太陽光発電システムを導入し、CO2排出削減を実現する。
平成29年3月~平成29年11月	太陽光発電	チリ	サンチャゴ市に位置するカトリック系大学に屋根置き太陽光発電システムを導入し、CO2 の排出削減を実現する。

■コジェネレーションシステム

納入年月	納入場所	概要説明
平成27年	インドネシア	自動車製造工場におけるガスコージェネレーションシステムの導入(川崎重工製 7.8MW高効率ガスエンジン)
平成27年	タイ	二輪車製造工場におけるオンサイトエネルギー供給のためのガスコージェネレーションシステムの導入(新日鉄住金エンジニアリング製 7MW級ガ スエンジン)

バイオマスボイラ

	納入年月	納入場所	概要説明		
令和元年~ ベトナム 化学工場へのバイオマスボイラーの導入		化学工場へのバイオマスボイラーの導入			
出典:前年度キックオフミーティング資料(2019)		グ資料(2019)	© 2020 NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.	18	

昨年度報告資料

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アジェンダ

- 1. 本プロジェクトの概要
- 2. スケジュール
- 3. 結果報告
- 4. 次年度以降の展望

1. 本プロジェクトの概要【提案書より再掲】

ヤンゴン管区Hleguタウンシップ内のスマートシティ開発事業(Eco Green City Project)における、低炭素化プロジェクトの実現を目指す。



1. 本プロジェクトの事業実施体制【提案書より再掲】



本プロジェクトの活動スケジュールは以下の通り。

江北西日		2019年						2020 年	
石馴頃日	7月 ^{第1回渡航}	8月	9月	10月 ^{第2回渡航}	11月	12月	1 月 _{第3回湖}	2月 _{E航}	
活動1: 長期的な都市間連携の関係性構築およびエコ グリーンシティの低炭素化に向けた計画策定	9/30-10/4	→ 現地 キックオフ		//30-10/4 - 脱炭素 プランのドラフ		→ :換	1/28-1 本年度成 の脱炭素 取りま	/20 果物として 化計画の €とめ	
活動2: JCM適用事業の組成に向けた活動		★ 一 現地 キックオフ		 スマートシー 経済性核 	ティ進出候補企 討およびC02	:業との直接協 削減効果検討	議		
O 現地調査		•		•			•		
○ 環境省との打ち合わせ		・ キックオ フ		● 中間 報告会		● 中間 報告会	● 最終 報告会		
○ 報告書の作成		●契約						●最終版	

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3. 最終報告

3.1.本年度の活動結果概要

活動項目	目標	達成レベル
活動1 長期的な都市間連携の関係性 構築およびエコグリーンスマー トシティの低炭素化に向けた計 画策定	アライアンススターグループと 連携し、低炭素化計画を策定 すること	エコグリーンスマートシティの マスタープランに沿って整備さ れる施設等に対する脱炭素化 計画を策定
活動2 JCM適用事業の組成に向けた 活動	アライアンススターグループの ネットワークを生かし、具体的 な案件組成活動を進めること	比較的、短期的に実現する可 能性の高いプロジェクトを2件 発掘した他、中長期的な候補 プロジェクトも1件発掘

3. 最終報告
 3. 1. 現地調査概要・・・【ご参考】第1回現地調査訪問先詳細

以下のスケジュールで第1回現地調査を実施した。

第1回現地調査

8月13日(火)。 ヤンゴン	移動(東京→ヤンゴン)。
8月14日(水) ヤンゴン+	10:00-11:00 在ミャンマー日本国大使館□打ち合わせ 14:00-16:00 Eco-Green City現場視察。 18:00-19:00 Alliance Stars Group 打ち合わせ。
8月15日(木)。 ネビドー。	移動(ヤンゴン→ネビドー)。 10:00-12:00 建設省住宅開発局□打ち合わせ。 12:00-13:00 JICA専門家□鹿子木様□打ち合わせ。 14:30-15:30 天然資源環境保護省環境保護局□打ち合わせ。 (18:00-19:00) Shwe taung comment Kyaw 様打ち合わせ。
8月16日(金) ヤンゴン	移動(ネビド→→ヤンゴン)。 9:30-11:00 → DAIICHI ASIA□打ち合わせ。 13:00-14:00 → ティラワ工業団地視察。 移動(ヤンゴン→東京)。

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3. 最終報告 3. 1. 現地調査概要・・・【ご参考】第2回現地調査訪問先詳細

以下のスケジュールで第2回現地調査を実施した。

第2回現地調査

日程₽	訪問先⇔	
	MBC42	
9月30日(月)+	JCCM 日本人建設会。	
ヤンゴンや	Central-Hotel₽	5
	Alliance Stars Group#	
10月1日(火)+	F-&-P-Asia+	
ヤンゴンや		
10月2日(水)+	Proven-group+3	
ヤンゴンや	エネルギー大臣の	
10月3日(木)+	Yangon Metal Industry₽	
ヤンゴンロ	JICA₽	

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3. 最終報告

3.1.現地調査概要・・・【ご参考】第3回現地調査訪問先詳細

・以下のスケジュールで第2回現地調査を実施した。

		第3凹現地調査	
	日程	訪問先	
	2020年1月29日	A社(ミャンマーの蓄電池製造大手メーカ)	
	2020年1月29日	アライアンス社	
	2020年1月29日	B社(現地コングロマリット、女性・子供向け 医療サービス)	
÷.,			
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つ 光井上 北	<u>/+</u>		

3. 進捗報告 3. 2. 活動1の報告 ① ・・・脱炭素化計画の策定

Eco Green Smart City開発に係る脱炭素化計画の策定を実施。

北九州市モデルの適用

◆ 公害克服と環境産業の育成を実現した北九 州市の経験をもとにした持続可能な発展の ための都市計画等のマスタープラン策定の フレーム

◆ 新興国における都市が公害を経験すること なく持続可能な発展を可能なものとすること を目的

◆ ビジョンの策定、背景の分析(課題と効果
 等)、目標・数値目標等の設定、戦略の策定
 (計画の策定)等のステップを整理

脱炭素化計画策定のステップ

北九州モデルを踏まえたドラフト作成 Eco Green Smart City開発事業者との調整 脱炭素化計画 第一版の策定



3. 進捗報告 3. 2. 活動1の報告 ② ・・・脱炭素化計画の位置付け

◆ 脱炭素化計画は、エコグリーンスマートシティ・プロジェクトにおいて都市開発計画に 沿って様々な施設やインフラ等が整備されていく際に、主として環境エネルギー面 から温室効果ガスの排出削減に資する設備等の導入や廃棄物のリユースやリサイ クル等が推進されるよう留意事項を取りまとめたもの



3. 進捗報告

3.2.活動1の報告 ③ ··· (参考資料)EGSCの概要

次項以降にEGSCの開発計画の概要をまとめる。

Eco Green Smart City Project



Alliance Stars Group of Companies

Eco Green Smart City Project

Background



Eco Green Smart City Project Master Plan



Alliang

Alliance Stars Group of Companies Alliance **Eco Green Smart City Project Urban Core Outlet Mall** Camp **Bus Terminal** Agriculture Wholesale Market Agriculture Commercia Resort Water Entertainment Resort Hotel Resort griculture esearch & Logistic dustr Hotel Hub Media village Resort Amusement Golf Media Studio) Resort village **Golf Resort** 2019 NTI DATA INSTITUTE OF MANAGEMENT COP NTTDATA 16

Eco Green Smart City Project

Possibility <4 Mega Projects of MOC> 1. Eco Green Smart City nmar Sustainable 2. Korea-Myanmar Industry evelopment Plan (2018 - 2030) Complex 3. New Mandalay Resort City 4. Smart District PJT Will of Myanmar Government Power supply Located In The Part Of National Grid Listed in Mvanmar Government Priority Development List → Project Bank 50 MW supply from National Power Grid 30 MW Solar Power Plant Only Obtained Government Permission Amongst • MOC's 4 Mega Projects Water supply Part of MSDP • Two alternative ways (Planning F/S) *Myanmar Sustainable Development Plan 1) From Nyaung Nha Pin 2) From Kalihtaw Dam by implementing Part of Greater Yangon 2040 Plan water treatment plant © 2019 NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. NTTDaTa

Alliance Stars Group of Companies -

Eco Green Smart City Project

Project Progress (Phase 1/A)

Low Cost Housing (160 Acres)

- 5 Blocks
- 121 Buildings
- 3,341 Units
- Implementation: Fast Moving
- In Progress: 28 Buildings

Planned Schedule

- 2020 December transfer to Myanmar gov.
- 28 Buildings (Block II)
- 1,070 Units





Eco Green Smart City Project

Project Progress (Phase 1/B)

Logistic HUB (133 Acres)

• Current Developing Area (23.19 Acres)

- (1) Petrol Station
- (2) Food Court
- (3) Landmark Hotel
- (4) Eco Tourism Park
- (5) Shopping Centre
- (6) Restaurants
- (7) Car Service Centre
- (8) Car Parking

Planned facilities

- (1) Event Park
- (2) Bus Terminal
- (3) Shopping Mall
- (4) Outlet Mall
- (5) Wholesale Market
- (6) Palm Resort
- (7) Water Entertainment
- · Variable according to the demand



Alliance Stars Group of Companies -

Eco Green Smart City Project

Water Infrastructure Issue (F/S with Posco E&C)



Alliance

3. 結果報告 3. 2. 活動1の報告 ④ ・・・ 脱炭素化計画の内容

Eco Green Smart Cityの開発と足並みをそろえて、エネルギー、水、廃棄物管理、交通、 環境保全について以下の目標を設定していくことでアライアンス社と合意。

テーマ	目標	数値目標	KPI	パイロットプロジェ クト
エネルギー	 エネルギー利用の効率 性を高める。 再生可能エネルギー等 の脱炭素型のエネル ギーの利用を拡大する。 	 建物の管理における C02排出量の削減を 目指す(2010年の建築基準に対して)。 再生可能エネルギーの利用割合を高める 	■2010年の建築基準 (Building Regulations Part L 2010)に対し、CO2 排出を15%削減	 EGSC内建物やショッピングモール・病院・学校等の省エネプロジェクト EGC内への再エネ設備導入プロジェクト(太陽光・バイオマス等)
水	 水源の確保を最優先事 項とする。 上水、下水管理を効率 化し、水源の汚染物を 削減する。 処理済水の再利用を推 進する。 	 自己水源の比率を40% 程度にする。 エネルギー利用効率 の向上等を通じてコストを20%削減する。 再生水の利用比率を 30%とする。 	 自己水源の調達水 源に占める割合 上下水管理のエネ ルギー効率 再生水の利用比率 	 効率的な上下水道システムの整備運用 処理済水の再利用を可能とする下水処理の高度化
廃棄物管理	 まちの中から発生する 廃棄物等を可能な限り 再利用(エネルギー回 収を含む)し、埋め立て 廃棄物の量を削減する。 	■85 %の廃棄物を埋め 立て処分しないように する。	 ・埋め立て処分しない 廃棄物量あるいは 比率 	 廃棄物処理の適正化

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3. 結果報告

3.2.活動1の報告 ④ ・・・ 脱炭素化計画の内容

テーマ	目標	数値目標	KPI	パイロットプロジェ クト
交通	 ・渋滞の緩和 ・コンパクトシティの実現 	 渋滞延長をヤンゴン平 均に比べて5%削減 する 	▪渋滞の発生頻度と 大きさ ▪公共交通機関の利 用率	 自動運転等のデジタルを利用した運電プロジェクトの実施 Al利用した渋滞緩和システムの導入プロジェクトの実施
環境保全	・大気・水質・土壌等のモ ニタリング	 大気・水質・土壌等の 環境基準を策定 	 大気・水質・土壌等 いずれの環境基準 も設定されている。 	・大気・水質・土壌のモニ タリング

今後、投資家が参画してきた場合、整備する施設等が投資家の意向で変更される可能 性があることから、今回の調査の共同実施者であるMBCあるいは弊社を環境・エネル ギー面でのアドバイザー的に位置づけることを働きかけ中。覚書的な署名を交わすこと を提案中。

3. 結果報告 3. 3. 活動2の進捗報告・・・①A社へのPV・リジェネバーナー導入

活動1を通して、JCM化の可能性を見込める案件を発掘。 バッテリー製造工場屋根へのPV設置と、溶融炉(バーナー)の効率化について 検討中。



3. 結果報告

3.3.活動2の進捗報告・・・①A社へのPV・リジェネバーナー導入

PV設置を検討中の屋根の情報をもとに、設置可能な軽量型パネルの規模を推計。 約0.6MW程度のPVの設置が可能。



3. 結果報告 3. 3. 活動2の進捗報告・・・①A社へのPV・リジェネバーナー導入

PVについては、関連工場の屋根も含めた規模拡大を検討中。また、同じ工場の溶 融炉を対象としたリジェネバーナーの導入についても検討中。



3. 結果報告

3.3.活動2の進捗報告・・・2B社への発電機導入

B社はヤンゴン市内で女性・子供向けの新病院を建設し、医療ビジネスに参入する予定。日 系病院と連携し、SPCを設立した上で医療サービスの提供を行う。新設する病院の設計は 日本で病院設計の実績の豊富な日系企業が実施中。



3. 結果報告 3.3. 活動2の進捗報告····2B社への発電機導入

新設する病院の概要は次の通り。

ZG5 YANGON HOSPITAL BASIC DESIGN PROPOSAL

□ SECTION 03_HOSPITAL SUMMARY / 病院概要 3-1. BUILDING SUMMARY / 建物概要





3. 結果報告 3.3.活動2の進捗報告····2B社への発電機導入

現在、設計会社と詳細を協議中。

JCMの適用には非常に前向きで、コジェネを含め高効率機器をまとめて申請することを検討 中。



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3. 結果報告

3.3.活動2の進捗報告・・・新規ポテンシャル案件③C社への30MWPV導入

C社は、Eco Green Cityの開発を行うAlliance Star Groupのグループ会社 である。EGC近隣への大規模PV導入を検討中。今後、EGSCの施設整備にあわ せて設置が進むことから、中長期的なプロジェクトとして位置付け。



3. 結果報告

3.3.活動2の進捗報告・・・新規ポテンシャル案件④ D社へのバイオマス混焼発電機導入

過去にJCM設備補助事業を実施した、D社にて、新規工場敷地内に発電設備 (石炭とバイオマスの混焼(混焼比率は50~80%程度))の導入を検討中。石炭 を利用していることから、JCM適用の可能性は低いものと判断。



3. 結果報告
 3. 3. 活動2の進捗報告・・・新規ポテンシャル案件【ご参考】その他活動

ポテンシャル案件の発掘のため、公演等を実施。第2回現地調査にて、日系 ゼネコン企業の会合にてJCM制度紹介を実施。

講演の様子(2019/9/30)

- Alliance Stars Groupが開発予定のEco Green Cityについてプロジェクト概要を紹介。
- あわせて、北九州市・NTTデータ経営研究
 所から、JCM設備補助制度についても概要
 を紹介した。



日系のゼネコン企業担当者が100名程度参加。
 各企業より、廃棄物発電の次のプロジェクトをミャン

マーで検討中である旨情報提供いただいた。





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1. 今年度プロジェクトの目的 (再揭)

◆ ① JCM適用案件の組成活動、② 候補案件の事業化に向けた活動および類似案件の水 平展開活動を実施し、脱炭素化プロジェクトの実現を目指す

<u>今年度プロジェクトの目的</u>

今年度の活動	活動概要	目的
活動① 適用案件の組成活動	エコグリーンスマートシティ (EGSC) の開発計 画に則り今後整備が進んでいく各種施設等を対 象としたJCM適用案件の組成活動 (EGSC周辺 の開発計画との連携も含む)	 COVID-19の影響などを 考慮し、EGSC周辺の開 発計画と連携を図る
活動② ぼ補案件の事業 化・水平展開活動	2019年度に発掘したアライアンス社とのネット ワークを活かしたJCM適用候補案件の事業化に 向けた活動及び類似案件の水平展開活動	 ・昨年度発掘した案件の 早期JCM適用 ・来年度以降の新規案件 発掘

(出典)プレキックオフミーティングミーティング資料(2020年6月)を基にエヌ・ティ・ティ・データ経営研究所作成

1. dttblc 2. 今年度調査事業概要(再揭)



- ◆ 大規模な感染拡大が確認されているが、企業、工場等への通勤は制限されていない
- ♦ 一方で、外国人の入出国は制限されている

ミャンマー国内情勢(9月11日時点)

感染者の推移	 ミャンマー国内での感染者は累計:2,422 名、死者は累計:14 名である ヤンゴン管区は最も感染者が多く、累計:970 名、死者は累計:10 名である これまで1桁 名/日であった感染者が8月17日付近を境に増加し、現在は100 名/日以上の感染者数が発生する日も多くなっている(ラカイン州で感染拡大が始まったと 推測されている)
国内の経済活動	 ・ ヤンゴン管区において、企業、工場への通勤は禁止されていない ・ 国内飲食店はテイクアウトのみの営業となっており、通常営業した場合は強制的に営業停止等の重い処罰が下される ・ 通勤等以外は基本的に自宅待機が命じられている
入国/出国	 8月31日までとされていた国際便の着陸禁止措置が9月30日まで延期となった ただし、ミャンマーへの帰国を希望しているミャンマー人のための帰国救援便は、月2回程度運航予定である
今後の見通し	 現在、ミャンマーは初めて大規模な感染拡大(第一波)が続いている状態である 自宅待機命令やヤンゴン地域からの出域制限措置が実施されているため、1~2ヵ 月でピークは過ぎ去ると推測する

(出典)

Myanmar Business Corporation (MBC) 社へのヒアリング結果および Ministry of Health and Sports 「CORONAVIRUS DISEASE 2019 (COVID-19) SITUATION REPORTS (MYANMAR)」(9月9日)、https://mohs.gov.mm/page/9575、 在ミャンマートは国大党館「教型コーナウ/huス関連情報」、https://www.mm.emb-japan.go.jp/profile/japanese/2020mailback_COVID19.htm を基にエヌ・ディ・ディーク経営研究所作成

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◆ 特にヤンゴン管区、ラカイン州で感染が拡大している



(出典) Ministry of Health and Sports「CORONAVIRUS DISEASE 2019 (COVID-19) SITUATION REPORTS (MYANMAR)」(9月9日)、https://mohs.gov.mm/page/9575 を基にエヌ・ティ・テーク経営研究所作成

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11.5月からの進歩 2. 進捗概要(適用案件の組成活動)

- ◆ COVID-19の影響でEGSC開発は遅れているものの、周辺開発案件を複数発掘。
- ◆ もともと現地企業MBCと連携した活動を計画していたことから、現地での活動も制約条件の中、可能な範囲で継続中

_	活動項目	活動内容		5月からの進捗
	1 EGSC開発状況確認	EGSCプロジェクトの開発状況、今後整 備が進んでいく各種施設を確認し、新規 案件発掘・水平展開等に活用する。	COVID-19 ず、開発は 投資家を募 めているこ	の影響等で海外投資家が集まら 進んでいない。このため、国内の り開発を進める方向も模索し始 とを確認した。
充	2 昨年度発掘した案件の実用 に向けた検討・調査	昨年度発掘した実現可能性のある案件 について、適用する技術の検討・調査を 行う。	EGSCの開 ることから、 周辺の開発	発については、上記の状況であ 開発の進捗状況を確認しつつ、 診案件の発掘を行っている。
l	³ 周辺の開発案件との連携可 能性調査	EGSC周辺地域の開発状況を確認し、 EGSC以外の開発案件へのJCMの適用 等の可能性を検討する。	ヤンゴン管 した。引き 定である。	区周辺で複数の開発案件を発掘 売き、提携可能性調査を進める予
	4 事業実施に向けた検討、各 種確認	JCM設備補助への応募を行う場合は、そ の準備を行う。また、共同事業者への意 思確認を併せて行う。	提携可能性 認でき次第	生調査実施中であり、可能性を確 JCM設備補助申請を検討する。

適用案件の組成活動の計画と進捗

11.5月からの進捗 2. 進捗概要(候補案件の事業化)

◆ COVID-19の影響でストップしている投資の再開が確認でき次第、各種検討を進める

	活動項目	活動内容		5月からの進捗
0	新設病院へ導入する省エネ 型設備・再エネ設備の特定	新設病院の詳細設計を確認・協議した上 で、導入可能な技術を抽出・特定する。		新設病院整備のための投資について、日本 側からの投資がCOVID-19の影響で滞って おり、遅延の状況。
	JCM適用を視野に入れた 体制構築	JCM設備補助申請に向け、事業実施体 制等を検討したうえで現地企業の意向を 確認する。		JCMの適用には引き続き関心を有しており、 投資状況が整った段階で具体化を図ってい く予定。
3	経済性評価等	投資額・投資回収年数、内部収益等を明 らかにした上で、現地企業の意向を確認 する。	/	上記の通り、投資の実施が決定し次第、検 討•確認予定である。

候補案件の事業化の計画と進捗

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II.5月からの進歩 2. 進捗概要(水平展開活動)

◆ 周辺の開発案件の発掘を優先しているが、EGSCの開発が進み次第、水平展開活動を検 討■確認する

水平展開活動の計画と進捗

	活動項目	活動内容		5月からの進捗
流	1 水平展開に向け、アライア ンス社のネットワークを活か した案件発掘	EGSCマスターデベロッパーでもある同 グループのネットワークを活用し、類似案 件を発掘する。		アライアンス社・MBCのネットワークを生かし て周辺の開発案件の発掘を推進中。 COVID-19の影響もあり、必ずしも案件は多 くない。
n	2 発掘案件に関する初期的な 技術評価、経済性評価等の 実施	適用される本邦技術を特定し優位性を確 認する。投資額・投資回収年数、内部収 益等を明らかにした上で、現地企業の意 向を確認する。	/	EGSCの開発が進み次第、検討・確認予定 である。



◆ EGSCはミャンマー国内の投資家を募り、プロジェクトを進める方針に転換する見込み



11.5月からの進捗

3. 活動①:長期的な都市間連携の関係性構築およびエコグリーンスマートシティ(EGSC)の脱炭素化に向けた計画策定 3.2. 周辺案件の提携可能性(1/2)

- ◆ シンガポール政府の投資プロジェクトとして、共同新規工業団地を発掘。MBCがアドバイ ザーとして活動する可能性あり
- ◆ かなりのスピードで準備が進んでいたが、COVID-19の影響でミャンマー政府とシンガポール政府の契約締結が遅延しており、詳細調査に移行できていない状況
- ◆ 契約締結次第、現地コンサル (MBC社) と共同で提携可能性調査を進める予定

<u>海外工業団地概要</u>

- 工業団地はレグタウンシップで開発を行う予定で あり、436 haの土地を食品工場や住宅向けに開 発するプロジェクトである
- 本プロジェクトはシンガポール政府ファンドが出 資する予定
- 本プロジェクト実施に関してミャンマー投資委員 会の基本的な承認を得たものの、COVID-19の ため契約締結が遅れ、未だ開発に着手できてい ない

海外工業団地において発掘した案件および概要



II. 5月からの進捗 3. 活動①:長期的な都市間連携の関係性構築およびエコグリーンスマートシティ (EGSC) の脱炭素化に向けた計画策定 3.2. 周辺案件の提携可能性 (2/2)

◆ 工業団地以外の案件発掘状況は次の通り。それぞれの案件についてMBC社と共同で導 入技術の選定、提携可能性調査を進める

<u> </u>	<u>案件の概要</u>	
1 高速鉄道の整備	ヤンゴンとマンダレーを結ぶ鉄道の改修事業 (Mandalay Yangon Railway Project) が既に着 エしており、日本の官民が協力して改修する。日本政府は250億円の円借款の供与を決定。大手 商社などが、日本の信号システムや新型車両66台を導入する。本事業は2024年に完成見込み。	
2 低所得者向け住宅開発	ミャンマー北中部マンダレー管区政府は、パテインジー郡区で計画している低所得者向け賃貸住 宅3,000戸について、月内に着工し開始し、2021年2月までに完成させる予定である。	
3 日系企業工場の建設	日系企業D社は、ミャンマーに健康飲料事業を目的とした会社を設立。工場建設時期等の詳細を 確認中。	
4 日系企業工場の建設	日系企業E社は日本経済新聞の取材に応じ、新たに「ミャンマーでの生産を考えている」と表明。 工場建設時期等の詳細を確認中。	
⁵ 新規総合病院の建設	日系企業F社はミャンマーの現地企業との合弁により、新たに病院運営会社を設立、2020年を目 途にヤンゴンにて新たに総合病院を建設する見込みである。	
⁶ 新規ショッピングモール の建設	日系企業G社はミャンマーでショッピングモール事業を展開するため、同国の不動産ディベロッ パーとの合弁会社を設立。2023年開業を目指して1号店を整備。	
^{参考} LNG発電所の建設	日系企業H社と日系企業I社、日系企業J社は合弁会社を設立し、最大都市ヤンゴン郊外にある 工業団地に隣接する港湾地区ICLNG発電所を設ける。設計や契約交渉に1年半〜2年、発電所 の建設IC2年半かかり、稼働は2025年前後となる見込み。	
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II.5月からの進捗 4. 活動②:JCM適用事業の組成に向けた活動

- ◆ 昨年度発掘したB社が手掛ける新病院整備プロジェクトは、COVID-19のため投資資金が集 まらず遅延の状況
- ◆ 引き続きJCMに関心を有しており、投資資金の準備状況をモニタリングしつつ対応する予定



B社 病院建設概要

- ミャンマーでニーズが高いにも関わらず、数が少 ない女性・子供向けに高度医療サービスを提供 する病院を建設予定である
- 日本において病院設計業務の経験豊富な設計 会社に基本設計を委託している



図. 新設病院の外観(イメージ)

(出典) Myanmar Business Corporation (MBC) 社へのヒアリングを基に弊社作成



Ⅲ. 今後の予定

- ◆ 当初年3回の現地調査を想定したが、COVID-19の影響を考慮し、年1回へ変更する
- ◆ EGSC開発遅延のため、本年度は周辺の開発案件との連携可能性調査、フェーズ3を見 越した来年度以降の新規案件発掘に重きを置く

	20	019~2021年(3:	年)			2022年~	•
活動計画	活動結果		2020年度(2:	カ年目:本事業)		2021年	
2019年度	2019年度	4~6月	7~9月	10~12月	1~3月	(3カ年目)	
活動①: 長期的な都市間 連携の関係性構 築およびエコグ リーンスマートシ ティ(FQSC)の低	・北九州モデルのサステナビリティ フレームワークを参考に設設素化 計画を検討し、脱炭素化計画につ いてミャンマー側と合意を得た ・将来的にMBC社を環境面でのアドバイザーには電行けること。また、 NITデーク接受音楽を声のにMのア	・国内キックオフ ・御省との打合 ゼ ・現地情報の収 集 等	 ・現地キックオフ ・EGSCの開発 北沢確置 ・30MW太陽光 プロジェクト等の 検討 	 第2回現地調査 EGSCの開発状況確認 30MW太陽光ロジェクト、その他の候補プロジェクトの詳細調査 	・第3回現地 調査 ・様補プロ ジェクトの具 ク 体化 ・周辺の開発 案件との連携	7ロジェ 小の具 事業化 K化	本年度重点 本年度重点 取り組み箇所
炭素化に向けた 計画策定	ドバイザーに位置付けることを合意した	脱氢素化口	同けた計画の見直し(4	5要に応じて)	可能性		
活動 ^{(2):} JCM適用事業の	・アライアンス社のネットワークを生 かし、脱炭素化素件の発掘した軸 果。以下の3案件を発掘した	新設病院への省エネ ・病院の詳細設計を ・ 4にM週間を摂動に ・ 4回究性評価 等	型設備や高工ネ設備の 諸まえた場入技術の特別 入れた体制構築	(単人 全	短期間 JGM認 事業の	1(1~3年に内)での 2編補助 の通知・事業化	
組成に向けた活 勤	① A社案件 ② B社案件 ③ C社案件	ステ展開活動 ・プライアンススター 発展家件に関する	グループのネットワーク 技術評価。結査性評価。	を生かした案件発調 事の実施	中長期 設備利 事業の	開間(3年~)でのJCM 動 D適用・事業化	
現地調査			●第1回	●第2回	●第3回		
報告書の作成		●规约	1	月次報告	●報(吉書提出	
Mark FORTAH		03-DX-1	●中間打会わせ	●中間打会わせ	●長終打会せ	(※打合せは、 必要に応じて追加)	

(出典)プレキックオフミーティングミーティング資料(2020年6月)を基にエヌ・ティ・ティ・データ経営研究所作成



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1.1. 背景と目的

◆ ヤンゴン管区におけるEco-Green Smart City (EGSC)の実現を目指す。

- ヤンゴン市は、昨今の急速な民主化や海外資本の流入、民間開発により、ミャンマーの経済開発の中心地として人口増加と都市化が進んでいる。しかし、人口増加に対して都市生活を支える社会基盤インフラの供給体制は十分といえず、経済活動のボトルネックとなっている
- ミャンマー政府が2016年7月に公表した基本的な経済政策の中には、「基本インフラの優先的な整備」、「長期的な環境保護の視点に立った都市建設」が挙げられており、経済発展と環境保護双方の視点を踏まえた都市開発が求められている
- 上記達成のため同国建設省住宅局が進める、大規模スマートシティ(EGSC)開発プロジェクトを対象として、脱炭素社会形成に関する経験・ノウハウ等を有する「北九州市」の支援のもと、スマートシティ内においてJCMクレジット獲得につながる案件の形成等を目指した調査活動等を実施する
 EGSCプロジェクトは、ヤンゴン都市圏開発マスタープランに沿った大規模都市開発の第一号案件であり、国内の注目度が高い。本事業で、JCMスキームを活用して本邦技術を導
- ・ EGSCノロンエクトは、ヤノコノ都中圏開発マスターファンに沿った大規模都中開発の第一号条件であり、国内の注目度か高い。本事業で、JCMスキームを活用して本邦技術を導
 入することにより、低炭素な都市づくりを実現することができれば、都市圏内のほかのサブセンターや、管区外の都市開発に横展開できる可能性は高い



1.2. 実施体制

◆ 本年度の実施体制は以下の通りである。



1.3. スケジュール

▶ 本年度の活動スケジュールは以下の通りである。

2019~2021年(3ヵ年)

2022年~ ■ アクションプランの遂行

■ 発掘案件の構展開

2019年度 2020年度(2カ年目:本事業) 2021年 (3力年目) 活動結果 4~6月 7~9月 活動計画 活動計画 10~12月 1~3月 ・北九州モデルのサステナ ビリティフレームワークを 参考に脱炭素化計画を検 ・EGSCの開発 状況確認 ・国内キック 活動①: ・EGSCの開 討し、脱炭素化計画につい 長期的な都市間 オフ 30MW太陽 発状況確認 ・30MW太陽 ・候補プロ ジェクトの てミャンマー側と合意を得 ・御省との打 プロ ジェク トの具 体化 光ロジェクト、 連携の関係性構 た 合せ 具体化 ・周辺の開 プロジェク その他の候補 築およびエコグ 活動①: 現地情報の 事業化 プロジェクトの 詳細調査 ト等の検討 収集 等 適用案件の組成活動 リーンスマートシ ・将来的にMBC社を環境 発案件との ティ(EGSC)の 連携可能性 面でのアドバイザーに位置 低炭素化に向け 付けること、また、NTT た計画策定 ータ経営研究所をJCM 脱炭素化に向けた計画の見直し(必要に応じて) のアドバイザーに位置付け ることを合意した ・アライアンス社のネット ワークを生かし、脱炭素化 案件の発掘した結果、以下 新設病院への省エネ型設備や再エネ設備の導入 短期間(1~ -3年以内)でのJCM ・病院の詳細設計を踏まえた導入技術の特定 ・JCM適用を視野に入れた体制構築等 設備補助の検討事業の適用・事業化 活動2: の3案件を発掘した 活動②: JCM適用事業の 候補案件の事業化・水平展 ① A社/PV・リジェネバー 組成に向けた活 ナーの導入 開活動 水平展開活動 動 JCM設備補助の検討 ② B社/発電機導入 ・アライアンススターグループのネットワークを生かした案件発掘 ・発掘案件に関する技術評価、経済性評価等の実施等 事業の適用・事業化 ③ C社/太陽光発電設備設 置



2.1. 活動の概要

- ◆ COVID-19の影響で、EGSCの開発は想定より後ろ倒しになっているため、昨年発掘した案件の具体的な検討は延期となっている。
- ◆ しかしながら、MBC社を通じて各社へのフォローは継続的に実施しており、状況が改善した場合、直ちに検討が進められるような体制を構築している。
- ◆ また、アライアンス社のネットワークによる調査および日系企業へのマーケティング活動等の結果、連携可能性のある2案件を発掘した。

活動項目	目標	達成レベル
適用案件の組成活動	 昨年度発掘した候補案 件の事業化に向けた取 り組みを進めること 周辺開発案件との提携 可能性を調査すること 	 COVID-19の影響で具体的な検討は延期となっているものの、各社へのフォローは継続して行っており、状況が改善した場合は直ちに検討が進められるような体制を構築している。 提携可能性のある2案件を発掘し、内1件は具体的な検討が進んでいる。

活動結果

2.2. 昨年度発掘した案件の実用に向けた検討・調査

- ◆ COVID-19の影響でEGSCの開発は想定より後ろ倒しになっているため、昨年度発掘した下記案件の具体的な検討は延期となっている。
- ◆ しかしながら、MBC社を通じて事業化に向けたフォローアップを継続しており、状況 が改善した場合は直ちに検討が進められるような体制を構築している。

企業	業種	業種 昨年度訪問回数	
A社	• 蓄電池製造業	• 20	 太陽光発電設備 リジェネバーナー
B社	 エネルギー関連会社 	• 20	• 太陽光発電設備

昨年度発掘した案件の状況

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2.2. 昨年度発掘した案件の実用に向けた検討・調査 (参考) A社案件概要(1/3)

◆ バッテリー製造工場屋根へのPV設置と、溶融炉(バーナー)の効率化について検討中である。



2.2. 昨年度発掘した案件の実用に向けた検討・調査 (参考) A社案件概要(2/3)

- ◆ PV設置を検討中の屋根の情報をもとに、設置可能な軽量型パネルの規模を推計した。
- ◆約0.6MW程度のPVの設置が可能である。



2.2. 昨年度発掘した案件の実用に向けた検討・調査 (参考) A社案件概要(3/3)

- ◆ PVについては、関連工場の屋根も含めた規模拡大を検討中である。
- ◆ また、同工場の溶融炉を対象としたリジェネバーナーの導入についても検討中である。



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2.2. 昨年度発掘した案件の実用に向けた検討・調査 (参考) B社案件概要

◆ B社は、EGSCの開発を行うアライアンス社のグループ会社である。EGSC近隣への 大規模PV導入を検討中である。



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2.3. 周辺案件との連携可能性調査 (参考) 第三者保有 (TPO) モデルの事業スキーム

- ◆現在、屋根置き型の太陽光発電設備から生み出される電力のコストは、系統電力から 購入する電力コストと同等かそれよりも低いレベルとなっている。
- ◆結果、住宅の所有者とは別の第三者が、住宅の所有者から屋根を賃借して、屋根に太陽光発電設備を設置し生み出される電力を住宅の所有者に販売するビジネス(TPO モデル)がわが国でも普及し始めている。



2.3. 周辺案件との連携可能性調査 (参考) TPOモデルを応用した無電化地域の電化支援

- ◆ 第三者保有モデルを応用し、世界の無電化地域の電化支援を行う組織も生まれている。
- ◆ 具体的には、一般社団法人GOOD ON ROOFSが、第三者保有モデルを活用し、企業 と提携して電力インフラの整備状況が悪く、人々の健康的な生活の困難な地域の電化 率向上に貢献する取り組みを進めている。





2.3. 周辺案件との連携可能性調査 2.3.1. 工業団地への第三者保有モデルを用いた太陽光発電設備導入(1/2)

◆ C社はEGSC近隣の工業団地を運営する企業であり、第三者保有モデルを用いて太陽 光発電設備の導入を検討している。



2.3. 周辺案件との連携可能性調査 2.3.1. 工業団地への第三者保有モデルを用いた太陽光発電設備導入(2/2)

- ◆ ミャンマーの工業団地へ第三者保有モデルを用いて太陽光パネルを設置し、工業団地の企業から受け取る電気代と寄付金で社会問題を解決できるようなスキームの構築を進めている。
- ◆ 案件の水平展開として、本スキームで導入される太陽光パネルにJCMを適用すること を検討している。



2.3. 周辺案件との連携可能性調査 2.3.2. ヤンゴン西部の大規模開発プロジェクト(1/2)

◆ コンソーシアムDはヤンゴン西部の大規模開発への参加を計画している。

◆ MBC社を通じて、当該コンソーシアム参加企業へJCMを紹介するとともに、採択された際にJCMを適用して設備を導入することを提案している。



2.3. 周辺案件との連携可能性調査 2.3.2. ヤンゴン西部の大規模開発プロジェクト (2/2)

- ◆ 工業地帯や橋梁、住居地域等を整備する、ヤンゴン西部の大規模開発プロジェクトを発掘した。
- ◆現在参加企業を再度公募しており、アライアンス社とも関係のあるミャンマー国内の建設企業によるコンソーシアム等も参加を計画している。



3.1. 活動の概要

- ◆ 昨年度発掘したE社の新病院整備プロジェクトは、投資資金を集めることに時間を要しており、JCM適用に向けた取り組みを継続する意思はあるが、具体的な検討は延期となっている。
- ◆しかしながら、MBC社を通じたフォローは継続的に実施しており、状況が改善した場合、直ちに検討が進められるような体制を構築している。
- ◆ また、アライアンス社のネットワークを活用し、EGSC内で新規案件を2件発掘した。

活動項目	目標	達成レベル		
候補案件の事業化・水 平展開活動	 昨年度発掘した新病院 整備プロジェクトの事業 化に向けた各種検討を 進めること アライアンス社のネット ワークを用いて新規案 件を発掘し、発掘案件 に関する技術評価等を 実施すること 	 COVID-19の影響で具体的な検討は延期となっているものの、各社へのフォローは継続して行っており、状況が改善した場合は直ちに検討が進められるような体制を構築している。 新規2案件を発掘し、それぞれJCM適用に向けた提案、導入する技術の検討等を実施している。 		

活動結果

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3.2. 新規病院案件の実用に向けた検討・調査

- ◆ E社の新病院整備プロジェクトは昨年度時点で詳細設計もほぼ終了している状況にあり、可能な限り日本の技術を導入する意欲が強いため、昨年度発掘した他2案件に先駆け、JCM設備補助の適用に向けた体制構築や経済の検討を計画した。
- ◆新型コロナウイルスの影響を受け、投資資金を集めることに時間を要しており、JCM 適用に向けた取り組みを継続する意思はあるが、具体的な検討は延期となっている。
- ◆しかしながら、MBC社を通じて各社へのフォローは継続的に実施しており、状況が改善した場合は直ちに検討が進められるような体制を構築している

企業	業種	昨年度訪問回数	JCM適用機器	
E社	• 病院	• 10	• 発電機	

昨年度発掘した案件の状況

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3.2. 新規病院案件の実用に向けた検討・調査 (参考) E社案件概要(1/3)

- ◆ E社はヤンゴン市内で女性・子供向けの新病院を建設し、医療ビジネスに参入する予定である。
- ◆ 日系病院と連携し、特別目的会社を設立した上で医療サービスの提供を行う。新設する病院の設計は日本でも病院設計における実績の豊富な企業が実施している。



3.2. 新規病院案件の実用に向けた検討・調査 (参考) E社案件概要(2/3)

◆ 新設する病院の概要は次の通り。

Subject of Medical treatment	Internal Medicine, Obstetrics, Gynecology, Peadiatrics, Giurhinology, Ophthalmology, Orthopedics, Rheumatology, Anesthesiology, Dermatology
191914E	内科、産科、婦人科、小児科、耳鼻環境科、斑科、整形外科、リ ウマ5 科、麻酔科、皮膚科
Number of Beds	59 Beds
Department	Outpatient, Emergency, Ward, Operation, Central supply, Medicine, Clinical examination, Radiology, Phychiatric, Nutrition, Medical consultant, Medical check-up, Manaement, Accountanc,
87145.B	外來部門。故意部門。我律部門、干術部門、中約部門、南新部 門、面孫總證部門。故封歸部門。切比9天>12部門、常香期 門、國際相談部門、健部部門、國事部門、総務部門
Outpatient pp/day	250 pp (Maximum 300 pp/day)
外來有数	250人(欄大 300人/日)
Structure Type	RC
構造形式	鉄筋コンクリート語
GFA	10,116.19 m ² (Parking 1,373.88 m ²)
经不序面積	10,115.19 m ² (駐車場 1,373.88 m ³)
Building Area 建築振構	1,888.80 m ²
Building Ratio 建新平	51.45 %
Floor Area Ratio 容積率	275.57 %
Floor Number	6 Stories + Pent House (No Basement)
81.03	地上6期 + 地屋(地下無し)
Maximum Height. 新商用之	29.85 m
Number of Cars	42 Cars
C1 (0) (1 (1)	42.64



3.2. 新規病院案件の実用に向けた検討・調査 (参考) E社案件概要(3/3)

- ◆ 現在、設計会社と詳細を協議中である。
- ◆ JCMの適用には非常に前向きで、コジェネを含め高効率機器をまとめて申請すること を検討中である。



3.3. EGSC内インフラ (上水道) の整備 3.3.1. 案件概要 (1/2)

◆ コンソーシアムFはEGSCのマスタープランに沿った上水道整備を計画している。



3.3. EGSC内インフラ (上水道) の整備 3.3.1. 案件概要 (2/2)

◆ 本上水道開発計画が進んだ場合のスケジュールは以下の通りである。

◆現在はフィージビリティスタディー(FS)を実施している段階であるが、水源や配管設置個所、設置する機器の仕様等の具体的な検討が進んでいる状態である。

上.	下水道整備開発スク	「ジュ		V
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ステータス	スケジュール	内容
実施中	2020年6月~2021年8月	FS開始
計画	2021年~2022年	基礎·詳細設計
計画	2022年中ごろ	契約締結
計画	2023年末	着工

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3.3. EGSC内インフラ (上水道) の整備 (参考) プロジェクト概要図

Project	Feasibility Study on the Water Treatment Plant & Wastewater Treatment Plant Project for Eco Green City (EGC) in Yangon, Myanmar
Location	Hlegu township, Yangon Region
Consortium	建設企業3社
Period	2020. 6 ~ 2021. 8 (14 months)
Budget	非公開
Central Government & Project Owner	Ministry of Construction (MOC) Alliance Stars Group of Companies (ASG)
Project Cost	非公開
Type of Project	To be decided
Construction Period	2021 ~ 2024 (Tentative) (Basic & Detailed desigh , Construction)
Purpose of Project	· Supply safe and clean water to the region of Eco Green City
Fulpose of Project	· Safely treat wastewater coming from EGC

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3.3. EGSC内インフラ (上水道) の整備 (参考) 建設するプラントの概要

C.	Plan of Facility	Location of Project area
ltem	Context	
Location	• Eco Green City (EGC)	Eco Green City Layout
Population	<mark>o</mark> 200,000 (2028)	Monaster Heg
Area	⊂ 1,453 ac (5,88km)	
WTP (Water Treatment Plant)	非公開	
WWTP (Wastewater Treatment Plant)	非公開	WITEC Tranmocania Garden Monastery
Remark	 City Concept : An eco-friendly smart city that blends complex cultural facilities, commercial facilities, and residential areas Residential area is under construction 	LEGEND WVTP Roor Roor Project an

建設するプラントの概要

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3.3. EGSC内インフラ (上水道) の整備 (参考) 浄水施設のレイアウト

浄水施設のレイアウト

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浄水施設のレイアウト



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3.3. EGSC内インフラ (上水道) の整備 (参考) 排水処理施設のレイアウト (2/2)



浄水施設のレイアウト

3.3. EGSC内インフラ (上水道) の整備 3.3.2. EGSCコンセプトに沿った水源の確保 (1/2)

◆ 水源についてはEGSCの北に位置するKalihtaw DamおよびEGSC内を通る YCDC canal等を利用することを検討している。

◆ 近隣の工業団地は既にKalihtaw Damへ接続していることから、本工業団地の既設 配管とEGSCを接続することができれば、工事費を削減することができる。そのため、 工業団地との提携も含め検討を進めている。



近隣工業団地との提携案

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3.3. EGSC内インフラ (上水道) の整備 3.3.2. EGSCコンセプトに沿った水源の確保 (2/2)

- ◆ EGSC内は大規模開発であるため、水源を1箇所に依存すると、各水源管理者が必要 な水量を確保できなくなる懸念があり、また、水に関するEGSCのコンセプト(自己水 源の比率を40%程度にする。再生水の利用比率を30%とする)とも合致しない。
- ◆ 貯水池を設置して雨水や地下水等を活用するとともに、排水処理施設から得た再生水も活用することも検討している。

Option	水源	配管	概要
F	Kalihtaw Dam、 YCDC canal、 雨水、地下水、 再生水	工業団地の既設配管およ び YDCD canal を EGSC貯水池と接続し、 貯水池と浄水施設を接続	 YCDC canalおよびKalihtaw Damから近隣工業団地へ流れ る水を主水源とし、不足分を代替水源 (雨水、地下水、再生水) で補完する。 自給率を最大化することで、EGSCのコンセプトとも合致する。 接続のために工業団地およびYCDCと協議が必要である。

EGSCコンセプトに合致した実現性の高い案

3.3. EGSC内インフラ (上水道) の整備 (参考) Option F

水源確保に関する検討(Option F)



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3.3. EGSC内インフラ (上水道) の整備 (参考) その他検討結果

EGSCコンセプトに合致しない、または実現するためには課題が残る案

Option	水源	配管	概要
A	Kalihtaw Dam	工業団地の既設配管 とEGSC浄水施設を 接続	 近隣の工業団地の既設配管から、EGSCの給水設備への接続だけで済むため、設備の 維持・管理が容易である。 全ての水源を工業団地に依存する場合、工業団地側は十分な水を確保できなくなることを懸念しており、協議が困難になると予想される。 EGSCのコンセプトと合致しない。
В	Kalihtaw Dam	Kalihtaw Damと EGSC浄水施設を接 続	 EGSCのコンセプトと合致しない。 工業団地と協議する必要がない。 建設費および設備の維持・管理費が増加する。
С	YDCD canal、 灌漑排水	YDCD canal と EGSC浄水施設を接 続	 EGSC内を通る運河への接続であり、設備の維持・管理が容易である。 EGSCの運営に十分な水資源を供給できるかが不明確である。 全ての水源をYCDC canalに依存する場合、運河を運営するYCDCはヤンゴン市に 十分な水を供給できなくなることを懸念しており、協議が困難になると予想される。 EGSCのコンセプトと合致しない。
D	YCDC canal、 雨水、地下水、再 生水	YDCD canal を EGSC貯水池と接続 し、貯水池と浄水施 設を接続	 YCDC canalを主水源とし、不足分を代替水源(雨水、地下水、再生水)で補完する。 自給率を最大化することで、EGSCのコンセプトとも合致する。 接続のためにYCDCと協議が必要である。
E	Kalihtaw Dam、 雨水、地下水、再 生水	工業団地の既設配管 をEGSC貯水池と接 続し、貯水池と浄水 施設を接続	 Kalihtaw Damから近隣工業団地へ流れる水を主水源とし、不足分を代替水源(雨水地下水、再生水)で補完する。 自給率を最大化することで、EGSCのコンセプトとも合致する。 接続のために工業団地と協議が必要である。

3.3. EGSC内インフラ (上水道) の整備 (参考) Option A

水源確保に関する検討(Option A)



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3.3. EGSC内インフラ (上水道) の整備 (参考) Option B

水源確保に関する検討(Option B)



3.3. EGSC内インフラ (上水道) の整備 (参考) Option C

水源確保に関する検討(Option C)



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3.3. EGSC内インフラ (上水道) の整備 (参考) Option D

水源確保に関する検討(Option D)

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3.3. EGSC内インフラ (上水道) の整備 (参考) Option E

水源確保に関する検討(Option E)



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3.4. EGSCにおけるロジスティクス・ハブの開発 (1/2)

◆ 国内の投資家がロジスティックス・ハブの開発に関する覚書を締結し、本開発に先進的 な技術が導入される予定である。

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◆本ロジスティックス・ハブはEGSCのマスタープランに沿ったものでありEGSC内の 133エーカーの土地を開発する計画である。



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EGSCマスタープラン

3.4. EGSCにおけるロジスティクス・ハブの開発 (2/2)

◆本開発についても、アライアンス社を通じて関係企業と連絡を取りながら、ロジス ティック・ハブの屋根への太陽光発電設備の導入、各種モビリティの電動化等の提案を 行っている。



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4. 次年度以降の展望

- ◆ 次年度以降は発掘した各案件の事業化に関する検討を継続する。
- ◆ また、EGSCプロジェクトは息の長いプロジェクトであるため、引き続き、開発計画に 則り整備が進む各種施設等を対象としたJCM適用案件の組成活動を継続する。

本年度の活動

次年度以降の展望



※ 別途、2023年に新設される大型ショッピンクモール案件を発掘した。本件について、事業者ともJCM適用に関する合意か 得られており、次年度以降は本件も加え、JCM適用に向けた検討を進める。

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APPENDIX D_月次報告書

月次報告書(令和2年9月)

業務	5 名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))
受訊	:者	株式会社エヌ・ティ・ティ・データ経営研究所(共同事業者:北九州市)
期	間	令和2年9月7日(月)~令和2年9月30日(水)

【実績概要】

 9月8日(火)に北九州市、現地コンサルティング会社(MBC: Myanmar Business Central Co.)と、 EGSC(Eco-Green Smart City)の開発状況や、周辺案件の状況、今後の方針に関する打ち合わせ (Web 会議)を開催。

② ①の会議にて発掘したEGSC周辺案件の提携可能性を確認するため、9月14日(月)に国内大手 スーパーへ、ミャンマーに新設するショッピングモールへのJCM設備補助適用について、ヒアリ ングを実施。

③ 環境省様とのキックオフミーティング実施に向け、①,②を踏まえ資料を作成。

④ 9月15日(火)に環境省様とのキックオフミーティングを開催。

【打合せ・現地渡航等】

<打合せ>

- 北九州市、MBC との Web ミーティング(9月8日(火))
- ② 国内大手スーパーへとの Web ミーティング(9月14日(月))
- ③ 環境省様とのキックオフミーティング(9月15日(火))
- ④ MBCによる現地での活動(随時)

月次報告書(令和2年10月)

業	務	名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))
受	託	者	株式会社エヌ・ティ・ティ・データ経営研究所(共同事業者:北九州市)
期		間	令和2年10月1日(木)~令和2年10月31日(土)

【実績概要】

- ⑤ 10月19日(月)に北九州市、現地コンサルティング会社(MBC: Myanmar Business Central Co.)
 と、EGSC(Eco-Green Smart City)の開発状況や、周辺案件の状況、今後の方針に関する打ち合わせ(月次 Web 会議)を実施。
- ⑥ ①の会議にて新たに発掘した EGSC 周辺案件の提携可能性を確認するため、GOOD ON ROOFS(一社)へ、日系工業団地内施設への JCM 適用等についてヒアリングを実施。
- ⑦ MBC を通じ、ミャンマー側の検討状況の報告、現地情報に関する確認等のフォローアップをメー ルベースで随時実施した。

【打合せ・現地渡航等】

<打合せ>

- ⑤ 北九州市、MBC との Web ミーティング(10月 19日(月))
- ⑥ MBCによる現地での活動(随時)

以上

月次報告書(令和2年11月)

業務	名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))
受託	者	株式会社エヌ・ティ・ティ・データ経営研究所 (共同事業者:北九州市)
期	間	令和2年11月1日(日)~令和2年11月30日(月)

【実績概要】

- ⑧ 11月11日(水)に北九州市、現地コンサルティング会社(MBC: Myanmar Business Central Co.)
 と、EGSC(Eco-Green Smart City)の開発状況や、周辺案件の状況、今後の方針に関する打ち合わせ(月次 Web 会議)を実施。
- ①の会議にて新たに発掘した EGSC 周辺案件の提携可能性を確認するため、MNBC (Myanmar National Brotherhood Consortium) が手掛ける案件への JCM 適用等についてヒアリング実施を計画した。
- 11月30日(月)にMBCと再度打ち合わせを実施し、ヤンゴン管区周辺で提携可能性のある案件について MBC 社より報告を受けた。報告内容を基に、アライアンススター社と JCM 適用案件に関する打ち合わせ実施を計画した。
- MBCを通じ、ミャンマー側の検討状況の報告、現地情報に関する確認等のフォローアップをメールベースで随時実施した。

【打合せ・現地渡航等】

<打合せ>

- ⑦ 北九州市、MBC との Web ミーティング(11月11日(火))
- ⑧ MBC とのミーティング(11月30日(月))
- ⑨ MBCによる現地での活動(随時)

以上

月次報告書(令和2年12月)

業 務 名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))				
受託者	株式会社エヌ・ティ・ティ・データ経営研究所 (共同事業者:北九州市)				
期 間	令和2年12月1日(火)~令和2年12月31日(木)				
【実績概要】					
迎 12月17日	(木) に北九州市、現地コンサルティング会社 (MBC: Myanmar Business Central Co.)				
と、EGSC(Eco-Green Smart City)のデベロッパーであるアライアンススター社と、EGSC の開				
発状況や、周	発状況や、周辺案件の状況、今後の方針に関する打ち合わせ(兼月次 Web 会議)を実施した。				
 ①の会議にて 	て、新たにヤンゴン西部の大規模プロジェクトを確認した。当該プロジェクトと連携・				
水平展開可能	£性について、MBC を通じ調査実施中である。				
14) 12月10日((木)に 第三者保有モデルを用いて日系工業団地に太陽光パネルを設置し 社会問題				
解決スキー」	ムを運営する企業(1社)とディスカッションを実施した。				
15 MBC を通じ	、ミャンマー側の検討状況の報告、現地情報に関する確認等のフォローアップをメー				
ルベースで阪	値時実施した。				
【打合せ・現地波	度航等】				
<打合せ>					
10 社会問題解	決スキームを運営する企業(1社)とのディスカッション(12月10日(木))				
 ① 北九州市、MBC、アライアンススター社との Web ミーティング(12月17日(木)) 					
① MBCによる現地での活動(随時)					
	以上				

月次報告書(令和3年1月)

業 務 名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))
受託者	株式会社エヌ・ティ・ティ・データ経営研究所(共同事業者:北九州市)
期間	令和3年1月1日(金)~令和3年1月31日(日)

【実績概要】

- 1月15日(火)に北九州市、現地コンサルティング会社(MBC: Myanmar Business Central Co.)
 と、EGSC(Eco-Green Smart City)の開発状況や、周辺案件の状況に関する打ち合わせ(兼月次 Web 会議)を実施した。
- ① ①の会議にて、これまでに MBC を通じて入手した情報の整理、最終報告書作成の方針等について、 議論を行った。
- 18 MBCを通じ、ミャンマー側の検討状況の報告、現地情報に関する確認等のフォローアップをメールベースで随時実施した。
- 19 個別の JCM 候補案件発掘に向けて、国内大手商社との打合せ、国内大手スーパー(ヤンゴンでの 出展を計画中)との打合せを実施した。

【打合せ・現地渡航等】

<打合せ>

- ③ 北九州市、MBC との Web ミーティング(1月15日(火))
- ⑭ MBCによる現地での活動(随時)

以上

月次報告書(令和3年2月)

業務名	令和2年度脱炭素社会実現のための都市間連携事業委託業務 (ヤンゴン管区スマートシティ開発における脱炭素化促進事業(フェーズ2))
受託者	株式会社エヌ・ティ・ティ・データ経営研究所(共同事業者:北九州市)
期間	令和3年2月1日(月)~令和3年2月28日(日)

【実績概要】

- ② 2月8日(月)に北九州市、現地コンサルティング会社(MBC: Myanmar Business Central Co.)と、
 EGSC(Eco-Green Smart City)の開発状況や、周辺案件の状況に関する打ち合わせ(兼月次 Web 会議)を実施した。
- 21 ①の会議にて、これまでに MBC を通じて入手した情報の整理および最終報告書作成の方針等について、議論を行った。
- 22 MBC を通じ、ミャンマー側の検討状況の報告、現地情報に関する確認等のフォローアップをメー ルベースで随時実施した。
- 23 個別の JCM 候補案件発掘に向けて、2月3日(水)国内大手スーパー(ヤンゴンでの出展を計画 中)との打合せを実施した。

【打合せ・現地渡航等】

<打合せ>

- 15 国内大手スーパーとの打合せ(2月3日(水))
- 16 北九州市、MBC との Web ミーティング(2月8日(月))
- ⑪ MBCによる現地での活動(随時)

以上

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