Utilization Plan for Ofunato Port [Summary Version]

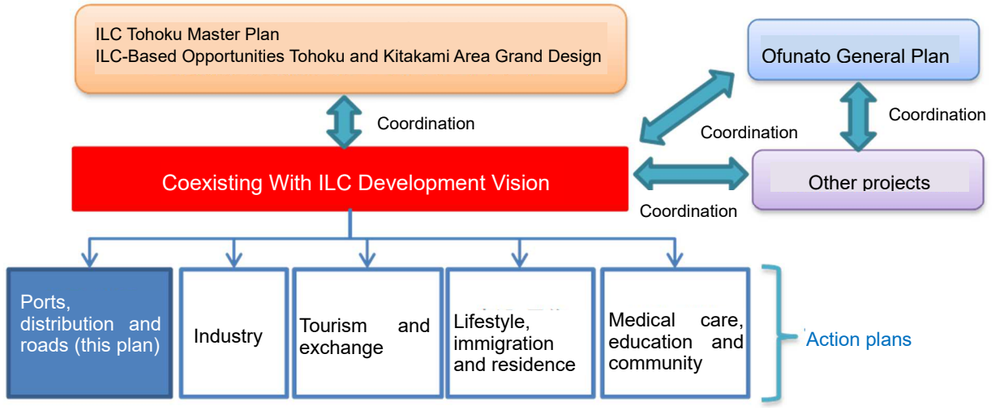
1. Plan Formulation Goal and Positioning

(1) Goal

As outlined in part 1 of the “Coexisting With ILC Development Vision Action Plan”, this plan will support the unloading at Ofunato Port and the related inspections, framework, and storage, so that the port can be used as a distribution hub construction site. Through measuring the enhancement and construction of the distribution network of items up to the chosen construction site, we will create a plan which improves regional economy through the port’s usage.

(2) Positioning

This plan defines specific action plans in the field of ports, distribution and roads which is one of 5 fields in the future vision represented in the Coexisting With ILC Development Vision formulated in coordination with the ILC Tohoku Master Plan and the ILC-Based Opportunities Tohoku and Kitakami Area Grand Design.



2. Survey Overview

(1) Goal of Surveys

(2) Our goal is to inspect the possible transport of items which will be used for ILC construction, between the ILC construction site and the Ofunato Port. This goal is tied to the promotion of the Ofunato Port.

(2) Survey Policy

Surveys for the transport of ILC items were carried out by dividing the list of products to be transported into categories based on their particular characteristics.

Furthermore, besides products that are within the general cargo regulation limits, we will also consider products outside of those limits, divided into the sections: wide items, long items, tall items and heavy items.

We will also consider three stages as targets for the transport of goods between the designated construction site and the Ofunato Port: harbors (unloading), distribution (storage), roads (transportation).

(3) Prerequisite of Goods Transport

① Currently, all estimated experiment equipment for the ILC will be unloaded at Ofunato Port.

② The machinery parts needed for the ILC research establishment engineering and construction are not included.

③ Because the device manufacturers are not yet fixed, the measurements, weight, and quantity are subject to change based on the advancement of the plan.

		General Limiting Value (Upper Limit Value)
Measurements	Width	2.5 m
	Length	12.0 m
	Height	3.8 m (Designated Height on Highway is 4.1m)
	Smallest Radius of Gyration	12.0 m
Weight	Gross Weight	20.0t (National Highway and Highway Specified Weight Limit is 25.0t)
	Axle Load	10.0 t
	Adjoined Axle Load	18.0t : Adjoined Axle Wheelbase is 1.8m insufficient 19.0t : Adjoined Axle Wheelbase is 1.3m over All adjoined Axles' Axle Load are under 9.5t 20.0t : Adjoined Axle Wheelbase is under 1.8m
	Axial Load	5.0 t

3. Survey and Investigation Results

(1) Harbors

① Investigation Results (All Districts' Facility Outlines)

District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Nagahama & Yamaguchi	Quay	-13.0m	1	290m	Deadweight 40,000t	・No equipment for handling cargo ・Wharf currently under development
		-7.5m	1	130m	Deadweight 5,000t	

District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Nonoda	Quay	-13.0m	1	270m	Deadweight 40,000t	・International Feeder Regular Container Service Line ・There is a private self-propelled harbor crane (stationed at quayside -13m)
		-7.5m	2	260m	Deadweight 5,000t	
		-4.5m	2	120m	Deadweight 1,000t	

District name	Facility type	Summary of facilities				Notes
		Water depth	No. of berths	Length	Target ships	
Chayamae	Quay	-9.0m	2	330m	Deadweight 10,000t	・Mainly bulk cargo is handled here ・There is a private crawler crane and a crane truck
		-6.0m	2	210m	Deadweight 2,000t	

② Investigation Results

A. Nagahama, Yamaguchi District

For containers and bulk cargo, we guarantee the depth of the water is deep enough, so it's possible to unload here.

B. Nonoda District

For containers and bulk cargo, we can guarantee the depth of the water is enough, so it's possible to unload here. However, in the case the port is already in use, time coordination and planning will be necessary. For containers, automatic harbor cranes will be completely deployed, so this district is more suitable than other districts for containers.

C. Chayamae District

For containers and bulk cargo, we can guarantee the depth of the water is enough, so it's possible to unload here. However, because it's used for bulk cargo (coal), time coordination and planning will be necessary. Compared to other districts, the space is lacking, so it will not be prioritized over other districts for use.

(2) Storage Area

① Investigation Results

	Nagahama - Yamaguchi District	Nonoda District	Chayamae District
Wharf Usage Area	3.7ha (Plan: start to offer one area for use in 2018) 1.8ha (Plan: start to offer area for use in 2019)	6.5ha (operating)	15.7ha (operating)
Industrial Area	5.3ha (finished) 6.4ha (under construction)	–	53.0ha (operating)
Green Land	3.3ha (under construction)	2.0ha (operating)	0.9ha (operating)

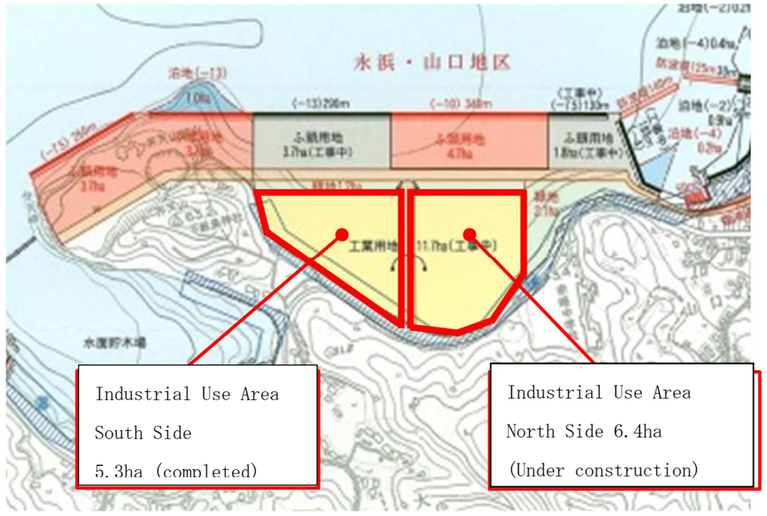
(2) Survey Results

A. Proposed Distribution Hub Construction Site

At the proposed distribution hub construction site, for the following reasons, the Nagahama and Yamaguchi District Industrial Use Area is the best option.

B. Reasons

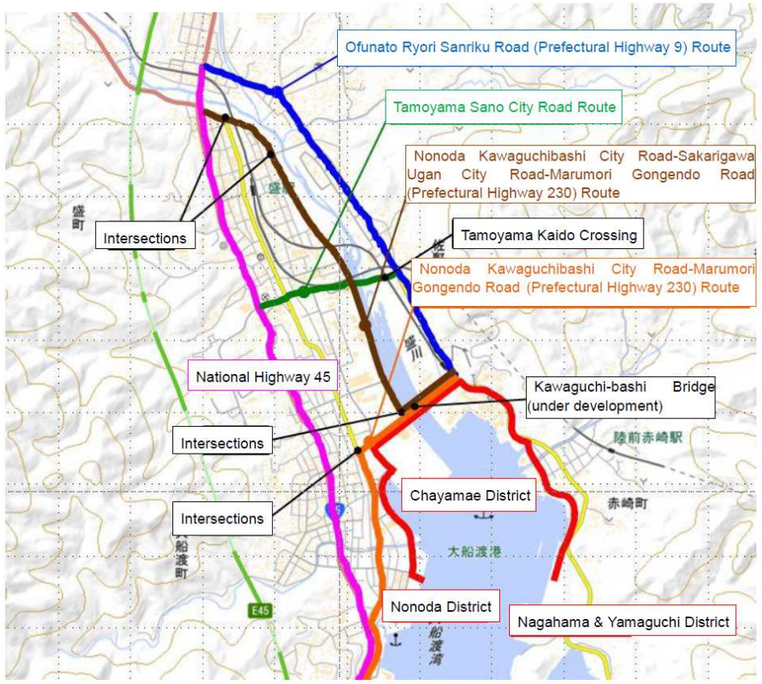
1. At the backside of the wharf at Nagahama and Yamaguchi District there is an industrial area of 11.7ha (south side: 5.3ha (complete), north side: 6.4ha (under construction)), which is adequate space for the distribution hub.
2. It neighbors a wharf that ocean-going ships can enter the port from.
3. It is behind the seawall, protecting it from tsunamis.
4. For the cryomodule, it is possible to reach the ILC construction site within 2 hours (using route B or C).



(3) Routes

① Investigation Results

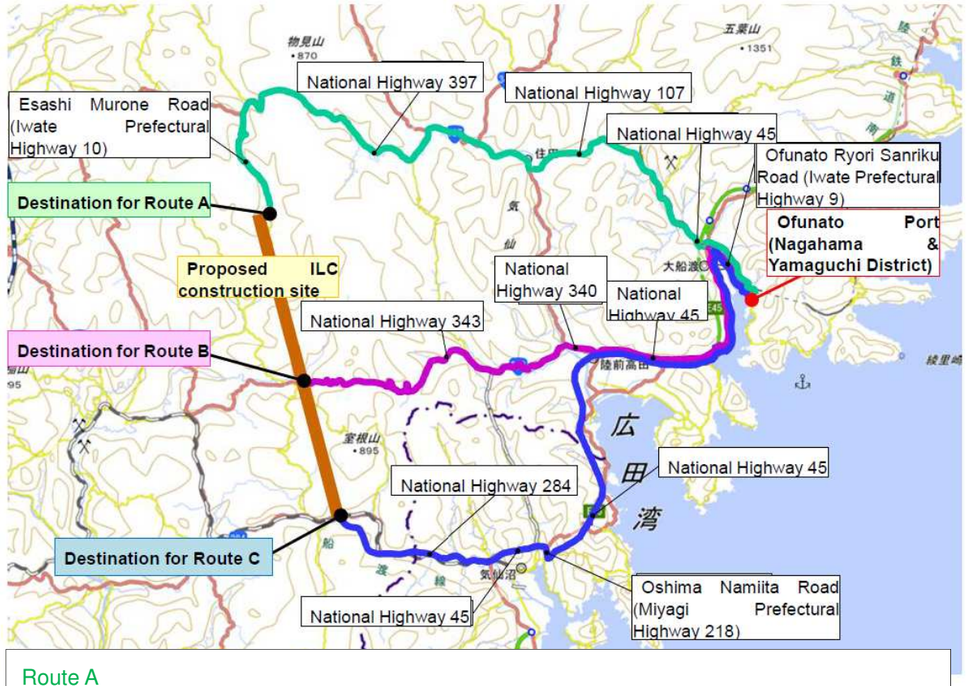
A. Routes within Ofunato



A. Route at Ofunato Port
The path within the port, towards the port, the main area road Ofunato Ryori Sanriku (Prefectural Road 9), and the Kawaguchi Bridge are under development. Once development ends, there will be no disruption in the path if the path is taken once the cargo is unloaded at Nonoda District then brought to Nagahama-Yamaguchi District.

B. Route from Ofunato Port quays to National Highway 45
Within the general limitations of the road laws, for the main cargo, or the 45 feet container, either route can be taken without hindrance. However, for other cargo there are railway crossing, turns and intersections. To avoid these, we select going by Ofunato Ryori Sanriku (Prefectural Road 9), then merging to National Highway 45 when transporting the items.

B. Route from Ofunato Port to ILC Construction Site



Route A

A. The distance is about 55km.

B. National Highway 107 has 13,000 vehicles per day drive on it and National Highway 397 has 2,200 vehicles per day drive on it; this has the least traffic out of the three routes.

C. The width of National Highway 107 or National Highway 397 is from 6.3m to 9.0m, while the Prefecture Road 10 has a width of about 3km to 5.5km.

Route B

A. The distance is about 45km, making this the shortest route of the three.

B. National Highway 343 has 4,500 vehicles per day drive on it, so it is a route with low traffic.

C. The width of the National Highway 343 is from 6.0m to 9.0m.

Route C

A. The distance is 55km, and uses the Sanriku Coast Road for 24km, so we can measure the reduction from this route.

B. The National Highway 45 has 14,000 vehicles drive on her per day, while the National Highway 284 has 13,000 vehicles drive on it per day, so this route has the most traffic of the three.

C. The width of National Highway 284 is from 7.0m to 9.0m.

2. Investigation Results

A. General cargo can be transported along the three routes which range from 45km to 55km, so the transportation time is possible within two hours. With this, the delivery of goods can be adjusted to the supplier of goods JIT (just in time).

B. For transport of cryomodule that uses a 45 foot container chassis, Route B and C are possible. For taking Route A, the Main Area Esashi Road Murone Line (Prefecture Road 10) will need to be improved. Further, because it will be subject to special railcar passage permission, it will be necessary to apply to and receive permission from the road supervisors.

C. For cargo that exceeds the maximum limit of the road law's limitations, a consultation with the road supervisors will be necessary, and when traffic regulations are involved, a consultation with the police will also be necessary.

D. For a portion of wide items, long items and tall items, in all routes the current intersections' road lanes, tunnels, overpasses, there are sections where the cross-section's shape and path are difficult, so construction improvements, or breaking up the products into the largest possible sizes for transport will be necessary.

E. In some cases when crossing bridges with heavy items, it will be necessarily for there to be improvements of traffic regulations or to strengthen the bridges.

F. The amount of 45 foot container chassis and 6 axis multi-trailers are lacking, so railcar arrangement work and detailed operation control will be necessary.

4． Ripple Effects (Related to Logistics)

(1) Case 1: covering all cargo in the transportation product list

This includes a ripple effect of ILC product transportation for Case I of (1), which covers all cargo in the transportation product list, a primary ripple effect totaling 23 billion yen is expected including port-related costs of 7.2 billion yen, distribution-related costs of 14.4 billion yen (including construction costs) and road-related costs of 1.4 billion yen.

Section	Breakdown	Main Expenses	Business Impact
Port (unloading)	Cargo handling	Unloading costs, heavy equipment costs etc.	¥6.2 billion
	Accommodation related	Harbor worker accommodation fees	¥800 million
	Food & drink related	Food & drink expenses for harbor workers	¥200 million
Port (unloading)		**Sub total**	**¥7.2 billion**
Distribution (storage)	Construction related	Construction costs (excluding land rent, inspection and assembly equipment costs)	¥7.0 billion
	Accommodation (construction) related	Construction worker accommodation fees	¥300 million
	Food & drink related	Food & drink expenses for construction workers	¥100 million
	Storage related	Entry/exit, heavy equipment costs, storage costs etc.	¥6.0 billion
	Accommodation (storage) related	Storage worker accommodation fees	¥800 million
	Food & drink (storage) related	Food & drink expenses for storage workers	¥200 million
Distribution (storage)		**Sub total**	**¥14.4 billion**
Roads (transport)	Transportation related	Transportation vehicle costs, guided vehicle costs	¥1.0 billion
	Fuel related	Fuel costs	¥100 million
	Accommodation related	Transportation worker accommodation fees	¥200 million
	Food & drink related	Food & drink expenses for transportation workers	¥100 million
Roads (transport)		**Sub total**	**¥1.4 billion**
Total			**¥23.0 billion**

[Prerequisites]
①All cargo on the transportation products list will be unloaded and stored at Ofunato Port and then transported to the proposed ILC construction site.
②A distribution hub will be constructed at Ofunato Port (construction period: 2 years).
③The transportation period will be 9 years.

5． Action Plan

№	Project Name	Project Summary (specific initiatives)	Implementing body	Initiation Period: Preparation Phase 2019-2022	Initiation Period: Construction Phase 2023-2031	Initiation Period: Operation and Maturation Phase 2032-2051
Future image 1 Utilization of the best port facilities in the prefecture as a multifunctional distribution hub (enhancement of port facilities and installation of a distribution hub)						
(1) Creation of a landing site for ILC-related materials and equipment						
1	Port Development Business Contribution Project for Ofunato Port (cont.)	Contribution project for port development (breakwater maintenance and port road improvements etc.) implemented by Iwate Prefecture	City	⇒	⇒	
2	Port Facilities Improvements and Requested Development Activities Project for Ofunato Port (cont.)	Requested activities for the prefecture to promote improvements and development of the port facilities in the Nagahama & Yamaguchi District of Ofunato Port	City Private	⇒	⇒	
3	Port Sales Promotion Project (cont.)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private	⇒	⇒	
(2) Formation of distribution hub						
3	Port Sales Promotion Project (repost)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private	⇒	⇒	
4	Formation of Logistics Hub Project (new)	Research and investigation related to the possibility of operations and development of inspection, assembly and storage facilities aimed at formation of a distribution hub	Prefecture City Private	⇒	⇒	
5	Operational Management of Terminal for Shared-use Containers Project (cont.)	Maintenance of facilities related to warehouses installed as temporary storage areas for container freight	City	⇒	⇒	⇒

(2) General cargo and cryomodules from the products list: Case 2

In Case II of (2), a primary ripple effect totaling 10.5 billion yen is expected, including port-related costs of 3.1 billion yen, distribution-related costs of 6.6 billion yen (including construction costs) and road-related costs of 0.8 billion yen.

Section	Breakdown	Main Expenses	Business Impact
Port (unloading)	Cargo handling	Unloading costs, heavy equipment costs etc.	¥2.1 billion
	Accommodation related	Harbor worker accommodation fees	¥800 million
	Food & drink related	Food & drink expenses for harbor workers	¥200 million
Port (unloading)		**Sub total**	**¥3.1 billion**
Distribution (storage)	Construction related	Construction costs (excluding land rent, inspection and assembly equipment costs)	¥3.3 billion
	Accommodation (construction) related	Construction worker accommodation fees	¥300 million
	Food & drink related	Food & drink expenses for construction workers	¥100 million
	Storage related	Entry/exit, heavy equipment costs, storage costs etc.	¥1.9 billion
	Accommodation (storage) related	Storage worker accommodation fees	¥800 million
	Food & drink (storage) related	Food & drink expenses for storage workers	¥200 million
Distribution (storage)		**Sub total**	**¥6.6 billion**
Roads (transport)	Transportation related	Transportation vehicle costs, guided vehicle costs	¥500 million
	Fuel related	Fuel costs	¥50 million
	Accommodation related	Transportation worker accommodation fees	¥200 million
	Food & drink related	Food & drink expenses for transportation workers	¥50 million
Roads (transport)		**Sub total**	**¥800 million**
Total			**¥10.5 billion**

[Prerequisites]

①Products from the transportation products list that are classed as general cargo that can be transported within the standard restrictions of the highway rules and cryomodules that can be transported in 45ft containers will be unloaded and stored at Ofunato Port and then transported to the proposed ILC construction site.

②A distribution hub will be constructed at Ofunato Port (construction period: 2 years).

③The transportation period will be 9 years.

Future image 2 Initiatives to optimize transportation routes (optimization of road networks)				
(1) Optimization of the entire transportation route				
6	National Highway Improvements and Requested Development Activities Project (cont.)	Requested activities for the national government to promote improvements and development related to nationally controlled roads, bridges, tunnels etc.	2 cities 1 town Private	
7	Prefectural Highway Improvements and Requested Development Activities Project (cont.)	Requested activities for the prefectural government to promote improvements and development related to prefecturally controlled roads, bridges, tunnels etc.	2 cities 1 town Private	
8	Improvement and Development of City Roads Project (cont.)	Improvement and development of city controlled roads, bridges, tunnels etc.	City Private	
Future image 3 Effective use of the distribution hub in the future				
(1) Formation of a multidisciplinary and diversified distribution hub through port sales				
3	Port Sales Promotion Project (repost)	Visit activities for ILC-related bodies such as the Tohoku ILC Promotion Council and companies to promote the unloading of ILC materials and equipment and the construction of a distribution hub	City Private	
(2) Sustainable and effective utilization through shifting to a base with research and development functions				
9	Utilization and Promotion of Distribution Hub Project (new)	Research and examination related to utilization of incubation facilities for research and development in the distribution hub facilities	Prefecture City Private	

: Initiation period

: Initiation continued depending on circumstances