別添資料 3

OSS プロセスの現状調査及び提言

Support to One-Stop Shop Services at Industrial Park Site

Step-1: Survey Results on Current OSS Process at Hawassa and Bole Lemi-I Industrial Parks

December 2017

JICA EIPP Team

Contents

1. Report on “Current OSS Process” at Hawassa and Bole Lemi-I IPs
   - Interview Survey at Hawassa IP: 5days during June 28-July 3
   - Interview Survey at Bole Lemi –I IP: 3days during July 6 –11
   - Interim Meeting with relevant officials of EIC H/Q on July 19
2. Issues of Current OSS Process

Service Provided at Hawassa IP as of July 2017 (1/2)

Service Provider	Activities of Each Service Provider	Office
EIC	1. Issuance of work permit. 2. Issuance of certificate for import customs duty exemption. 3. Issuance of notification letter for corporate income tax holiday. 4. Issuance of notification letter for personal income tax incentives for foreign workers.	Counter (GF) Desks (2F)
Immigration	1. Receiving application of residence permit.	Counter (GF)
Customs	1. Controlling the import and export goods (import clearance, export clearance, and custom duty free service). 2. Issuance of certificates for special preferential market access opportunities.	Separate Custom Building.
City Administration	1. Issuance of TIN for tax payer workers. 2. Collection of personal income tax.	Will locate at counter (GF).
Commercial Bank of Ethiopia (CBE)	1. National Bank of Ethiopia has delegated CBE to provide import and export permit at the industrial park. 2. Providing export and import permit using Letter of Credit, Cash against Document, and advance payment. 3. Deposit, withdraw, and transfer money and pay salary for employee. 4. CBE has bank interface facility (software of online application).	Office on the GF.
Source: Interview survey by JICA EIPP Team		

Service Provided at Hawassa IP as of July 2017 (2/2)

Service Provider	Activities of Each Service Provider	Office
IPDC (CCECC as an Operator)	1. Operation and Management of the Industrial Park .	Staff work on 1F, except 1 person sits at counter (GF).
Ethiopian Electric Utility (EEU)	1. Distribution of electricity including maintenance work. 2. Collection of electricity charges.	One desk is allocated at the counter (GF), but it is vacant most of time.
Ethiopian Telecom	1. Providing telecommunication service including maintenance work. 2. Collection of charges of telecommunication.	One desk is allocated at the counter (GF), but it is vacant most of time.
Ethiopian Shipping and Logistic Service Enterprise (Customer Section)	1. Shipping service. 2. Inland transportation service (Hawassa – Djibouti). 3. Logistic and freight forwarding service. 4. Container yard (1.7 ha) is under construction in the IP.	One desk is allocated at the counter on GF. More than 15 staff work on the 2F.
Textile Industry Development Institute	1. Giving guidance of workers' training program.	Counter (GF)
Horizon Express (Customer Service Center)	Not yet providing full service such as asset tracking, automate organizations asset management, express delivery service, and access control service (security service by ID card).	Counter (GF)
Source: Interview survey by JICA EIPP Team		

Tenant Company's Comments at Hawassa IP (1/2)

Confidential

Company Name	Problems on Approval and Licensing Procedure
Company A	Issuance of VISA
Company B	Issuance of VISA (apply once a month on average) • Have to apply at Immigration authority in Addis Ababa. • Difficult to bring application to General Manager of Immigration authority in every cases of VISA process. Issuance of residence permit (apply 2 times a month on average) • It takes long time, since application received by immigration at the IP needs to be sent to the Immigration Authority in Addis Ababa for processing. Issuance of Certificate of Origin (apply 2 times a week on average) • Getting certificate of origin from Addis Ababa is lengthy process. So it should be issued by OSS at the industrial park. Custom Clearance • Custom clearance process is too slow. • Sample coming from a buyer through Addis Ababa is subject to tax by custom.
Company C	Issuance of VISA • The OSS Center at Hawassa IP is not properly helping the tenant to get business VISA.

Source: Interview survey by JICA EIPP Team

Tenant Company's Comments at Hawassa IP (2/2)

Confidential

Company Name	Problems on Industrial Park Operation and Management
Company A	Not good aftercare of IP Operation and Management • JP Textile has frequently asked IPDC to take care about electric power shutdown and Satellite TV signal interruption in the IP dormitory. But, IPDC has not taken good care. Poor Service of Telecommunication • There is frequent internet shutdown. • Internet service is not available at the hall of IP dormitory. Power Supply • Ethiopian Electric Utility (EEU) is not providing constant power supply. Electric outage occurs about 5 times a month on average during the daytime (6 am - 6 pm) . Electricity stops for about 0.5 – 1 hour for one electric outage.
Company B	n.a.
Company C	• Constant power supply shortage (supply shortage is different problem from electricity outage). • Frequent internet shutdown. • No security fence for the park compound. • IPDC should give the company training about labor law.

Source: Interview survey by JICA EIPP Team

Service Provided at Bole Lemi-I IP as of July 2017

Service Provider	Activities of Each Service Provider	Office
EIC	1. Issuance of work permit. 2. Issuance of certificate for import customs duty exemption. 3. Issuance of notification letter for corporate income tax holiday. 4. Issuance of notification letter for transferring construction materials, capital goods and accessories within the same industrial park.	GF of EIC Shed
Customs	1. Controlling the import and export goods (import clearance, export clearance, and custom duty free service). 2. Issuance of certificates for special preferential market access opportunities.	Met at the IPDC meeting room
Commercial Bank of Ethiopia (CBE)	1. National Bank of Ethiopia has delegated CBE to provide import and export permit at the industrial park. 2. Providing export and import permit using Letter of Credit, Cash against Document, and advance payment. 3. Deposit money; and withdraw, transfer and pay salary for employee. 4. CBE has bank interface facility (software of online application). 5. ATM Service.	Separate shed for Bank and others

Source: Interview survey by JICA EIPP Team

Tenant Company's Comments at Bole Lemi-I IP

Confidential

Company Name	Problems on Approval and Licensing Procedure
Company D	<u>Issuance of VISA (apply often at Immigration Authority in Addis Ababa)</u> • The buyers and visitors for the company cannot get on arrival VISA. <u>Renewal of residence permit</u> • Immigration office is asking 10 USD/day penalty for delay in renewal of residence permit, even in cases where the staff stay outside Ethiopia for business reason. <u>Payment of Excise Tax</u> • All the garment industry including the company is now asked to pay Excise Tax.
Company E	<u>Issuance of VISA (apply 2 times a week on average at Immigration Authority in Addis Ababa)</u> • It takes too long (3-10 days) to get VISA. <u>Issuance of work permit (apply 2 times a week on average to EIC)</u> • It is hard to get work permit for person coming from the country which do not have consulate in Ethiopia. <u>Duty exemption service for raw materials</u> • Custom section of ERCA is not providing full service. <u>No representative of social service in the IP</u>
Company F	<u>Issuance of residence permit (apply at Immigration Authority in Addis Ababa)</u> • The queue for resident permit is too long. <u>Issuance of Certificate of Origin</u> • It is not issued at OSS in IP, since customs section of ERCA is not providing full service. <u>Labor and social service at the IP</u> • This service is not available at the IP.

Source: Interview survey by JICA EIPP Team

Tenant Company's Comments at Bole Lemi-I IP

Confidential

Company Name	Problem on Industrial Park Operation and Management
Company D	1. Frequent water cut. 2. Sufficient fire safety is not available. 3. Frequent power shutdown. 4. Frequent internet shutdown. 5. Every month 10% turnover. Reasons for high turnover rate are: • Lack of dormitory since all employees are coming from outside Addis Ababa. • It is difficult for employees to adapt themselves to city life. • Low salary.
Company E	1. Waste disposal coming from the City is disposed around the industrial park. 2. Water leakage on the shed during rainy season. 3. Frequent water cut.
Company F	1. Internet interruption. 2. The shed has a problem of water leakage during rainy season. 3. Electric power shutdown. 4. High rate of worker turnover, e.g. 830 workers left their job last year. • The company provides breakfast, lunch and dinner in addition to salary 750 ETB per month.

Source: Interview survey by JICA EIPP Team

Issues of Current OSS Process (1/2)

On the current OSS process, the following issues were found by JICA EIPP Team during the interview surveys at Hawassa and Bole Lemi-I industrial parks.

1. Focus area of OSS Manager has not yet determined
   - OSS Center of Hawassa IP provides services with a mixture of: (i) approval and licensing services; (ii) customer services such as logistics, banking, security, and express delivery; and (iii) operation and management of IPs and utility supply.
   - Service (i) should be strengthened by EIC and competent authorities, service (ii) should be provided by inviting public or private service providers, and service (iii) should be taken cared by IPDC.
   - EIC is required to focus on realization of approval and licensing services at the IP site.
2. Inconvenient Service for Investors to get Work VISA and Residence Permit As tenant companies commented, it takes time to acquire Work VISA and Residence Permit since OSS Centers at IPs are not authorized to issue those permits.
   - EIC required to coordinate with Immigration Head Office to dispatch their authorized officials who can issue Work VISA and Residence Permit at IPs, or to delegate authority to the OSS/EIC.
3. Inconvenient Service for Investors to get Certificate of Origin

   OSS Centers at IPs are not providing service for issuing Certificate of Origin. Exporting tenants companies needs this service at IPs, since the certificate is frequently required for exporting products.
   - The authority of issuing Certificate of Origin has already been delegated to Head Office of ERCA. EIC is suggested to coordinate with Head Office of ERCA to delegate authority to their officials at IPs.

   Note: ERCA has alredy sent the officers to Hawassa IP since August 2017 for issuing the Certificate of Origin within the IP.

Issues of Current OSS Process (2/2)

4. No establishment of Branch Office of Ministry of Environment and Forest at IPs
   - Section 24(2) of Industrial Park Proclamation stipulates that the Ministry of Environment and Forest (MoEF) shall establish an office within IPs for the application, supervision, protection and enforcement of environmental norms, standards, safeguards, management and mitigation plans within the IPs. However, so far environment office has not been established in industrial parks.
   - EIC required to coordinate with MoEF to dispatch authorized officials to the IPs.

5. Insufficient information sharing within OSS Center at IPs
   - It is suggested that the following information should be shared within the OSS Center at each IP:
     - Common Use: File for each tenant company compiling submitted applications with attached documents, issued certificates, letters, and licenses including a copy of those issued by EIC headquarter such as investment permit, commercial registration, and business license.
     - Use of Individual Section: submitted applications with attached documents, issued certificates, letters, and licenses which the section has handled.
     - Obligation of confidentiality: Since information on individual company's activities has confidentiality, it is necessary to maintain the confidentiality.
   - The information sharing can reduce the documents to be submitted from applicants and promote prompt and smooth appraisal of applications.

Support to One-Stop Shop Services at Industrial Park Site

Step-2: Lessons Learnt from OSS at Thilawa SEZ

December 2017

JICA EIPP Team

Contents

Outline of Thilawa SEZ and Study Tour to the SEZ

Location of Thilawa SEZ

Located at about 20 km from Yangon, which is the largest commercial city of Myanmar

(Source: Map Data@2016 Google ZENRIN)

Development of Thilawa SEZ

- The first and only one operational SEZ in Myanmar
- Construction of all the hard infrastructures inside the Zone A (405 ha) :November 2013 - 2015.
- Developer: Myanmar Japan Thilawa Development Limited (MJTD) with the following shareholders:
  - The Myanmar government: 10% stakes through the Thilawa SEZ Management Committee (TSEZMC),
  - The Japanese government: 10% stakes through the Japan International Cooperation Agency (JICA),
  - Myanmar private consortium: 41% stakes through the Myanmar Thilawa SEZ Holdings Public Limited, and
  - Japanese private consortium: 39% stakes through MMS Thilawa Development Co., Ltd.

Tenant Companies of Thilawa SEZ

78 enterprises of various kinds of industries such as automotive, electronics, environmental business, apparel, food, beverage, construction materials, footwear, chemical, rubber products, and agriculture machine
(From Commencement of sales in May 2014 to 20 November 2016)

One Stop Service in Thilawa SEZ

The first real one stop service – Probably the first case in the world: for providing all the required administrative permits and registration services including; VISA, Company Registration, Worker Registration, Customs Clearance, Tax Payer Registration, and so on.

Study Tour to OSSC in Thilawa SEZ

- Day and Time: 17 July, 2017
- Visited place: One Stop Service Center (OSSC) in Thilawa SEZ
- Attendants from Ethiopia: 3 officials from EIC, 6 from IPDC)
- Purpose of Study Tour: Learn lessons on OSS from OSSC in Thilawa SEZ
- Lessons learnt: See the following slides
- Documents distributed:
  - Presentation material : Project for Improvement of the Capacity of Thilawa SEZ Management Committee(TSMC) in Myanmar)
  - Standard Operating Procedures for TSMC and OSSC

Organization/Management Structure of TSMC/OSSC

JICA Project Team

SEZ Planning, Investment Approval & Monitoring, Customs Clearance & Logistics, Approval and License Procedure (General, Construction, Environment) Organizational Management, Information Management System,

Support & Advice

Supervising and providing administrative supports for smooth operation of OSSC at site office.

Support & Advice

Special Economic Zone Central Body

Special Economic Zone Central Working Body

Thilawa SEZ Management Committee (TSMC)

- Chairman
- Vice Chairman/ Secretary/ Joint Secretary
- Investment Appraisal
- Investment Monitoring
- TSMC Co., Ltd.

One Stop Service Center (OSSC)

- Immigration Department
- Ministry of Labor
- Customs Office
- DICA
- Ministry of Commerce
- Ministry of Industry
- Ministry of Construction
- Internal Revenue
- Ministry of Environmental Conservation and Forestry
- Central Bank

The first real one stop service – Probably the first case in the world: for providing all the required administrative permits and registration services including; VISA, Company Registration, Worker Registration, Customs Clearance, Tax Payer Registration, and soon.

-Providing Investment Approval with consultation.
- Monitoring of operations of Approved Business.
-Registering import of Machinery, Equipment, Raw Materials and Construction Materials.
- Social Considerations including Resettlement
-Supervising infrastructure service by MJTD and line Ministries.

Investors

Source: Presentation of OSSC at Thilawa SEZ (by KRC on July, 2017)

Approval and Licensing Procedure by OSSC (1)

TSMC and Parent Body of OSSC Section	Services Provided by TSMC and each Section of OSSC
Thilawa SEZ Management Committee (TSMC)	◆Providing investment approval with consultation ◆Monitoring of operation of approved business ◆Registering import of machinery, equipment, raw materials and construction materials
One Stop Service Center (OSSC)	Providing all the required administrative permits and registration services
Immigration Department	◆Issuing stay permit and foreign registration certificate ◆Issuing re-entry VISA (multiple or single)
Ministry of Labor	◆Issuing foreign worker employment registration card ◆Issuing local worker employment registration card
Customs Office	◆Procedure for import ◆Procedure for export ◆Sub-contracting between Free Zone investor and Non-Free Zone Investor ◆Forwarding the goods between SEZs
Directorate of Investment and Companies Registration (DICA)	◆Issuing company registration certificate ◆Issuing approval for change of shareholder/increase of paid-up capital ◆Issuing approval for selling of the company's share ◆Receiving reports on the change of directors/managers and company director's address

Source: Made by JICA EIPP Team base on Standard Operating Procedures (SOP) of TSMC & OSSC

Approval and Licensing Procedure by OSSC (2)

Parent Body of OSSC Section	Services Provided by each Section of OSSC
Ministry of Commerce	◆Exporter/importer registration certificate ◆Issuing the certificate of origin
Ministry of Industry	◆Issuing electricity certificate ◆Issuing boiler certificate (if any) ◆Issuing the letter of approval of factory operation
Ministry of Construction	◆Review and examination of documents and drawings ◆Issuing building permit and fire safety certificate ◆Receipt of the document for registration of contractor ◆Receipt of project information sheet / Implementation of intermediate inspection ◆Implementation of final inspection and issuance of building completion certificate
Internal Revenue	◆Issuing of TIN for company ◆Issuing of general index registration number for individuals / Issuing of certificate for commercial tax ◆Put a stamp to the original land lease contract upon receiving stamp duty
Ministry of Environmental Conservation and Forestry	◆Issuing the letter of approval of environmental conservation and prevention plan ◆Issuing the letter of approval of IEE/EIA Report ◆Implementation of environmental inspection during construction stage ◆Implementation of environmental inspection before commencing commercial operation ◆Reviewing the environmental monitoring report for construction stage
Central Banks	◆Issuing the approval letter of offshore loans ◆Reviewing offshore loan transaction

Source: Made by JICA EIPP Team base on Standard Operating Procedures (SOP) of TSMC & OSSC

Strong Commitment by Myanmar Government

1. Delegation of authority to each OSSC section

a. President and Deputy President delegated authority to the Chairman of TSMC so that **he could take the leadership of establishing OSSC** with the fairness and transparency of approval and licensing procedure. Even the Chairman of TSMC is a high-ranked officer as Deputy Governor of the Central Bank of Myanmar, such delegation of authority was necessary.

b. **The Presidential Office of Myanmar issued official letters** twice to relevant ministries for obtaining their cooperation to TSMC for establishing OSSC in Thilawa SEZ. Consequently, the relevant ministries dispatched their officers to OSSC; and delegated the authority to the dispatched representatives.

2. Introduction of international standard and elimination of corruption

a. Operational structure of OSSC was established to meet the international standard and be suitable for Thilawa SEZ.

Source: Presentation of OSSC at Thilawa SEZ (by KRC on July, 2017)

Separation of Front Office and Back Office

- Office of OSSC was clearly separated into Front Office (FO) and Back Office (BO).
- Staff in FO has the following functions:
  - Receipt of the submitted documents,
  - Confirming the contents of submitted documents
  - Arrangement of meeting between outsiders and staff of TSMC or OSSC
- Consequently, staff dispatched from the relevant ministries can concentrate in appraisal and issuing approval and license.

Source: Presentation of OSSC at Thilawa SEZ (by KRC on July, 2017)

Front Office

Back Office

Simplified and Visualized Approval Procedures

1. Making Standard Operating Procedures (SOP)

SOP was made from the existing procedure implemented outside the SEZ by reviewing, simplification and formalization.

SOP include the following substances for each approval and license procedure.

- Guidance information of concerned procedure
- Application Procedure（Necessary documents submitted by applicant, actual procedure, application fee, time frame, and remarks)
- Workflow between applicant, front office of OSSC, and individual section of OSSC
- Application forms
- Others

2. Approval by the Cabinet for Standard Operating Procedure (SOP)

The Cabinet approved the prepared SOP to enforce implementation of it in the SEZ, avoid being widespread of ambiguous procedures for approval and license, and obtain the trust of tenant companies.

3. Visualization of SOP via Website of TSMC

The SOP was posted on the website of TSMC and renewed as needed so that tenant companies could see the detail procedure easily.

Source: Presentation of OSSC at Thilawa SEZ (by KRC on July, 2017)

☆ *Copy of SOP was distributed to OSS Coordinator at EIC headquarter as well as 3 EIC officials who visited Thilawa SEZ.*

Effective OSS under the Difference between Ethiopia and Myanmar

Difference between Ethiopia and Myanmar	JICA EIPP Team's Recommendations to EIC
Institutional Difference Within SEZ in Myanmar, it is possible to apply approval and licensing procedures which are different from those applied outside SEZ in accordance with the Law of SEZ. While in Ethiopia, the existing proclamations and regulations should be applied for approval and licensing procedure regardless of inside or outside Industrial Parks.	**Simple Procedure for Approval and Licensing** EIPP team recommends that approval and licensing procedure such as for issuing Work Visa and Residence Permit at industrial parks should be simpler than those currently taken outside industrial parks just like SEZ in Myanmar.
Difference in Number of OSSC Since Thilawa SEZ is only one operational SEZ in Myanmar, the Government of Myanmar can preferentially allocate human resource to OSSC in Thilawa SEZ. While in Ethiopia, it is necessary to establish more than 13 OSS Centers in a short period of time. Therefore, it is impossible to allocate human resource to only one OSS Center.	**Minimize the Number of Authorized Officials Working for OSS at IP sites** EIPP team recommends to minimize the authorized officials working for OSS at IP sites by means below. 1. EIC should concentrate in facilitation of Approval and Licensing Procedure; other services should be entrusted to the responsible entities for each service. 2. Initially focus on services with higher demand from tenant companies, and gradually add services that will increase in demand. Note: Early provide the services which are required before it is too late, e.g. environmental services. 3. Number of service providers should be minimized with keeping the quality of services at the satisfactory level for investors by delegation of authority to EIC or other service providers which has already been stationed at IP.

Support to One-Stop Shop Services at Industrial Park Site

Step-3: Workflow for Mapping Out the Ought to be OSS Process

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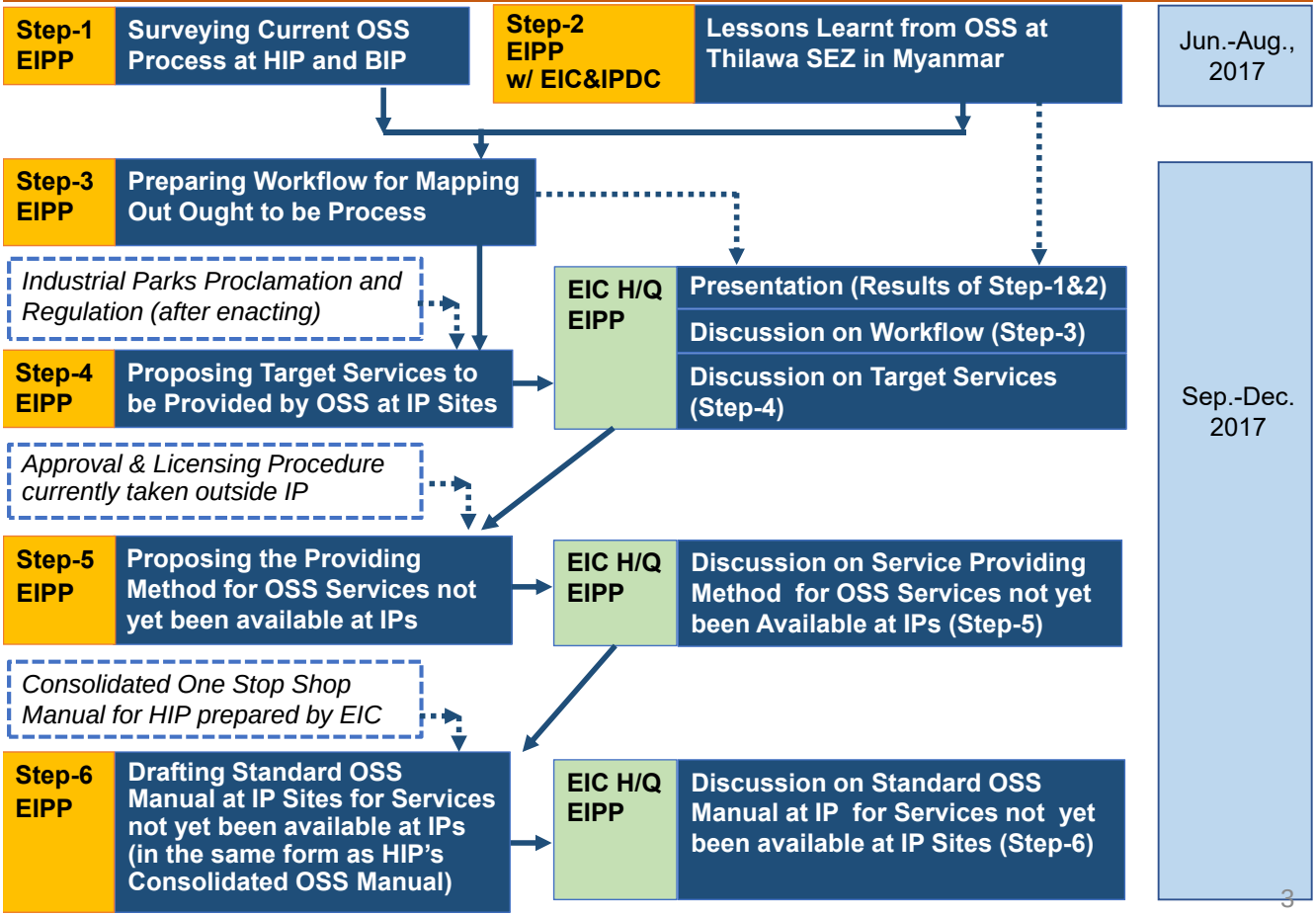
JICA EIPP Team

Contents

Proposed Workflow for Mapping Out the Ought to be OSS Process



Activities to be Performed at Each Step

Step	Activities Performed at Each Step
Step-3 Workflow for Mapping Out Ought to be Process	1. Prepare mutually agreeable workflow in terms of preparation process and schedule
Step-4 Target Services of Ought to be OSS Process at IP Sites	1. Divide OSS Services into 3 categories: a. Approval and licensing services, b. Customer services, c. Operation and management of IPs and utilities supply 2. Propose concentration on approval and licensing services
Step-5 Service Providing Method for OSS Services not yet Available at IPs	1. Investigate how to provide the following OSS services not yet available at HIP based on the procedure currently taken outside industrial parks a. Work visa b. Residence permit c. Certificate of origin d. EIA studies and certificate e. VAT and related services f. Tax services g. Registrations pertaining to employers and workers 2. Options of the method Option-1: to assign authorized officials Option-2: to delegate authority to EIC at IPs Option-3: to establish a headquarter, e.g. IP Visa and Residence Permit Center, in Addis Ababa
Step-6 Drafting Standard OSS Manual at IP Sites for Services not yet been available at IPs	1. Draft the Standard OSS Manual at IP Sites for the services not yet been available at IPs in the same form as HIP's Consolidated OSS Manual

Support to One-Stop Shop Services at Industrial Park Site

Step-4: Proposing the Target Services to be Provided by OSS at IP Sites

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JICA EIPP Team

Contents

Proposing the Target Services

1. OSS Center of Hawassa IP has a plan to provide wide-ranging services including the following categories of services.
   a. Approval and Licensing Services that should be provided by the administrative organs competent for such service; or EIC or another appropriate institution designated by such administrative organs on their behalf within an industrial park.
   b. Customer Services that may be provided by business enterprises within the industrial park for own profit.
   c. Services relating to Operation and Management of Industrial Park that should be provided by an industrial park developer or operator either directly or through the instrumentality of a third person.
2. If EIC tries to coordinate provision of all the services under the OSS Manager dispatched from EIC, it seems to make the realization of OSS more difficult, since he needs to have wide-ranging power and responsibility.
3. JICA EIPP team propose that the OSS Manager dispatched from EIC should focus on providing a part of services, coordinating and playing leadership among service providers the Approval and Licensing Services because of the following reasons:
   a. All the approval and licensing services are provided on the basis of investment permits given by EIC. If service providers for such services work together at the same place, they can use documents for issuing investment permit for basic data for approval and licensing services.
   b. If service providers for such services work together at the same place, it makes it easy to establish the common data base of Approval and Licensing Services and to communicate each other under the leadership of EIC.
   c. The OSS Manager can spend more time paying attention to important issues on OSS by narrowing the range of service provision to the Approval and Licensing Services.
   d. Steady provision of Application and Licensing Services at OSS Center within the industrial park enable the industrial park end-users to have easy access to the service provision and to concentrate in their operation.

Proposing the Target Services

4. With regard to Customer Services, each service provider should have responsibility as business. EIC's coordination work is mainly for ensuring each service provider to provide sufficient OSS service.
5. With regard to Services relating to Operation and Management of Industrial Park, IPDC or private developer / operator should have leadership and responsibility in coordinating relevant service providers. EIC's coordination work is mainly for ensuring each service provider to provide sufficient OSS service.

Classification of One-stop Shop Services (1/3)

One-Stop Shop Services Classification	I	II	III
a) renewal, amendment, change or replacement of investment permit or issuance of investment permit for expansion of investment project;	+		
b) change or amendment of commercial registration or issuance of substitute certificate of commercial registration;	+		
c) issuance and renewal of business license, or issuance of substitute business license;	+		
d) amendment or change of the name of a business organization;	+		
e) registration of trade name, giving substitute trade name, amendment of trade name certificate or its cancellation;	+		
f) registration and renewal of registration of the association of industrial park enterprises;	+		
g) registration of foreign direct capital;	+		
h-1) issuance and renewal of visa;	+		
h-2) issuance and renewal of residence permit;	+		
i) issuance of work permit, its renewal, replacement and cancellation;	+		
j) approval of exemption from customs duty and franco valuta importation of goods;	+		
k) approval of income tax holiday;	+		
l) receipt and entertainment of requests for transfer of construction materials, capital goods, spare parts and motor vehicles from an industrial park enterprise entitled to exemption from customs duty to another enterprise with the same entitlement within a single industrial park;	+		
Classification *I: approval and licensing II: customer services III: operation and management of industrial parks*			

Classification of One-stop Shop Services (2/3)

One-Stop Shop Services	I	II	III
m) authentication of documents including memorandum of association, articles of association and amendments thereto;	+		
n) issuance of tax identification number to employees in the industrial park and communication of decisions regarding income tax holiday to expatriate employees;	+		
o) registration of industrial park enterprises for value added tax, refund of value added tax, granting permits and rendering services such as in relation to implementation of voucher and other export incentives;	+		
p) provision of declaration of tax, payment of tax, tax refund, tax audit and other services pertaining to tax;	+		
q) conduct of registrations pertaining to employers and workers;	+		
r) issuance of certificate of origin and other supporting certificates necessary to benefit from special market opportunities;	+		
s) approval of environmental impact assessment studies and issuance of certificate;	+		
t) issuance of a certificate of competence, and other certificates required in the marketing of products, where necessary;		+	
u-1) provision of banking services		+	
u-2) provision of insurance services		+	
u-3) provision of shipping and logistical services		+	
u-3) provision of other services of relevance to the industrial park (if any)		+	
Classification *I: approval and licensing II: customer services III: operation and management of industrial parks*			

Classification of One-stop Shop Services (3/3)

One-Stop Shop Services	I	II	III
v) issuance of certificate of residence to industrial park residents;			+
w) collection of contributions from employers and employees to the private organizations pension fund;		+	
x) follow up and give support regarding the safety and health of workers in relation to work;		+	
y) handling complaints and resolving disputes or creating conducive condition for resolution of disputes by appropriate organs, especially using alternative dispute resolution methods.	+	+	+
Duty of Industrial Park Developer or Operator either directly or through the instrumentality of a third person			
providing utilities and removing liquid and solid waste			
1) provide water			+
2) provide electricity			+
3) provide telecom including voice, video, data and other related services			+
4) remove liquid waste			+
5) remove solid waste			+
6) provide other necessary services			+
Classification *I: approval and licensing II: customer services III: operation and management of industrial parks*			

Service Providers for Approval and Licensing Service (1/2)

Approval and Licensing Services	Provider within IP	Competent Authority
a) renewal, amendment, change or replacement of investment permit or issuance of investment permit for expansion of investment project;	EIC	
b) change or amendment of commercial registration or issuance of substitute certificate of commercial registration;	EIC	
c) issuance and renewal of business license, or issuance of substitute business license;	EIC	
d) amendment or change of the name of a business organization;	EIC	
e) registration of trade name, giving substitute trade name, amendment of trade name certificate or its cancellation;	EIC	
f) registration and renewal of registration of the association of industrial park enterprises;	EIC	
g) registration of foreign direct capital;	EIC	
h-1) issuance and renewal of visa;	Not yet been determined	Immigration
h-2) issuance and renewal of residence permit;	Not yet been determined	Immigration
i) issuance of work permit, its renewal, replacement and cancellation;	EIC	
j) approval of exemption from customs duty and franco valuta importation of goods;	EIC	
k) approval of income tax holiday;	EIC	
Note: **Immigration**: Main Department for Immigration & Nationality Affairs		

Service Providers for Approval and Licensing Service (2/2)

Approval and Licensing Services	Provider within IP	Competent Authority
l) receipt and entertainment of requests for transfer of construction materials, capital goods, spare parts and motor vehicles from an industrial park enterprise entitled to exemption from customs duty to another enterprise with the same entitlement within a single industrial park;	EIC	
m) authentication of documents including memorandum of association, articles of association and amendments thereto;	EIC	
n) issuance of tax identification number to employees in the industrial park and communication of decisions regarding income tax holiday to expatriate employees;	City Administration	
o) registration of industrial park enterprises for value added tax, refund of value added tax, granting permits and rendering services such as in relation to implementation of voucher and other export incentives;	Not yet been determined	ERCA
p) provision of declaration of tax, payment of tax, tax refund, tax audit and other services pertaining to tax;	Not yet been determined	ERCA
q) conduct of registrations pertaining to employers and workers;	Not yet been determined	MoLSA
r) issuance of certificate of origin and other supporting certificates necessary to benefit from special market opportunities;	Not yet been determined	ECCSA
s) approval of environmental impact assessment studies and issuance of certificate;	Not yet been determined	MEFCC
y) handling complaints and resolving disputes or creating conducive condition for resolution of disputes by appropriate organs, especially using alternative dispute resolution methods.	Each Service Provider	

Note: **ERCA**: Ethiopian Revenues and Customs Authority **MoLSA** : Ministry of Labor and Social Affairs
ECCSA: Ethiopian Chamber of Commerce & Sectoral Association **MEFCC**: Ministry of Environment, Forest and Climate Change

OSS Services Necessary for Proposing the Providing Method for Service

Since service providers for the following OSS services have not been determined yet, JICA EIPP team will investigate and propose the providing method of these services after due consultation with EIC and the competent authority at Step-5.

Approval and Licensing Services	Competent Authority
h-1) issuance and renewal of visa;	Immigration
h-2) issuance and renewal of residence permit;	Immigration
o) registration of industrial park enterprises for value added tax, refund of value added tax, granting permits and rendering services such as in relation to implementation of voucher and other export incentives;	ERCA
p) provision of declaration of tax, payment of tax, tax refund, tax audit and other services pertaining to tax;	ERCA
q) conduct of registrations pertaining to employers and workers;	MoLSA
r) issuance of certificate of origin and other supporting certificates necessary to benefit from special market opportunities;	ECCSA
s) approval of environmental impact assessment studies and issuance of certificate;	MEFCC

Note: **Immigration**: Main Department for Immigration & Nationality Affairs **ERCA**: Ethiopian Revenues and Customs Authority
MoLSA : Ministry of Labor and Social Affairs
ECCSA: Ethiopian Chamber of Commerce & Sectoral Association **MEFCC**: Ministry of Environment, Forest and Climate Change

Support to One-Stop Shop Services at Industrial Park Site

Step-5: Service Providing Method for OSS Services at IPs

December 2017

JICA EIPP Team

Contents

I. Activities at Step-5

1. Interview Survey
   Interviews are made, in collaboration with EIC, to the following competent organs to investigate how to provide each OSS services which are not yet available at Hawassa IP.
   a. Work visa: Immigration Office
   b. Residence permit: Immigration Office
   c. Certificate of origin: Chamber of Commerce or ERCA
   d. EIA studies and certificate, and environmental monitoring: MEFCC
      Note: Environmental monitoring is required by environmental laws, but not designated as OSS service by the draft IP regulation.
   e. VAT and related services: ERCA
   f. Tax services: ERCA
   g. Registrations pertaining to employers and workers: MoLSA

2. Investigation on Providing Method of OSS Services and Analysis
   a. Options of OSS service providing method by the competent organs
      - Option-1: Competent organ to assign authorized officials at OSS at each IP.
      - Option-2: Competent organ to delegate authority to EIC or other authorities at IPs.
      - Option-3: Establish a headquarter in Addis Ababa which issues approval, license and certificate such as visa and residence permit and sends back to front offices at each IP through internet.
   b. Identification of challenges and issues on OSS services providing

3. Recommendation on Ought to be OSS Process

II Investigation Results and Analysis
1. Work Visa and Residence Permit: Immigration Office (1/2)

Items	Investigation Results and Analysis
Current OSS Services in Addis Ababa	1. Immigration Desk in EIC The immigration desk is working as a liaison office in EIC to provide consultation service to investors before they go to the immigration headquarter; and also to make intervention when problems happen. 2. Application Form and Necessary Documents a. Application form (to be purchased by the Applicant with 40 ETB) b. Passport copy c. Investment license d. Request letter by the company e. Support letter from EIC, if any f. Photo 3. Current Services at Immigration Headquarter / Required Days a. Applicant to submit documents to reception b. Immigration officers to check the documents c. Applicant to pay fees at the cashier d. Applicant to provide bio data (finger print, photo etc.) e. Delivery of visa The work visa can be issued within 1 day. 4. Fee of Visa a. US$ 50 b. US$ 80 for 6-month multiple visa c. US$ 120 for 1-year multiple visa

II Investigation Results and Analysis
1. Work Visa and Resident Permit: Immigration Office (2/2)

Items	Investigation Results and Analysis
OSS Services at IPs (Immigration Office's Plan)	1. The Immigration Headquarter has a plan to assign authorized immigration officers in all IPs for issuance of visa and residence permit. 2. The timing of assignment has not been clearly determined yet.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. The Immigration Office has a plan to assign authorized immigration officers in all IPs for issuance of visa and residence permit. It is necessary to determine the timing of assignment for each IP. 2. Besides inducement of On-line system is considered through discussion between EIC and the Immigration Office. The appropriate method is needed to be determined at their earliest convenience. 3. The Immigration Office provides VISA at maximum 1 year at present. It is necessary to change the valid period of maximum 5 year according to the IP Regulation (Section Five 16 3/).

II Investigation Results and Analysis
2-1. Country of Origin without Preferential Tariff: Ethiopian Chamber of Commerce and Sectoral Associations (1/2)

Items	Investigation Results and Analysis
Current OSS Services in Addis Ababa	1. Competent Organs in charge of Issuing Country of Origin a. Ethiopian Chamber of Commerce and Sectoral Association (ECCSA) (with 60 staff) issues Certificate of Origin without Preferential Tariff b. ERCA issues Certificate of Origin with Preferential Tariff 2. Application Form and Necessary Documents a. Form of Certificate of Origin (to be purchased by applicant with 115 ETB) b. TIN Number Certificate c. Business License d. Commercial Invoice 3. Methods of Current Services and Required Days a. In ordinary case • Applicants visit to ECCSA in Addis Ababa to get signature of the authorized officer (only 2 persons) on the Certificate Form. • ECCSA makes investigation on the intended export products for the first coming exporters. • For the second application or later, ECCSA issues the certificate within a few minutes, since they don't make investigation. b. In case of Hawassa IP • ECCSA visits to the IP site once 4 months bringing blank forms of certificate origin on which the authorized officers have already signed.

II Investigation Results and Analysis
2-1. Country of Origin without Preferential Tariff: Ethiopian Chamber of Commerce and Sectoral Associations (2/2)

Items	Investigation Results and Analysis
OSS Services at IPs (Plan of ECCSA)	The ECCSA has a plan of on-line OSS service for IP enterprises with following characteristics. 1. Inducement of on-line communication system between ECCSA and each applicant 2. National Bank of Ethiopia, Commercial Bank of Ethiopia, ERCA and ECCSA will join a new on-line system. 3. A Korean consultant has been studying on inducement of a new on-line system.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. Although the on-line system is planned at ERCA's initiative according to ECCSA, the timing of its inducement is not sure at the present. It is necessary to induce that at their earliest convenience. 2. Even in case of inducement of on-line system, it is necessary for the authorized officer of ECCSA to put the signature on the certificate. It is necessary to determine how to put their signature on the certificate if on-line system is induced. 3. In case of inducement of on-line system, plural competent organs may join the new system, according to ECCSA. A detailed consideration is needed for a concept for headquarters of competent organs. For instance, one of the concept for the headquarter is common headquarter for providing services within IP.

II Investigation Results and Analysis
2-2. Country of Origin with Preferential Tariff: ERCA (Valuation and Tariff Directorate) (1/2)

Items	Investigation Results and Analysis
Current OSS Services	1. Competent Organs for Issuing Certificate of Origin a. Valuation and Tariff Directorate of ERCA has about 30 staff including 4 authorized officers. b. Each ERCA regional office in Mekelle, Hawassa, Bahirdar, Adama (future) has 1 or 2 authorized officers. c. The regional office in Hawassa assigned 2 authorized officers in within Hawassa IP in Aug. 2017 after training the Rules of Origin. 2. Application Form and Necessary Documents (vary depending on a preferential agreement between Ethiopia and foreign countries) a. Form for Certificate of Origin (to be purchased by Applicant with 2 ETB) b. Commercial Invoice c. Packing List d. Bill of Loading e. Export License f. Others specified by criteria of each agreement (value added, HS code, others) 3. Procedure of Current Services a. Applicant to submit documents to ERCA b. Authorized officers to check the documents c. Authorized officers issue the certificate of origin 4. Required Days a. First export: about 2 weeks b. After Second export: within a few minutes

II Investigation Results and Analysis
2-2. Country of Origin with Preferential Tariff: ERCA (Valuation and Tariff Directorate) (2/2)

Items	Investigation Results and Analysis
OSS Services at IPs (Plan of ERCA)	1. ERCA has a plan to dispatch authorized officers to all IPs for issuance of certificate of origin from either the headquarter or the regional offices of ERCA after training. 2. ERCA has sufficient numbers of authorized officers for dispatching to IPs for the time being.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. There are 2 options: inducement of the on-line system (according to ECCSA) and assignment of authorized officers in each IP. It is necessary to decide which option is more appropriate from viewpoints of their strategy, financial aspect and realization. 2. In case of inducement of on-line system, plural competent organs may join the new system, according to ECCSA. A detailed consideration is needed for a concept for headquarters of competent organs. For instance, one of the concept for the headquarter is common headquarter for providing services within IP.

II Investigation Results and Analysis
3. EIA Studies and Certificate, and Monitoring for Environmental Aspects: MEFCC (1/2)

Items	Investigation Results and Analysis
Current OSS Services	I EIA approval 1. Competent Organs in charge of EIA evaluation and certificate a. Environmental and Social Impact Assessment Directorate of MEFCC. b. Although an officer was assigned to HIP in last year, he left MEFCC due to personal reasons. So far there is no resident officer of MEFCC in HIP, since MEFCC has problems in budget and manpower. c. EIA was approved for the Cycle-1, Phase-1 of HIP (100 ha). d. The MEFCC made comments on the EIA report for the Cycle-2, Phase-1 of HIP (200 ha). 2. Application Form and Necessary Documents for EIA evaluation a. EIA report to be prepared by IPDC b. EIA report to be prepared by each enterprise (So far no IP enterprise in HIP has submitted.) 3. Procedure of Current Services (EIA approval) at HIP a. IPDC to submit TOR of EIA document to MEFCC b. MEFCC to give the comments to TOR of EIA document c. A consultant procured by IPDC to prepare EIA document d. IPDC to submit EIA document to MEFCC e. MEFCC to evaluate and give the comments on EIA document f. IPDC to finalize and submit the revised EIA document g. MEFCC to approve EIA document II Monitoring for Environmental Aspect 1. The environmental audits were made 2 times for HIP. 2. Although environmental monitoring is required for the common effluent treatment plant and solid waste management, so on, the full monitoring has not been commenced because MEFCC could not assign the officers at IP site.

II Investigation Results and Analysis
3. EIA Studies and Certificate, and Monitoring for Environmental Aspects: MEFCC (2/2)

Items	Investigation Results and Analysis
OSS Services at IPs (Plan of MEFCC)	1. MEFCC has a plan to assign officers to each IP for environmental audit and environmental monitoring. 2. MEFCC needs capacity building for EIA studies and pollution prevention with a support from International donors.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. There are the following 2 issues for assignment of officers to each IP. a. To settle financial issues b. To conduct training of officers 2. It is necessary to assign the officers to each IP at their earliest convenience, after the settlement of above issues.

II Investigation Results and Analysis
4. VAT and Related Service, and Tax Services: ERCA (Technology Center) (1/2)

Items	Investigation Results and Analysis
Current OSS Services	1. Competent Organs in charge of Tax related Services a. ERCA regional office at Hawassa is responsible for domestic tax and customs issues. Domestic tax issue includes local tax such as VAT and Excise Tax. Customs issue includes taxes imposed on Import and Export. b. Within Hawassa IP, for the time being ERCA is providing customs service only. Hawassa regional office of ERCA is dealing with tax related services for IP enterprises in Hawassa IP so far. 2. Application Form and Necessary Documents for payment VAT a. Receipt b. TIN number c. Trade license (issued by Ministry of Trade) 3. Procedure of VAT Payment at HIP a. TIN number is issued by ERCA. b. The company gets trade license from Ministry of Trade. c. The company notifies the type of business to be engaged to ERCA. d. ERCA registers the company for VAT. e. The company opens VAT account. f. The company needs to prepare invoice. g. The company deducts 15 % on sales turnover to pay VAT to ERCA. h. The company pays VAT on a monthly basis. 4. Required Days Within 1 day (payment for previous month portion)

II Investigation Results and Analysis
4. VAT and Related Service, and Tax Services: ERCA (Technology Center) (2/2)

Items	Investigation Results and Analysis
OSS Services at IPs (Plan of ERCA)	1. ERCA has a plan to assign authorized officers to all IPs for tax related services. 2. Inducement of On-line Payment System • Large Taxpayers Office (LTO) in Addis Ababa has already started the on-line system service on a trial basis. After one-month, ERCA will fully start online payment. • The on-line payment system will be launched soon at Hawassa IP as well. • Even if on-line payment system is induced, the authorized officer will be needed to be assigned in each IP for consultation to applicants.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. For inducement of on-line payment system, ERCA needs to provide guidance of the online payment system on their Web-site. 2. It is necessary to assign authorized officers to all IPs for tax related services at their earliest convenience.

II Investigation Results and Analysis
5. Registration of Employers and Workers : Ministry of Labor and Social Affairs (MoLSA), Harmonious Industrial Relation Directorate

Items	Investigation Results and Analysis
Current OSS Services	1. The responsibilities of MOLSA are: • To register nationally recognized labor unions • To follow up relationship of worker and employer • To collect data on the statics of employee (e.g. employment, turnover) • To oversee enterprises who have more than one regional office • To take care of enterprises stationed 2. MOLSA has not yet started providing OSS service at IPs. The major reason for this are: • There is no structure to assign a person at IP. • There is no professional person to undertake activities at the market.

II Investigation Results and Analysis
5. Registration of Employers and Workers :
Ministry of Labor and Social Affairs (MoLSA), Harmonious Industrial Relation Directorate

Items	Investigation Results and Analysis
OSS Services at IPs (Plan of MOLSA)	1. MOLSA received a letter from EIC in July 2017 that requests MoLSA to either dispatch officers to IPs or delegate their authority to other governmental organs. 2. The director personally recommended the Minister that MoLSA delegate the authority of advisory services in IPs to EIC since MoLSA will not be able to manage the service at many IPs.
Identification of Challenges and Issues	Since the following challenges and issues are identified, the measures are necessary. 1. Although the delegation of authority is planned by MoLSA, the timing for implementation is not sure at the present. It is necessary to delegate the authority at their earliest convenience.

III. Recommendation on Ought to be OSS Process (1/4)

III-1. For EIC

Lessons Learnt from Thilawa SEZ	Recommendation on Ought to be OSS Process
Strong Commitment by the Government	① It is recommended that Government delegate authority of OSS to EIC so that it could take the leadership of establishing OSS at IPs. ② It is recommended that the Government encourage the relevant ministries and agencies to send officers or delegate authority to other service providers.
Separation of Front Office and Back Office	① Separation of Front Office (FO) (Note-1) and Back Office (BO) (Note-2) is recommended so that OSS officers can concentrate in appraisal and issuing approval and license.
Simplified and Visualized Approval Procedure	① It is recommended that Standard Operating Procedure (SOP) of all service providers be made and approved (Note-3). ② It is recommended that the SOP be posted on the website of EIC and renewed as needed so that investors or potential investors could know the application procedure, necessary documents submitted, latest application forms, time frame, etc.
Note	1. Duties of FO: receipt of the documents submitted by applicants; confirming the contents of documents; arrangement of meeting between outsiders and staff of OSS Center. 2. Duties of BO: appraisal and issuing approval and license.

III. Recommendation on Ought to be OSS Process (2/4)

III-2. For Service Providers other than EIC (1/3)

OSS Service	Competent Organ	Recommendation on Ought to be OSS Process
【1】 Work visa, Residence Permit	Immigration Office	① The Immigration Office to **assign authorized officials** at OSS Center at each IP. (Because the OSS services for Work Visa and Residence Permit is concerned with the national security, it is difficult to delegate the authority to other organs.) We recommend Option-1 (see Sheet p.19). ② It is recommended to **provide a compartment isolated** from others to the immigration officers in the OSS for the national security reason. ③ Inducement of On-line system shall be studied through discussion between EIC and related competent organs. (a) **On-line system for only OSS services of EIC** (under process of implementation assisted by WB) (b) **Integrated on-line system for OSS services of EIC and others** (See Option-3 in sheet p.19) in the future ④ The Immigration Office shall **provide multi-entry VISA at maximum 5 years** according to the IP Regulation (Section Five 16 3/).

III. Recommendation on Ought to be OSS Process (3/4)

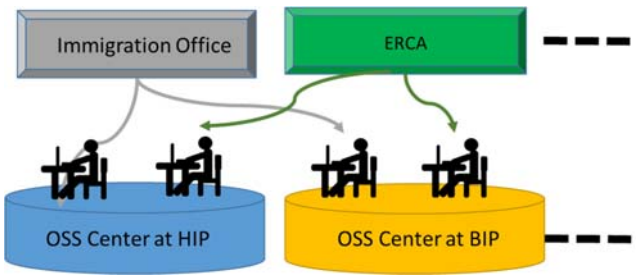
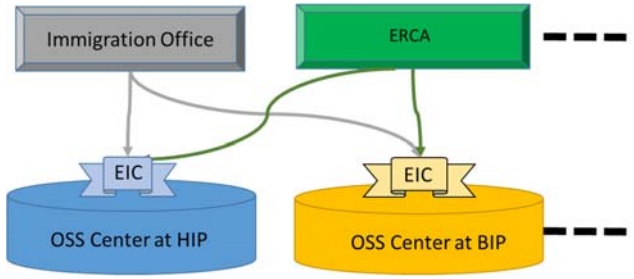
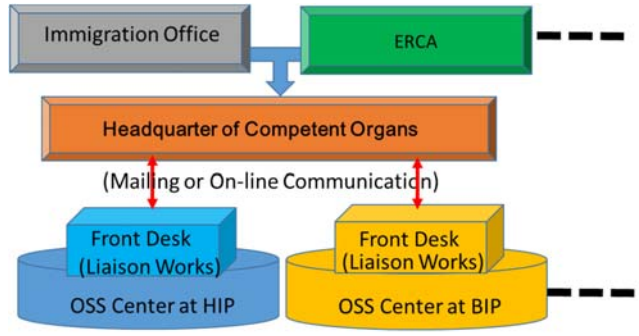
III-2. For Service Providers other than EIC (2/3)

OSS Service	Competent Organ	Recommendation on Ought to be OSS Process
【2-1】 Certificate of origin without preferential tariff	Ethiopian Chamber of Commerce	① The **on-line system planned by ERCA's initiative** shall be induced at their earliest convenience. ② It is recommended to determine how to put signature of the authorized officers on the certificate if on-line system will be induced.
【2-2】 Certificate of origin with preferential tariff	ERCA Valuation and Tariff Directorate	① ERCA (Valuation and Tariff Directorate) to **assign the authorized officers at each IP** (taking ERCA's plan into consideration, the Option-1 is supposed to be appropriate and realistic.) We recommend Option-1. (see Sheet p.19). ② In case of **inducement of integrated on-line system**, plural competent organs may join the system in the future. Inducement of integrated on-line system shall be studied through discussion between EIC and related competent organs (See Option-3 in sheet p.19) in the future .

III. Recommendation on Ought to be OSS Process (4/4)

III-2. For Service Providers other than EIC (3/3)

OSS Service	Competent Organ	Recommendation on Ought to be OSS Process
【3】 EIA studies and certificate, and monitoring for environmental aspect (IP regulation did not mention.)	MEFCC (Environmental & Social Impact Assessment Directorate)	① MEFCC to **assign the authorized officers at each IP**. (Because the OSS services for environmental aspects needs specialty of environmental fields, it is difficult to delegate the authority to other organs.) We recommend Option-1 (see Sheet p.19). ② MEFCC shall carry out the **settlement of the financial issues and training of officers.**
【4】 VAT and related services, and Tax services	ERCA (Revenue Issue)	① ERCA to **assign the authorized officers** for revenue issue at each IP. (Taking ERCA's plan into consideration, the Option-1 is supposed to be appropriate and realistic.) ② In case of inducement of on-line payment system, ERCA shall **provide guidance of the online payment system on their Web-site.**
【5】 Registrations pertaining to employers and workers	MoLSA (Harmonious Industrial Relation Directorate)	① MoLSA to **delegate the authority to EIC at each IP**. (Because it is difficult for MoLSA to assign the authorized officers to each IP due to lack of budget and manpower) We recommend Option-2 (See sheet p.19). Note: EIC has already started preparation of this service with delegation of authority from MoLSA.

Option-1: Competent organ to assign authorized officers at OSS at each IP	
Option-2: Competent organ to delegate authority to EIC at IPs	
Option-3: Establish Integrated On-line System for OSS connecting between HQ and each IP	

別添資料 4

投資許認可手続きに関する説明資料（ボレレミ工業団地）

FINAL

EIPP ETHIOPIA INDUSTRIAL PROMOTION PROJECT
Investment Promotion and Industrial Park Development

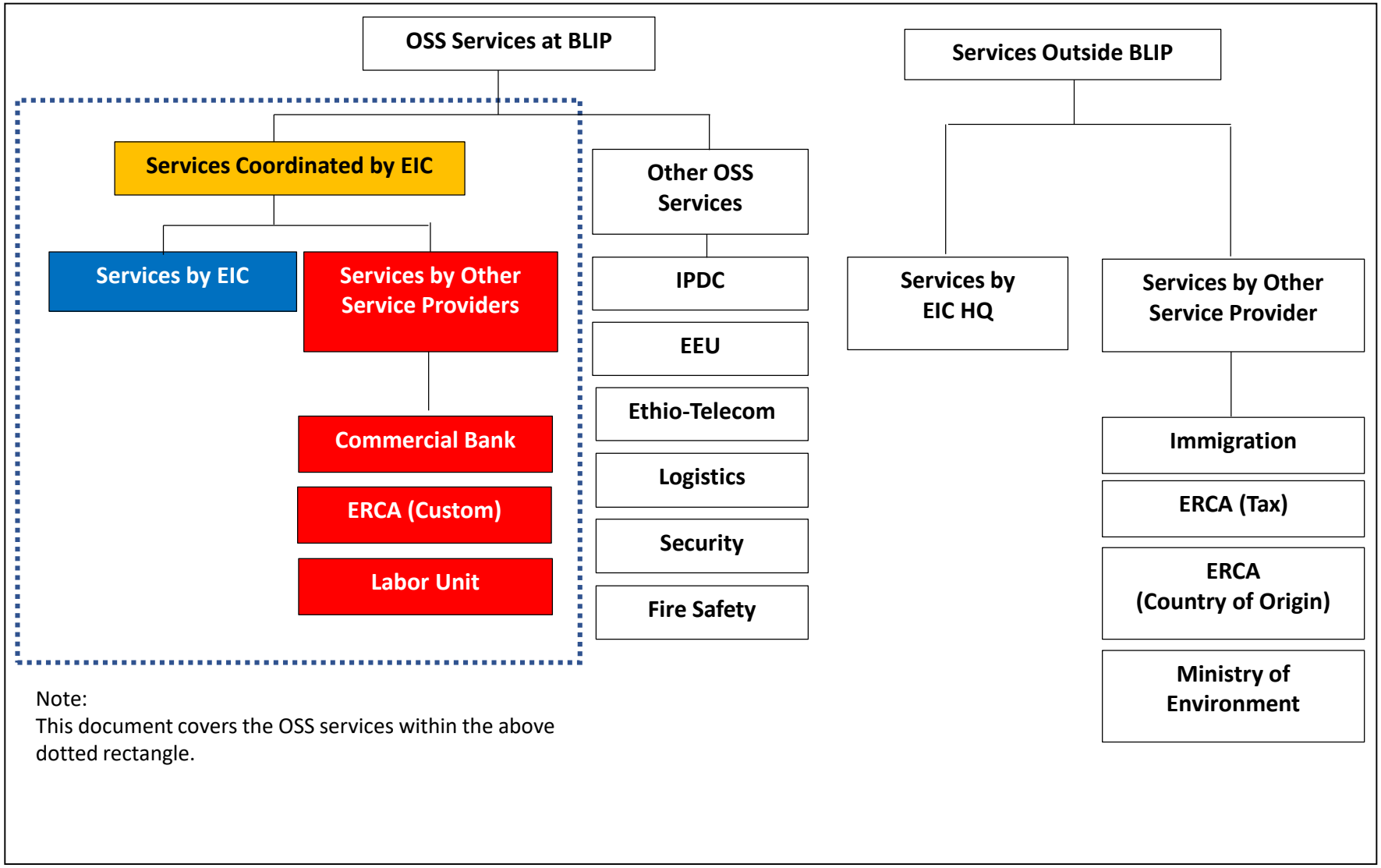
OSS Services at BLIP

December 2018

Japan International Cooperation Agency

Ethiopia Industrial Promotion Project (EIPP)

Services being Provided to Investors in BLIP



Note:
This document covers the OSS services within the above dotted rectangle.

OSS Services being Provided in BLIP at Operational Phase Application Process at EIC Branch (1/5)

1. Registration of Foreign Capital

- Step 1: The investor submits application to EIC branch together with the custom declaration.
- Step 2: EIC branch sends a letter to National Bank with a copy of the business license, TIN number and investment license of the investor.
- Step 3: National Bank registers foreign capital of the investor.

Part I: Registration Effected Before Taking Out Business License: required documents

- Application for registration of foreign capital brought into the country duly signed by investor, general manager or legally authorized agent
- In case the application is submitted by an agent, verified copy of his power of attorney
- Copy of the renewed investment permit (if in project phase)
- Copy of the renewed business license (if in operational phase)
- If applicant is a business organization, copies of memorandum and articles of association;
- For capital brought into country in cash, the proof from bank of such a transaction and receipt. For capital brought into country in kind (Franco Valuta), a copy of customs declaration, purchase invoice and duty-free letter.
- Authenticated proof showing the source of capital registered

Part II: Registration of Additional Foreign Capital : required documents

•Application for registration of foreign capital brought into country duly signed by the investor, general manager or legally authorized agent

•In case the application is submitted by an agent, verified copy of his power of attorney

•Copy of the renewed investment permit (if in project phase)

•Copy of the renewed business license (if in operational phase)

•Initial capital recognition letter issued by NBE or EIC

•If the applicant is a business organization, copies of memorandum, articles of association and a copy of the resolution (minutes) authorizing import of additional capital

•For capital brought into the country in cash, the proof from bank of such transaction and receipt

•For capital brought into the country in kind (Franco Valuta), a copy of the customs declaration and purchase invoice

•Authenticated proof showing the source of the capital registered

OSS Services being Provided in BLIP at Operational Phase Application Process at EIC Branch (2/5)

2. Providing Income Tax Holiday

- Step 1: The investor submits a letter to EIC branch.
- Step 2: EIC branch makes verification of the investor's letter.
- Step 3: EIC branch sends a tax exemption letter to ERCA branch attaching a copy of the business license of the investor.
- Step 4: ERCA branch makes final decision.

Permission to income tax holiday

Required Documents	EIC Process Map at the BLIP	
1. Application for tax exemption duly signed by the investor, general manager or legally authorized agent 2. In case the application is submitted by an agent, a verified copy of power of attorney 3. Copy of the renewed investment permit or the renewed business license 4. Copy of the TIN certificate	Receiving the complete set of documents	
	Verifying the completeness of the documents; ensuring that the tax-free incentive requested for the investment sector corresponds with the schedule provided under Reg. No. 270/2012; assessing the tax-free incentives period accordingly;	
	Writing a tax exemption letter to ERCA Branch Office	
	Approving the content of letter, signature	
	Stamping the letter; delivering the same to the investor	
	Entering service related data into the system	

OSS Services being Provided in BLIP at Operational Phase Application Process at EIC Branch (3/5)

3. Providing Custom Duty Exemption

- Step 1: The investor submit application to EIC branch.
- Step 2: EIC branch makes verification of the application.
- Step 3: EIC branch sends a letter to ERCA branch.
- Step 4: ERCA branch makes final decision.
- Step 5: ERCA branch controls capital goods incoming to BLIP.

Permission to Import Customs Duty Free Capital Goods and their Accessories : required documents

- Application to import customs duty-free manufacturing equipment, goods and accessories duly signed by the investor, general manager or his/her legally authorized agent
- In case the application is submitted by an agent, a verified copy of power of attorney
- Duly completed customs duty free incentive request form
- Copy of the renewed investment permit or business license
- If the application is submitted after acquiring a business license, a copy of proof affirming the actual investment of at least $200,000 (or its Birr equivalent) and creating permanent employment to at least 50 Ethiopians
- Copy of the TIN certificate
- Copy of the commercial invoice
- Copy of the packing list
- Copy of the Bill of Lading -Air Way Bill/Truck Way Bill
- Copy of the Letter of Credit; if the goods are imported through Franco-Valuta:
  - Proof affirming foreign investor status
  - In case the investor is an Ethiopian whose permanent residence is overseas and is treated as a foreign investor, a support letter issued by Ethiopia's Embassy abroad confirming such status which must also be authenticated by the Ministry of Foreign Affairs

OSS Services being Provided in BLIP at Operational Phase Application Process at EIC Branch (4/5)

4. Issuance of Work Permit for Expatriate / Renewal of WP / Cancelation

- Step 1: The investor submits application to EIC branch together with attachments of educational background, work experience, valid passport, and work visa.
- Step 2: EIC branch evaluates the application and attached document.
- Step 3: If the application is accepted by EIC branch, the investor pays fee of 2,000 ETB per person at the bank.

Issuance of work permit : Required documents

- Application in four (4) copies for issuance of work permit to expatriate employee duly signed by the employer investor or his/her legally authorized agent
- In case the application is submitted by an agent, verified copy of power of attorney
- Copies of biographic pages of the passport of the expatriate employee valid for at least one year
- Copy of a valid business visa or work visa of the expatriate employee
- Four 3 X 4 size photographs of the expatriate employee taken within the last six months
- Completed form depicting expatriate employee's biography
- Authenticated copies of expatriate employee's work and educational documents
- If the expatriate employee has previously taken out a work permit, proof that the document has been returned

Renewal of work permit : required documents

- Application in two (2) copies for the renewal of the work permit of the expatriate employee duly signed by the employer investor, general manager or legally authorized agent
- In case the application is submitted by an agent, a verified copy of power of attorney
- Renewed investment permit of the employer and the original work permit of the employee
- Copy of the employee's valid residence permit
- Follow-up report of status by employer to substitute the expatriate employee
- In case the request is for the extension of a work permit:
  - Evidence proving that an Ethiopian cannot carry out the duties of the expatriate employee
  - Proof that the expatriate employee is indispensable for the job and follow-up report
- Four 3 X 4 size photographs of the expatriate employee taken within the last six months

OSS Services being Provided in BLIP at Operational Phase Application Process at EIC Branch (5/5)

5. Transfer of Capital Goods within BLIP

- Step 1: The company shall pay duty for the capital goods at hand in advance to transferring the capital goods.
- Step2:Both transferor and transferee come to EIC branch taking agreement on the capital goods transfer and the request letter.
- Step 3: EIC branch makes verification of the investor's letter and agreement.
- Step 4: EIC branch sends a letter for transferring capital goods to ERCA branch.
- Step 5: ERCA branch provides declaration and issues the transfer certificate.

Source : IP OSS facilitation directorate

Transfer of capital goods within BLIP: Required Documents

- D
- Application for transfer of item(s) duly signed by the investor or his/her legally authorized agent
- In case the application is submitted by an agent, a verified copy of the power of attorney
- Copy of the renewed investment permit or the renewed business license Copy of the TIN
- Copy of the EIC letter permitting customs duty free import privilege of such item(s)
- Contract for the transfer, sale or gift of imported item(s)
- If transferee/buyer possesses no similar privilege, a copy of a receipt evidencing payment of customs duty laid on the item(s)
- Copy of the letter issued by the pertinent body approving customs duty free importation of the item/s
- Copy of the commercial invoice
- Copy of the declaration, and in case the item relates to a vehicle, the title deed
- Letter from ERCA confirming that the imported item that is now the subject of transfer/sale bears no outstanding tax owed to ERCA
- notary authorized to register pledges/mortgages confirming that the item is not the subject to any 'injunction not to alienate'
- Furthermore, if the transferee/buyer has similar customs duty-free import privileges, the following are required
  - Renewed investment permit or renewed business license of transferee/buyer , TIN
  - Letter from the pertinent investment agency confirming transferee or buyer's entitlement to such privilege
  - If the item relates to a vehicle, a letter from ERCA confirming that no such vehicle was imported previously (if restrictions apply)

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (1/7)

1. Issuance of Bank Permit for Export of Goods

a) Case of Cash Against Documents (CAD)

- Step 1: The investor submits application form for bank permit for export of goods to bank branch along with commercial invoice, company undertaking letter and sales contract.
- Step 2: Bank branch issues bank permit for export of goods.

b) Advance Payment for Trade Settlement

- Step 1: The Investor submits advance payment application form together with the following document to Bank branch.
  - Bank Credit Advice
  - Commercial Invoice
  - Sales Contract
  - Bank Permit Application

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (2/7)

- Step 2: Bank branch Issues advance payment permit to the importer.
- Step 3: The investor sends the document to the importer abroad directly.
- Step 4: The importer pays Advance Payment to the investor.

c) Letter of Credit (L/C) for Trade Settlement

- Step 1: The investor submits application for L/C to Bank branch with bill of exchange, freight invoice, commercial invoice, manufacturer invoice, packing list, transport document, and certificate of origin.
- Step 2: Bank branch issues the Letter of Credit (L/C) to the exporter.

d) Consignment Service

- This service is offered only for export service of perishable goods.

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (3/7)

2. Issuance of Bank Permit for Import of Goods

a) Advance Payment

The investor pays the amount in advance

- Step 1: Investor submit advance payment application form along with the following documents.
  - Letter of authorization and undertaking from the company (the investor)
  - Proforma invoice from the supplier
  - Investment permit
  - Insurance
  - Renewed trade license
  - TIN number
  - Foreign exchange application for import
- Step 2: Bank branch transfers the money to the supplier (abroad).
- Step 3: Bank branch gives advance payment bank permit to the investor.
- Step 4: The Investor pays Advance Payment.

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (4/7)

b) Cash against Document (CAD)

- Step 1: The investor submit the requests for purchase order along with the following documents.
  - Filling purchase order request application form letter
  - Purchase order of the company
  - Proforma Invoice
  - Insurance,
  - TIN number
  - Trade License
- Step 2: Bank branch generates purchase order number.
- Step 3: Bank branch notifies the collection advice and gives to the investor (Importer) .
- Step 4: The Investor (Importer) returns the collection advice with making stamp on it and along with the filled foreign exchange application form.
- Step 5: Bank branch transfers the advance payment and releases the CAD document to the investor.

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (5/7)

c) Letter of Credit (L/C) for Trade Settlement

- Step 1: The Investor should fill the Letter of Credit application form and submit along with the following documents to Bank branch.
  - L/C application form
  - Proforma Invoice
  - Insurance
  - TIN number
  - Trade License
  - Investment License
  - Foreign exchange application form for import
- Step 2: After making sure that importer has sufficient foreign exchange balance, Bank branch fixes the amount of L/C.
- Step 3: Bank Branch creates L/C arrangement and issues L/C in the name of the seller.
- Step 4: After making payment, the document is released to the investor.

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (6/7)

3. Bank Guarantee

- Step 1: The Investor fills application form of bank guarantee and submit to Bank branch.
- Step 2: The bank reserves an indicated amount of money as guarantee fee.
- Step 3: In case of failure to meet the sales contract condition, the bank sends the written promise (guarantee form) to the seller bank (abroad).

4. Less Price Packaging Services

- For investors at Industrial park only

5. National Banks Delegation Services

- Approval of the mode of payment for Cut Make and Trim (CMT)
- Re- export of defective items without guarantee
- Export on CAD/CMT document sending directly to the buyer
- Sample Export

OSS Services being Provided in BLIP at Operational Phase Application Process at Bank Branch (7/7)

6. **Other Services**
   - Financial service: Deposit, withdraw, and transfer money, and pay salary for employees
   - Non financial service: ATM service and Internet Banking

Source: Interview to Manager of Bank branch on December 7 and 13, 2018

OSS Services being Provided in BLIP at Operational Phase Application Process at ERCA Branch (1/4)

1. Import Procedure

- Step 1: ERCA branch receives and checks import documents including application form together with bill of loading and packaging from the importer.
- Step 2: To get transit permit, ERCA branch sends a letter to ERCA entrance ports branch.
- Step 3: ERCA entrance ports branch allows the container to come.
- Step 4: The goods are transited from ERCA entrance ports branch to BLIP.
- Step 5: The incoming containers are inspected by the inspection group of ERCA branch to evaluate the following risk levels.
  - Green: Finish the inspection / Yellow: Sent to the assessment team / Red: Send to examiner
- Step 6: The inspection group finalizes and attests the import permit.

OSS Services being Provided in BLIP at Operational Phase Application Process at ERCA Branch (2/4)

2. Export Procedure

- Step 1: The exporter needs to have bank permit to start the procedure at customs.
- Step 2: The exporter apply to a custom clearing agent.
- Step 3: The custom clearing agent prepares the export document (E-document).
- Step 4: The custom clearing agent sends the E-document to ERCA branch.
- Step 5: ERCA branch makes verification and issue transit document (T-document).
- Step 6: The goods are transported from BLIP to ERCA exit ports branch.
- Step 7: The transit document is sent to ERCA exit ports branch for final checking of export goods.

OSS Services being Provided in BLIP at Operational Phase Application Process at ERCA Branch (3/4)

3. Custom Duty Free and Pay Duty Services

- Step 1: The investor submits an application letter and the following attachments to ERCA branch.
  - Commercial invoice
  - Bill of loading
  - Certificate of origin
  - Bank permit
  - Investment permit
- Step 2: ERCA branch office makes verification of application and issue certificate for import custom duty free.

OSS Services being Provided in BLIP at Operational Phase Application Process at ERCA Branch (4/4)

4. Reconciliation of Voucher

- Step 1: ERCA branch receives the following import documents.
  - Bill of loading
  - Commercial Invoice
  - Bank Permit
  - Import document
- Step 2: ERCA evaluates the documents against the Ethiopian standard.
- Step 3: If the Investor passes the Input/output coefficient criteria, ERCA renews the voucher license.
- Step 4: If the Investor fails to meet criteria, ERCA imposes tax on raw material.

Source: Interview to team leader of ERCA branch on December 7, 2018

OSS Services being Provided in BLIP at Operational Phase Application Process at Labor Branch

1. **Handling Complaints and Resolving Disputes in accordance with Labor Law**
   a. Inspect the workers' activities at the work place by using checklist and also make follow-up for the proper implementation based on the labor law.
   b. Receive complaints from workers and make researches for those complaints.
   c. Advise solutions for labor related problems to workers and management of tenants.
   d. Send the problem to Bureau of Labor and Social Affairs under Addis Ababa City Government, if handling of the relevant problem is beyond the capacity of the Labor branch.
2. **Safety and Health Training**
   - The training is provided based on the request from companies
   - The training includes both class lecture and practice
   - The training is provided by 5-7 trainer experts at head office

Source: Interview to Senior Labor Officer of BLIP branch of Addis Ababa City Government Bureau of Labor and Social Affair on, December 7, 2018

別添資料 **5**

EIC 本部および工業団地デベロッパーにおける投資申請手続き（日本語）

EIC本部および工業団地デベロッパー における 投資申請手続き

2018年10月

ETHIOPIAN INVESTMENT COMMISSION

የኢትዮጵያ ኢንቨስትመንት ኮሚሽን

EIC本部および工業団地デベロッパーにおける投資申請手続き
はじめに

本資料は、EICがIPDC等工業団地デベロッパーと協力して実施している投資申請手続きの基本的な様式を示すものである。

仮定
- 貸工場ケース/ 土地サブリースケース
- 新規投資
- 特定のセクターは仮定せず

手続きおよび提出書類は状況により異なる
- 投資（新規、拡張、移転）
- セクター (環境)
- 工業団地(場所、インフラ等）

手続きを開始する前に、EICの投資促進部(Investment Promotion Directorate)および 工業団地ファシリテーションチーム（IP Facilitation Team ）と相談し、遠回りすることによる時間と労力の 浪費を防ぐ。

EICおよび工業団地デベロッパーによる3つの仕事
1.プロジェクト評価・覚書
2.投資許可・会社登記
3.工場レンタル契約・土地サブリース契約の締結

3つの仕事の担当機関
1.EIC / IPDC等工業団地デベロッパー
2.EIC
3.IPDC等工業団地デベロッパー

EIC はIPDC等工業団地デベロッパーとの協力関係強化を図っている

EIC本部および工業団地デベロッパーにおける申請手続き
貸工場ケース手続きフロー（ 1/4）

工業団地デベロッパー	投資家	EIC 本部

- EIC投資促進部(Investment Promotion Directorate)および工業団地ファシリテーションチーム(IP Facilitation Team)に相談する
- 工業団地内の貸工場が使用できることを、EICおよびまたはIPDC等工業団地デベロッパーに確認する

↓

- EIC経営陣(Management)による評価・承認を受けるため、事業計画をEIC工業団地ファシリテーションチームに提出する
- その他書類をEIC工業団地ファシリテーションチームに提出する（注1）

↓

- 投資家、EIC、IPDC等の工業団地デベロッパー三者間の覚書(MOU)に署名する（注2）

↓

- 手付金をIPDC等工業団地デベロッパーの口座に振り替える（但し貸工場の大きさによる）（注3）

EIC本部および工業団地デベロッパーにおける申請手続き
貸工場ケース手続きフロー（ 2/4）

工業団地デベロッパー	投資家	EIC 本部

- 必要書類をEIC投資許可・会社登記部 (Licensing and Registration Directorate) へ提出する（注4）

→

公開有限責任会社(PLC)のための追加手順
- *社名が重複しないことの確認*
- *基本定款及び付属定款に署名*

↓

- 口座開設に必要なレターを、EIC投資許可・会社登記部で受け取る（注5）
- 納税者識別番号（TIN) の登録に必要なレターを、EIC投資許可・会社登記部で受け取る（注6）

↓

- 国内銀行口座を開設し、最低必要資本金を振り替える （注5 および 7)

↓

- 銀行振替通知書を取得し、EIC投資許可・会社登記部へ提出する

EIC本部および工業団地デベロッパーにおける申請手続き
貸工場ケース手続きフロー（ 3/4）

工業団地デベロッパー	投資家	EIC 本部

PLCおよび支社を設立する場合の追加手続き

- TIN証明書をEIC内にあるエチオピア歳入・関税庁(ERCA)デスクで取得し、EIC投資許可・会社登記部に提出する（注6）

- 投資家が要求事項を遅滞なく行えば、投資許可証は所定の申請書類を受理してから公定労働日7日以内にEICにより発給される
- 投資家は投資許可証および会社登記証をEIC投資許可・会社登記部で受け取る

EIC本部および工業団地デベロッパーにおける申請手続き
貸工場ケース手続きフロー（ 4/4）

工業団地デベロッパー	投資家	EIC 本部

- IPDC等の工業団地デベロッパーと工場レンタル契約を締結する

- IPDC等工業団地デベロッパーから貸工場が引き渡される

事業実施フェーズの開始

EIC本部および工業団地デベロッパーにおける申請手続き 貸工場ケース注釈（1/4）

1. EIC工業団地ファシリテーションチーム(IP Facilitation Team)への提出書類
   a. 詳細な事業計画書
   b. 輸出または輸入代替計画
   c. 財務の状況および10年間予想に関する申告
   d. 環境影響：投資家が投資許可証発行を受けるためには、事業計画書の中で事業が及ぼす環境影響を簡潔に記載することが、セクターによっては、求められる。さらに、事業実施段階には、環境・森林・気候変動省(Ministry of Environment, Forest and Climate Change)に環境影響評価（EIA)報告書を、セクターによっては、提出しなければならない。
2. 投資事業によっては、投資申請手続きのための投資家・EIC間の覚書(MOU)に代え、投資家、EIC、IPDC等工業団地デベロッパーの三者で覚書を締結することが、最近決定された。貸工場ケース覚書のひな形はEIC工業団地ファシリテーションチームで入手できる。

EIC本部および工業団地デベロッパーにおける申請手続き 貸工場ケース注釈（2/4）

3. 貸工場ケースの場合、覚書には原則、投資家はレンタル料の一部を手付金(Advance Payment)としてIPDC等工業団地デベロッパーの口座に振り替えなくてはならないこと、その代わりにEICおよびまたはIPDC等工業団地デベロッパーは、投資家が必要とする貸工場をその工業団地の投資家すべてに適用される貸工場レンタル契約に沿ったレンタル料で、提供することを約束することが、記載される。

   手付金の金額は貸工場の大きさによって変わる。もし、5,500m^2以下であれば、投資家は10万米ドルをIPDC等工業団地デベロッパーに振り替える必要がある。手付金は当初数か月間のレンタル料で相殺される。また、手付金は最低必要資本金20万米ドルの一部となる。
4. EIC投資許可・会社登記部(Licensing and Registration Directorate)への提出書類
   a. 新規投資許可、会社名確認などの記入済申請書。申請書用紙は投資許可・会社登記部で入手できる。
   b. 個人事業主の場合：有効なパスポート、投資ビザ、および、事業計画

EIC本部および工業団地デベロッパーにおける申請手続き 貸工場ケース注釈（3/4）

c. 公開有限責任会社(PLC)を設立する場合： 基本定款と付属定款、有効なパスポートと投資ビザ、投資家の経歴、事業提案書、申請書

d. 支社を設立する場合：親会社の認証済み文書、事業計画、新しい会社のゼネラルマネージャーのパスポートとビザ

e. 手付金をIPDC等工業団地デベロッパーの口座に振り替えたことを証明する銀行振替通知

f. 最低必要資本金の残額を投資家の国内銀行口座に振り替えたことを証明する銀行振替通知（国内銀行口座を設立した後に提出）

g. 投資法に規定される投資許可証発行のためのその他書類

5. 投資家が口座を開設するため、EICは国内銀行あてレターを作成する。投資家は、その口座開設のためのレターをEIC投資許可・会社登記部から受け取る。

6. EICはエチオピア歳入・関税庁(ERCA)に納税者識別番号（TIN)証明書を発行してもらうためのレターを作成する。投資家は、EIC投資許可・会社登記部からそのレターを受け取り、EIC内にあるERCAデスクに提出してTIN証明書をもらう。

EIC本部および工業団地デベロッパーにおける申請手続き 貸工場ケース注釈（4/4）

7. 投資家は、最低必要資本金の20万米ドルから手付金を差し引いた残額を自社の現地口座に振り替える必要がある。たとえば、投資家がすでにIPDC等工業団地デベロッパーの口座に10万米ドルを振り替えている場合には、最低必要資本金の20万米ドルからこの手付金10万米ドルを差し引いた残り10万米ドルを自社の現地口座に振り替える必要がある。

EIC本部および工業団地デベロッパーにおける申請手続き
土地サブリースケース手続きフロー（ 1/4）

工業団地デベロッパー	投資家	EIC 本部

- EIC投資促進部(Investment Promotion Directorate)および工業団地ファシリテーションチーム(IP Facilitation Team)に相談する
- 工業団地内の開発済土地が使用できることを、EICおよびまたはIPDC等工業団地デベロッパーに確認する

↓

- EIC経営陣(Management)による評価・承認を受けるため、事業計画をEIC工業団地ファシリテーションチームに提出する
- その他書類をEIC工業団地ファシリテーションチームに提出する（注1）

↓

- 投資家、EIC、IPDC等の工業団地デベロッパー三者間の覚書(MOU)に署名する（注2）

EIC本部および工業団地デベロッパーにおける申請手続き
土地サブリースケース手続きフロー（ 2/4）

工業団地デベロッパー	投資家	EIC 本部

- 必要書類をEIC投資許可・会社登記部 (Licensing and Registration Directorate) へ提出する（注3）

→ 公開有限責任会社(PLC)のための追加手順
- *社名が重複しないことの確認*
- *基本定款及び付属定款に署名*

↓

- 口座開設に必要なレターを、EIC投資許可・会社登記部で受け取る（注4）
- 納税者識別番号（TIN) の登録に必要なレターを、EIC投資許可・会社登記部で受け取る（注5）

↓

- 国内銀行口座を開設し、最低必要資本金20万米ドルを振り替える （注6)

↓

- 銀行振替通知書を取得し、EIC投資許可・会社登記部へ提出する

EIC本部および工業団地デベロッパーにおける申請手続き 土地サブリースケース手続きフロー（ 3/4）

工業団地デベロッパー	投資家	EIC 本部

PLCおよび支社を設立する場合の追加手続き

- TIN証明書をEIC内にあるエチオピア歳入・関税庁(ERCA)デスクで取得し、EIC投資許可・会社登記部に提出する（注5）

- 投資家が要求事項を遅滞なく行えば、投資許可証は所定の申請書類を受理してから公定労働日7日以内にEICにより発給される
- 投資家は投資許可証および会社登記証をEIC投資許可・会社登記部で受け取る

EIC本部および工業団地デベロッパーにおける申請手続き 土地サブリースケース手続きフロー（ 4/4）

工業団地デベロッパー	投資家	EIC 本部

- IPDC等工業団地デベロッパーと土地サブリース契約を締結する

- 土地サブリース契約で規定された支払い額をIPDC等工業団地デベロッパーの口座に振り替える

- 工業団地デベロッパーから開発済土地が引き渡される

- 工場の建築許可のためIPDCに申請書および必要書類を提出する

- IPDCが建築許可証を発行する

→ 事業実施フェーズの開始

EIC本部および工業団地デベロッパーにおける申請手続き 土地サブリースケース注釈（1/3）

1. EIC工業団地ファシリテーションチーム(IP Facilitation Team)への提出書類
   a. 詳細な事業計画書
   b. 輸出または輸入代替計画
   c. 財務の状況および10年間予想に関する申告
   d. 環境影響：投資家が投資許可証発行を受けるためには、事業計画書の中で事業が及ぼす環境影響を簡潔に記載することが、セクターによっては、求められる。さらに、事業実施段階には、環境・森林・気候変動省(Ministry of Environment, Forest and Climate Change)に環境影響評価（EIA)報告書を、セクターによっては、提出しなければならない。
2. 投資事業によっては、投資申請手続きのための投資家・EIC間の覚書(MOU)に代え、投資家、EIC、IPDC等工業団地デベロッパーの三者で覚書を締結することが、最近決定された。

EIC本部および工業団地デベロッパーにおける申請手続き 土地サブリースケース注釈（2/3）

投資家が工場を建設することを覚書で約束することを条件に、EICおよびまたはIPDC等工業団地デベロッパーは、当該工業団地内に指定の大きさの開発済土地を迅速に提供するよう努める。覚書の有効期限は覚書に記載されるが、通常は署名後6か月である。土地サブリースケース覚書のひな形は、EIC工業団地ファシリテーションチームで入手できる。

3. EIC投資許可・会社登記部(Licensing and Registration Directorate)への提出書類
   a. 新規投資許可、会社名確認などの記入済申請書。申請書用紙は投資許可・会社登記部で入手できる。
   b. 個人事業主の場合：有効なパスポート、投資ビザ、および、事業計画
   c. 公開有限責任会社(PLC)を設立する場合： 基本定款と付属定款、有効なパスポートと投資ビザ、投資家の経歴、事業提案書、申請書

EIC本部および工業団地デベロッパーにおける申請手続き
土地サブリースケース注釈（3/3）

d. 支社を設立する場合：親会社の認証済み文書、事業計画、新しい会社のゼネラルマネージャーのパスポートとビザ

e. 最低必要資本金を投資家の現地口座に振り替えたことを証明する銀行振替通知

f. 投資法に規定される投資許可証発行のためのその他書類

4. 投資家が口座を開設するため、EICは国内銀行あてレターを作成する。投資家は、その口座開設のためのレターをEIC投資許可・会社登記部から受け取る。

5. EICはエチオピア歳入・関税庁(ERCA)に納税者識別番号（TIN)証明書を発行してもらうためのレターを作成する。投資家は、EIC投資許可・会社登記部からそのレターを受け取り、EIC内にあるERCAデスクに提出してTIN証明書をもらう。

6. 投資家は、最低必要資本金の20万米ドルを自社の現地口座に振り替える必要がある。

ご清聴ありがとうございました!

別添資料 6

Standard Operation Manual（SOP）

EIPP

IPDC
Industrial Parks Development Corporation
የኢንዱስትሪ ፓርኮች ልማት ኮርፖሬሽን

STANDARD OPERATION PROCEDURE

FOR THE INDUSTRIAL PARK

SEPTEMBER 2018

STANDARD OPERATION PROCEDURE

FOR THE INDUSTRIAL PARK

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Industrial Parks Development Corporation
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EIPP

ETHIOPIA INDUSTRIAL PROMOTION PROJECT
Investment Promotion and Industrial Park Development

CONTENT

APPENDIX

List of Figures

List of Tables

For Industrial Park Enterprises in rental factory plot shall follow this Standard Operation Procedure whenever it becomes applicable.

PART ONE

Introduction

Definition

1 Industrial Park

"Industrial Park (IP)" means the area developed by the Corporation and/or other developer under the Proclamation No.886/2015 and used exclusively for production activities.

2 Government

"Government" means the Government of Ethiopia and any of its governmental authorities.

3 Commission

"Commission" means the Ethiopian Investment Commission (EIC), established under the Ethiopian Investment Commission Establishment Council of Ministers Regulation No. 313/2014.

4 Corporation

"Corporation" means Industrial Park Development Corporation (IPDC), established under Council of Ministers Regulation No.326/2014.

5 Industrial Park Developer

"Industrial Park (IP) Developer" means any profit-making public, public-private or private developer including the Corporation engaged in designing, constructing or developing Industrial Park.

6 Industrial Park Operator

"Industrial Park (IP) Operator" means any profit-making enterprise includes the Corporation that operates, maintains or promotes Industrial Park.

7 Industrial Park Enterprise

"Industrial Park (IP) Enterprise" means a public, private or public-private enterprise owned by Ethiopians, foreigners or jointly and possess developed land through sub-lease or by renting or building a factory within the IP to engage in manufacturing activity or in-service provision for profit-making.

8 Lease Agreement

"Lease Agreement" means the "Lease Agreement of IP" executed by and between the Corporation and the Industrial Park Enterprise, for the lease of the Plot and/or Rented Shed from the Corporation to the Enterprise.

9 Standard Operation Procedure

"Standard Operation Procedure (SOP)" means this procedure which is embodied here with and which may be replaced and amended from time to time by the Corporation. This SOP shall be applied to the Enterprise under Lease Agreement, which shall be incorporated by reference in, and made an internal part of such contract, as though repeated in full therein.

10 Plot

"Plot" means the part of the Industrial Park utilized or leased by the IP Enterprise pursuant to a Lease Agreement between the Corporation and the IP Enterprise.

11 Rented Shed

"Rented Shed" means the standard shed, which are built by the Corporation within the IP with the intention of renting.

12 Infrastructure

"Infrastructure" means the civil works constructed or prepared by the Corporation such as roads, lighting, water supply system, sewerage system, drainage system, electricity system, telecommunication system, and wastewater treatment plants of IP area.

13 Facilities

"Facilities" means services that are provided by the Corporation within the Industrial Park: such as, but not limited to, police station, firefighting station, clinic, bank, rental office, exhibition hall and commercial areas (including food court and shopping mall).

14 Common Area

"Common Area" means areas within the Industrial Park can be used by any relevant person without specific charge: such as buffer green, road, pedestrian path, park and sport fields.

15 Investment Permit

"Investment Permit" means a permit issued by the Commission for IP Developer, IP Operator or IP Enterprise to carry out IP development related activities as an investor.

16 Building Permit

"Building Permit" means a document verifying the permission given to the Industrial Developer and the Industrial Park Enterprise to construct IP and/or factories upon fulfilment of necessary requirements of the plan. The permit shall be approved by the Corporation to whom the Commission delegates authority.

17 Occupancy Permit

"Occupancy Permit" means the permit for commencement of usage shall be acquired by the Enterprise upon completion of construction. The permit shall be approved by the Corporation.

18 Sewerage

"Sewerage" means system by which sewage water of domestic use is carried away by the IP Enterprise.

19 Common Effluent

"Common Effluent" means water which results from the industrial production process by the IP Enterprise.

20 Sewerage Treatment Plant

"Sewerage Treatment Plant (STP)" means treatment plant at the IP that is used to treat sewerage produced by Industrial Park Enterprises.

21 Common Effluent Treatment Plant

"Common Effluent Treatment Plant (CETP)" means treatment plant at the IP that is used to treat common effluent produced by IP Enterprises. Such processed water shall fulfil the common effluent quality standards determined by Ministry of Environment, Forest and Climate Change and mentioned in this SOP.

22 Protective Controls

"Protective Controls" means the restrictions set and elsewhere in this SOP.

23 Environmental and Social Impact Assessment

"Environmental and Social Impact Assessment (ESIA)" means any study and assessment of the positive and negative impacts on the natural and social circumstances to be anticipated at the IP construction and the operation activities.

24 Environmental and Social Management Plan

"Environmental and Social Management Plan (ESMP)" means the document that contains the methods of handling the important impacts on the environment and society to be anticipated at the IP construction and operation activities.

25 Environmental and Social Monitoring Plan

"Environmental and Social Monitoring Plan (ESMoP)" means the document prepared by the project owner or developer that contains the method of monitoring environmental and social components affected by the important impacts of the planned project development and operation activities.

26 Improvements

"Improvements" means any kinds of changes and/or modifications to the existing structures, such as buildings, paved areas, fences, walls, poles, built, erected, installed or otherwise located and any landscaping or planting in the IP.

27 Setback

"Setback" means the distance between a building or other structure and a street or road, a river or other stream, flood plain, or any other place which is deemed to need protection.

28 Buffer

"Buffer" means the area set inside the Plot along the IP Enterprise boundary line to mitigate the anticipated negative impacts, such as noise and vibration caused by the factory operation.

29 Building Height

"Building Height" means the total height of building in each facility.

30 Floor Area Ratio

"Floor Area Ratio (FAR)" means the ratio of a building's total floor area to the size of the piece of land upon which it is built.

31 Building Area Ratio

"Building Area Ratio (BAR)" means the ratio of a building ground floor area to the size of the piece of land upon which it is built.

32 Conditions

"Conditions" means conditions which can be made by the Commission to regulate the rights and obligations of the Commission, the Corporation and Industrial Park Enterprise, not inconsistent with the existing proclamations and regulations of Ethiopia.

33 Working Day

"Working Day" means all days designated by the Ethiopian National calendar.

Objective of this SOP

1 To ensure legitimate and proper activities and security for the properties and benefits of the Industrial Park Enterprises or IP Enterprise in the IP under fair and equal Conditions;

2 To ensure safety conditions, hygiene and effective use of facilities and amenities for the IP Enterprises in the IP;

3 To protect the environment and scenery in the IP and its neighbouring areas;

4 To ensure security and order in the IP against any action as will or might depreciate the value of the IP or the properties of the IP Enterprises;

5 To ensure the friendship and harmonious relationship with local society and contribute toward the development of the surrounding area;

6 To be aware of the services provided by the Corporation in supporting the expeditious construction and operation of its facilities at the IP;

7 To be aware of the rights and obligations relating to the construction and operation of its facilities at the IP; and,

8 To construct and operate the facilities at the IP in compliance with the Ethiopian proclamations and regulations, and instruction issued by the Corporation.

Compliance with Ethiopian Laws and Regulations

If any provision hereof is determined by competent authorities or the Corporation to be invalid or unenforceable under Ethiopian proclamations, regulations, standards and any Ethiopian laws in general, then such provision shall be ineffective to the extent of such invalidity or unenforceability, without affecting any other provisions of this SOP, which shall remain in full force and effect.

PART TWO

BUILDING CONTROLS

Permitted Operations and Uses

IP Enterprise must ensure that factory is predominantly used for industrial purposes and ancillary area must be used as ancillary to predominant uses. It must follow the IP Regulation. Predominant uses cover at least 60% area and ancillary uses must occupy not exceed 50% of the factory's total gross floor area.

Building Ratio and Maximum Height

Article 3.3.1 of the "Ethiopian Building Code and Standards-General: Building Spatial Design (BSD)" provides that the maximum Floor Area Ratio (FAR) and Building Coverage Ratio (BCR) in international use, or Building Area Ratio (BAR) in Ethiopia, are specified in city planning regulations of each city. Municipalities where IPs are established have own urban master plan that fixes BAR, FAR and maximum building height.

IP Enterprise who has intention to construct factory(ies)g in the IP shall request the Corporation land sub-leasehold after it receives the permit of investment. The Corporation in response to this request, arranges necessary area of land to the IP Enterprise and provides it BAR, FAR and Maximum Height according to the relevant city master plan.

Prohibitions

Any performance and operation which may be contrary to the purpose of this SOP which is carried out within the Plot or any part of the IP shall be strictly prohibited at the sole discretion of the Corporation. Any commercial activities by the IP Enterprise other than those approved by the Investment Permit or otherwise approval in addition to said Permit shall be also prohibited. No portion of the IP or any Improvements thereon shall be used in such a way as to violate the proclamations, rules and regulation issued by the responsible authorities for environment, public health, safety and so forth.

PART THREE

Development Procedures for the Industrial Park Enterprises

Development Procedure[1]

1 The IP Enterprises shall conclude an agreement regarding the implementation of factory and related construction with the Corporation or an operator designated by the Corporation, excluded the case of renting factory shed.

2 The Corporation is responsible for granting building permit, other permits related to construction, and examine and approve bill of quantities (BOQ) following the conclusion of abovementioned agreement.

3 The IP Enterprise shall obtain the occupancy permit after completion of construction works.

Design Approval by the Corporation[2]

Submission of the Design

The IP Enterprise shall submit the application for building permit using the format that is available at the Corporation headquarter office or online from Corporation's website

1 Full name and address of the IP Enterprise;

2 Permitted service for the building;

3 Location of construction;

4 Table showing the total area of the floors;

5 Architectural, structural, sanitary, electrical designs and soil test and structural analysis report;

6 Fire safety plans and descriptions thereof;

7 Amount of water and wastewater demand;

8 Electro-mechanical designs and analysis for buildings using lifts and artificial

9 Number of floors of neighboring buildings below and above ground level and their distance from the boundary lines;

10 ESIA certificate,

11 Two sets of design drawings; and,

12 Full name, address, signature and a copy of registration certificate of professionals who prepared plan of the building.

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1 Source: Article 11, Regulation No 417/2017 Industrial Parks Council of Ministers Regulation, Ethiopian Building Proclamation No624/2009, Council of Ministers Building Regulation No243/2011

2 The Commission delegates responsibility of issuance of construction (building) permit to the Corporation (Source: Article 11. 1/ Council of Ministers Regulation, No417/2017)

Review and Approval by the Corporation[3]

1 The Corporation, through contracted consultant, evaluates dossiers and carries out any necessary site inspections within 10 days of the receipt issuance. Should submitted documentation be reported not meet the set requirements, the Corporation in turn will give the applicant IP Enterprise a notice period to complete or rectify the documentation. After two attempts at rectification which have not resulted in a compliant dossier, the Corporation has the right to reject the application.

2 The Corporation shall issue notice of accept or rejection within the following time limits to the applicant. In case of accept, IP Enterprise or applicant shall receive the Building Permit together with the design document stamped by the Corporation, or written reply of rejection explaining the reasons for the rejection.

1. New Building Permit or modification works: 30 working days;
2. Extension or re-issuance: 20 working days.

3 The applicant can resubmit the building permit request or a new application after addressing the reasons for rejection

4 A copy of the signed and sealed application form and approved plans shall be permanently displayed at the building site. All original approved application forms and plan shall be kept in good condition and presented at any time, before and during construction, upon the request of the urban administration or designated organ or the Corporation or an authorized inspector.

Occupancy Permit[4]

1 Upon building construction completion, the IP Enterprise, or authorized agent, shall contact the Corporation to request a final inspection of all construction completed and all electrical, plumbing or other systems or equipment installed. Application format includes:

1. Full name and address of the IP Enterprise;
2. Location of the building;
3. Building permit number;
4. Date of starting and completion of construction, and
5. Reason of occupancy
6. Cost

2 The Corporation shall respond within ten (10) working days after receipt of the application.

3 The IP Enterprise may be charged fines if he/she begins rendering services without occupancy permit or suspends the services until such Occupancy Permit is obtained. The application form for occupancy permit shall indicate:

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3 Art. 11. 1/ of the IP Regulation provides that it is the Commission to issue the construction (building) permit and the Commission shall seek professional assistance from the Corporation of another institution. Conforming this article, the Corporation reviews and approves the application of construction.

4 Source: Council of Ministers Building Regulation No243/20116) 6

Modification of Original Design

1 In the event that the IP Enterprise modifies the original plan of the factory, office building and facilities, at any time of preparation of construction, construction and operation, it shall submit an Application for Design Modification to the Property Service Department of the Corporation stationed at each IP and receive modification approval. The application composes:

1. Full name and address of the IP Enterprise;
2. Name of the IP and location of the Plot in the IP;
3. Building permit number and date of issue;
4. Current situation of the Plot
5. Contents of modification: type of modification and details
6. Reason of modification
7. Drawings: location and design of modification
8. Implementation schedule

2 Any work of alteration of service, expansion, renovation, maintenance or demolition of a building shall be carried out by competent registered contractor.

PART FOUR

Industrial Park Internal Design Guidelines

Requirements of the IP Internal Design

The Corporation applies the 'Customs Trade Partnership Against Terrorism' (C-TPAT) of the United States for the IP design. Following this, the IP Enterprise shall design and construct/prepare five points for its internal design:

- Fence: fencing of the Plot with a 6-feet fence topped with barbed wire
- Factory Shed: ventilation, emergency doors, diagonal bracing, canopy
- Parking: parking area (inside the Plot) separated from the factory area by fence
- Doors: fire protection (fire safe) doors

Entrance Points and Boundary Fence

Entrance Points

1 The main entrance to the plot shall be of adequate width to allow easy access to the fire engine and in no case, shall it measure less than 6 m in width. If the main entrance at the boundary wall is built over, the minimum clearance shall be 4.5 m. If an arch or covered gate is constructed, it shall have a clear head-room of not less than 5m.[5]

2 Entrance and exit points are vehicle traffic accesses the Plot to the road. The numbers of points are controlled for traffic safety. The minimum distance for entrance/exit points from the road junction shall be at least 16 m.

3 To ensure a safe and efficient flow of traffic, construction of entrance(s) to the Plot along the highlighted area is prohibited. In addition to these prohibited areas, the IP Enterprise is prohibited from constructing entrance(s) within 12 m from the property line

5 Source: EBCS-13 3.3.2

Boundary Fence

1 No concealing fences such as those constructed from bamboo, wooden or concrete block shall be erected at the front of any property line facing the road.

2 Before IP Enterprise starts construction of fences, IP Enterprise submits the fence design including property line to the Corporation. After issuance of the approval from the Corporation, IP Enterprise shall be able to start construction of the fences

3 IP Enterprise shall maintain the fence in good condition at all occasions.

4 Fences between the IP Enterprise's Plot and IP Common Area

1. The IP Enterprise shall erect the fences along internal road and between the IP Enterprise's plot and Common Area. The fences shall be erected within the IP Enterprise's Plot and adjacent to the established boundary line of the IP Enterprise's plot. During construction of the fences, the Corporation shall assign supervisors to ensure that fences are erected in accordance with this SOP.

2. The maximum height of fences along the road, if any, shall be 3m from ground level.

3. Boundary fences shall be open-type fences made of painted wrought iron bars or galvanized chain-link fencing material framed with galvanized pipes, and other similar types of fences. These boundary fences shall be kept upright by galvanized pipes anchored to the ground with appropriate concrete or solid masonry footing not higher than 1.2 m from ground level.

5 Fences between individual Plots

1. The center line of fences between plots shall be coincidentally constructed by the first IP Enterprise entering the plot on the established property line between Plots. Subsequent IP Enterprises entering neighboring Plots shall bear fifty (50) % of construction cost of joint fences. Non-concealing fences are recommended.

2. Fences between Plots shall not be less than 2 m and more than 3 m high and shall be of materials acceptable to the Corporation plaster finish or painted where appropriate, and based on aesthetic standards. Barbed wire shall not be used.

Setback and Buffer

Buffer

Buffer zone is the zone inside the Plot along the plot boundary. They include tree planting strip. No buildings or other developments can enhance into the buffer zone except for only certain types of light ancillary structures such as bin centers, guard houses, electric transformer, sign boards, lamp posts, letter boxes, etc. Buffer zone ensures to mitigate negative impacts, such as noise and vibration, that the planed factory may generates. Minimum width of buffer shall be not less than 6 m.

Setbacks from Neighbouring Plots

Minimum setback 6.0 m requirements for buildings on lots abutting neighboring Plots. This is to provide for natural light and ventilation considerations as well as fire safety.[6]

Landscaping and Plantation in the Plot

1 To create a softer and pleasant environment, greenery such as tree planting and landscaping is required in the Plot. Particular attention should be given to the Plot fronting major roads.

2 All new buildings and additions over 1,500 m2 shall be landscaped. Such landscaping shall be completed within three (3) months from the date of occupancy of the building[7]

3 Individual development must be provided with landscaped areas. These must be maintained by the individual IP Enterprise. A minimum planting strip of 1 m shall be provided along the front of all factory plots for tree planting and landscaping.

4 Other specifications

1. A 2 m planting strip should be set aside for plants that front onto a major road.
2. A maximum 2 m planting strip for plots that front onto the minor road.
3. A minimum 1 m wide planting strip shall be provided for the sides and rear of the factory plots

5 In the landscaping area, IP Enterprise shall not install or build any structure or building on the ground except for the structures or buildings.

6 The entire area between the boundary fence and the factory building of any improvements shall be landscaped with an effective combination of trees, ground cover and shrubbery. Green open spaces are areas planted with vegetation and shall constitute 10% - 15% of the area of the Plot[8].

7 No fruits tree shall be used for landscaping and planting in the Plot to protect from bird damage. Growing vegetables inside the Plot is not allowed.

6 Source: Ethiopian Building Code Standards (EBCS) -13 3.3.2 (c)
7 Source: BSD3.3.4.2
8 Source: BSD3.3.4.1

8 The greenery zone within the buffer shall be turfed and/or planted with ornamental plants / shrubs and trees. These shall be regularly maintained and not to cause any nuisances to the neighbors.

9 The Industrial Park Enterprise shall be responsible for landscaping the Plot and maintain it in a well-kept condition including, but not limited to, trimming, watering and fertilization.

10 All part of the plant and tree including, but not limited to, branches, boughs and leaves shall be kept by the IP Enterprise. No ivy and similar kind of creeping plant shall be planted/erected for landscaping in the area close to the property lines in the Plot.

11 If, in the sole opinion of the Corporation, proper care and maintenance of any landscaping area is not being exercised, the Corporation may, upon having first given ten (10) calendar days, notice in writing to the IP Enterprise, take such steps to correct such improper maintenance, at the expense of the IP Enterprise, as in its sole discretion it may deem reasonable and necessary.

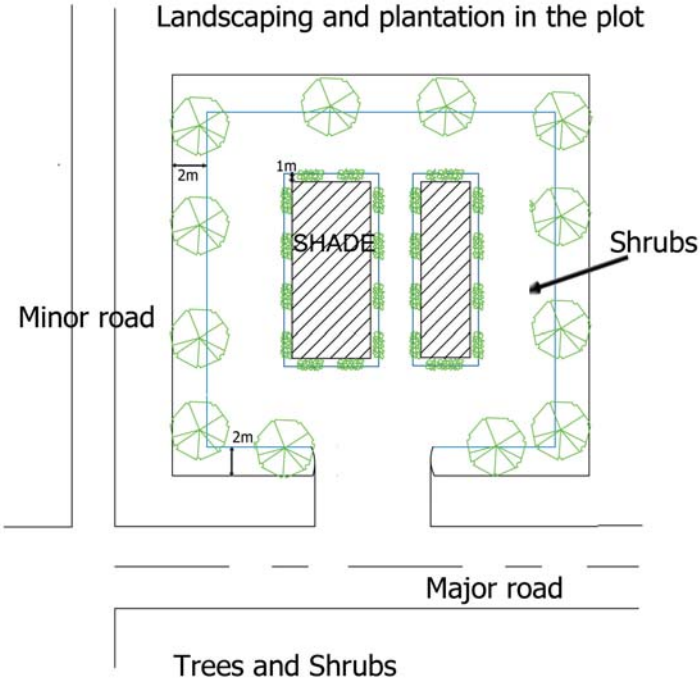


Figure 1 Landscaping and Plantation in the Plot

Infrastructures

Water Supply

1 The Corporation will construct the pipe from the feeder pipes to the Plot with a sluice (or stop) valve and water meter. The IP Enterprise shall construct the water tanks and the meter chamber and continue the internal piping. Only one point of connection per IP Enterprise shall be allowed. No direct pumping from the Corporation water main shall be permitted.

2 For the IPs where no water supply service, the Corporation will construct pump wells and provide groundwater to each Plot inside the IP.

3 For the periodic or emergency maintenance of water supply facilities, the Corporation has a right to shut down the water supply. The IP Enterprise shall provide water storage tanks and the capacity of the water storage tank shall be more than twenty-four (24) hours of IP Enterprise's water consumption.

4 The water meter chamber shall be located not more than 1 m from the boundary line along internal access road.

5 Water supplied within the IP shall be for the exclusive and sole use of the IP Enterprises within the IP and shall not be taken out of the Plot.

6 Water reservoirs and supply systems of any building shall be accessible for inspection and cleaning.[9]

7 If IP Enterprises intends to change the required amount of water supply due to renewal, remodeling, or abolishment of its facilities, IP Enterprises shall inform the Corporation in advance. Through the negotiation with IP Enterprises, the Corporation may change such required amount to an appropriate one.

Electricity Supply

1 The electric power shall be supplied by the Ethiopian Electric Utility (EEU). Source of Electricity: 400/230V-50Hz for low voltage, 15 kV and 33kV for medium voltage system. Electricity meters for standard are installed for each factory plot.

2 The average power factor must be ≥ 0.9. Depending on the load and the electrical machines, customer must install the suitable capacity bank system to meet this requirement and to avoid the penalty.

3 The Corporation installed medium-voltage (MV) cable, MV/LV distribution substation, low voltage (LV) system inside factory shed: thus, no need to consider about connection fee. However, the IP Enterprise must conduct the maintenance, operation, and upgrade for low voltage system.

4 The IP Enterprise shall obtain approval from the EEU regarding the maximum power consumption.

5 The IP Enterprise shall have sufficient electricity system, a standardized security and fixed controlling devices to avoid the likelihood of danger and ensure safety of users. Designs of electricity system shall give priority to cost effective renewable alternative system within their installations in addition to the main electricity, for their essential services.

[9] Source: Ethiopian Building Code Standards (EBCS) -13 3.3.2 (c)

6 If IP Enterprise intends to change the required amount of electricity due to the renewal, remodeling, or abolishment of its facilities, IP Enterprise shall inform to the Corporation, and EEU in advance. Through the negotiation with IP Enterprise, EEU/Corporation may change such amount to an appropriate one and replace the distribution transformer by new one with other capacity.

Telecommunication

The Corporation shall make conventional telecommunication system through the Ethiotelecom available to IP Enterprise.

1 Any IP Enterprise requiring the conventional telecommunication system shall submit application for allocation of the lines, in writing, to the Corporation.

2 Connection of the telecommunication

1. Connections shall be carried out pursuant to the prevailing terms and conditions determined by the Ethiotelecom.
2. In the case of damage to the network of IP Enterprise, the damage shall be the responsibility of IP Enterprise.

Rainwater Drainage

1 The rainwater drainage system is separated from the sewer system, with less chance of pollution during extra-ordinary storm occurrence.

2 Outside each Plot, the system consists of a network of collector drains (roadside drains) which collects rainwater from individual plots and leads it to major arterial drains before discharging it outside the IP.

3 IP Enterprise shall construct their surface drains within their Plot and connect it to the IP drains. IP Enterprise shall ensure that any garbage, leftover or the similar into the drain shall not be dumped into drain system, such as washing of factory floors, production areas, bin centers, oil, etc.

4 IP Enterprise shall use suitable means which follows directives of the Corporation for the part of the rain water to be absorbed within the site.[10]

10 Council of Ministers Building Regulation No243/2011

Wastewater

1 The IP Enterprise shall utilize the common wastewater discharge pipeline as provided in the IP by the Corporation and shall not utilize any alternative sources or methods of sewer discharge.

2 Wastewater shall be divided into two (2) group based on the resource, which "sewerage" is the wastewater from domestic use, and "common effluent" is the waste water from industrial production process.

3 Connecting work for the wastewater discharge pipeline between the wastewater pit and the common wastewater pipeline shall be carried out on the IP Enterprise's account. Such connection work shall be carried out with the attendance of the Developer or IP Operator.

4 Sewerage shall be connected to the sewer pipeline, and common effluent shall be connected to the common effluent pipeline.

Solid Waste

1 The Corporation is responsible for the solid waste management, for both non-hazardous and hazardous solid waste, in the IPs.

2 "Reduce, Reuse and Recycle (3R)"[11] is the three essential components of environmentally-responsible consumer behavior. The Corporation promotes 3R in the IPs.

3 The Corporation requests IP Enterprise to implement following solid waste management process:

1. IP Enterprise shall make sufficient provision for the safe and efficient disposal of all wastes, including, but not limited to, pollutants generated from its factory operation, for the requirement and satisfaction of the Corporation and the relevant governmental authorities.
2. The IP Enterprise shall separate solid waste that is generated in its Plot into domestic, non-hazardous industrial and hazardous solid waste and keep them in containers or outdoor trash containers.
3. The IP Enterprise shall ensure that the said containers or outdoor trash containers are placed away from the neighboring premises.
4. In case that the IP has a temporary solid waste deposit, the IP Enterprise brings separated solid waste there where a company duly authorized by the Corporation for removal and disposal of solid waste to landfill site or other disposal systems applied by the city administration.
5. In case that the IP has no temporally solid waste deposit, the IP Enterprise shall make its own arrangement with a company duly authorized by the Corporation for

[11] Reduce means that people should limit the number of purchases that they make in the first place. Ruse is that people should reuse items as much as possible before replacing them. Recycle says that people should ensure that items or their components are put to some new purpose as much as possible.

removal and disposal of solid waste to landfill site or other disposal systems applied by the city administration.

4 The IP Enterprise is charged for solid waste collection based on the amount of water bill. It pays the charge to the Corporation at the OSS and the Corporation will transfer it to the authorized waste collecting company.

Security

1 The IP Enterprise shall provide security and maintain safety prevention measures and devices suitable for use, construction and operations within the Plot.

2 Any building within the Plot shall be equipped with a property designed lighting arrester.

Fire Fighting[12]

1 Any approved firefighting installation may be connected to the water supply system; provided, however, that the urban administration or designated organ can, subject to any conditions it may consider necessary, allow such firefighting installation to be connected to:

1. Any approved alternative source of supply; or
2. Any source of non-potable water, where such water is not to be used for domestic or any other purpose which, in the opinion of the urban administration or designated organ might give rise to health hazard.

2 An effective fire alarm and firefighting system shall be established for each building in the Plot.

3 The factory shall set emergency escape routes and exit signs in a conspicuous place to be always visible.

4 There shall be a suitable storage for flammable and inflammable chemicals.

5 In buildings having more than five floors, there shall be safe escape route for emergency cases besides the main staircase.

6 The emergency escape route of a building shall be easily accessible and shall have international standard exit signs posted to indicate the escape route in case of emergency and shall also have alternative power supply for illumination during power interruptions.

7 There shall be a suitable storage for inflammable chemicals.

8 Buildings which is used hazardous substances shall be of non-combustible construction.

9 Buildings in which a special fire hazard is inherent shall be separated from other occupancies in the building by wall, partition, floor and floor-ceiling assemblies of non-combustible materials.

10 Heating, ventilation and exhaust systems, boilers and furnaces shall be safely located and separated from other portions of the building by fire resistive construction or by detaching them from other portions of the building.

[12]Source: Council of Ministers Building Regulation No243/2011, BSD4.16.3, EBCS-13 3.3.2

11 Fire extinguishing instruments shall be installed by licensed persons having professional certificate.

12 The fire extinguishing instruments shall meet the standard, be approved by the Corporation, and regularly inspected.

13 The IP Enterprise shall keep a record of the maintenance of fire extinguishing and protection equipment available for inspection by the Corporation.

14 In buildings having more than two floors, a separate firefighting staircase shall be provided.

15 Fire and Emergency Prevention and Control Directorate of the Corporation stationed at each IP issues fire safety certificate.

Parking

1 Circulation within the Plots and parking spaces for cars, motorcycles, Lorries and container trucks shall be provided by the IP Enterprise to cater for their own operation requirements including staff parking. In this respect, the Corporation does not allow parking in the Common Areas.

2 The IP Enterprise shall designate sufficient number of paved and dust-free all-weather parking places within the Plot.

3 The compulsory open spaces between buffer zone and buildings shall not be used for parking[13].

4 IP Enterprise shall install safety measures for parking, such as sign boards or the room for guard man.

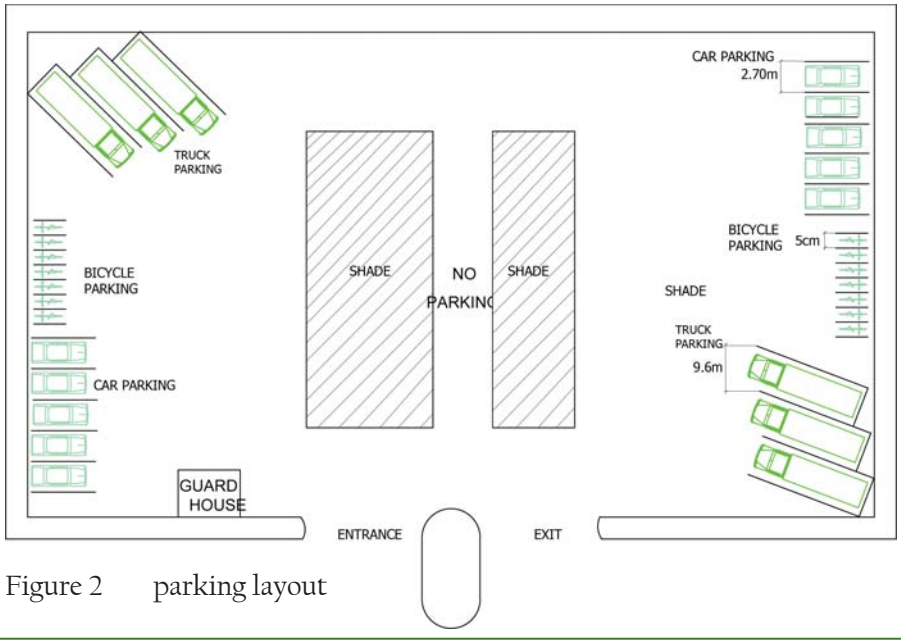


Figure 2 parking layout

13 Source: EBCS-13 3.3.2 (b)

Internal Lighting

1 The IP Enterprise shall provide and maintain adequate lighting for safety and security within the Plot.

2 Street lights at every 12 m along boundary fence in front of the Common Area.

3 All electrical lines shall be located underground and shall be designed, erected and maintained.

4 No lamp shall shine directly to the neighboring lots or roads.

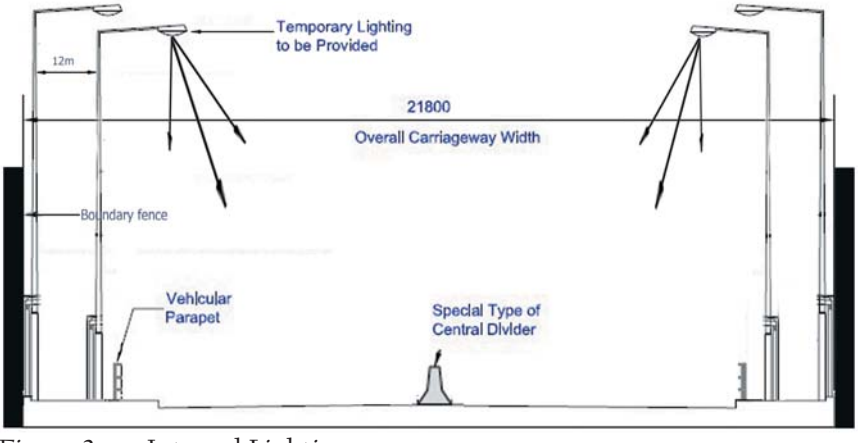


Figure 3 Internal Lighting

Sign Board

1 A sign shall not be erected in a manner that would confuse or obstruct the view of or interfere with exit signs or with official traffic signs, signals or devices. Signs and sign support structures, together with their supports, braces, guys and anchors, shall be kept in repair and in proper state of preservation. The display surfaces of signs shall be kept neatly painted or posted always.

2 Signs shall not be erected, constructed or maintained to obstruct any fire escape or any window or door or opening used as a means of entrance or to prevent free passage from one part of a roof to any other part thereof. A sign shall not be attached in any form, shape or manner to a fire escape, nor be placed in such manner as to interfere with any opening required for ventilation[14].

3 No signs shall be permitted above the roof level and outside the site boundary.

4 The sign shall not interfere with the natural lighting and ventilation of neighboring sites.

5 No sign shall be located closer than 5 m to any neighboring premises.

6 Any individual sign which is more than 30 m2 shall have the supporting structure designed by a qualified engineer and approved by the Corporation.

7 All signs shall be attractive, harmonious and in scale with their surroundings.

8 No flashing or moving signs shall be allowed.

[14] Source: BSD10.3.3

9 Temporary signs are allowed during the construction period only with prior written approval from the Corporation and, if necessary, from the relevant authorities.

10 Every sign permitted by this SOP shall be kept in good condition and repair. When any sign becomes insecure, in danger of falling or is otherwise deemed unsafe by the code official the IP Enterprise shall and in any case within not more than ten (10) working days, make such sign conform to the provisions of this SOP, or shall remove it. If within ten (10) working days the order is not complied with, the code official shall be permitted to remove or cause such sign to be removed at the expense of the IP Enterprise who set the sign concerned.

PART FIVE

Environmental and Social Considerations

Necessity of Environmental Controls

1 IP Enterprise who leases either plot or factory shed, shall understand their duty of environmental management provided in "Environmental Policy (1997)", "Environmental Impact Assessment Proclamation (2002)" and other relevant proclamations and regulations.

2 IP Enterprise shall make the strongest effort throughout their leasing period of plot or factory shed to prevent or mitigate occurrence of environmental impacts on the natural environment and disturbance of living life of neighboring community.

3 While the Corporation is responsible for conducting ESIA study and receives environmental clearance certificate for the entire IP, the IP Enterprise shall implement all of its activities in conformity with EMP and EMoP described in the certified ESIA report at the level of individual company. The IP Enterprise shall manage environmental issues during construction and operation periods in compliance the approved EMP.

4 The IP Enterprise shall not use or generate possibly toxic, source of pollution or different material even it is not listed in Industrial Park production specification EMP.

5 The IP Enterprise shall draw design of factory buildings and facilities that make less impact on the environment and use machines and materials that generate and emit no or low pollution. They shall keep regular maintenance of machinery, as well as sound work circumstances.

6 As the awareness on environmental and social considerations of factory owners and workers is the key of sound environmental management, it is recommended to the IP Enterprise to organize environmental education for them.

7 Details of Environmental items prescribed that IP Enterprise shall consider are summarized in the **Appendix B**.

8 Environmental Expert from Ministry of Environment, Forest, and Climate Change (MEFCC) and the Corporation who are stationed at IP, implement monitoring of environmental and social impacts based on the EMoP both at construction and operation phases. If problems are detected, they give instruction to the IP Enterprise who generates negative impacts to take measures to stop or mitigate them. The IP Enterprise who receive the instruction must respond to it without delay. (See sample of environmental monitoring sheet at **Appendix C**).

Water Pollution

Protective Controls

To protect the sewage system and its function and to keep the water quality discharged from the wastewater treatment plant into the nature, the IP Enterprise shall keep the quality of wastewater discharged from its plot into the wastewater pipeline. Following types of water is to be controlled.

- Water containing substances difficult to be treated at the treatment plant (for example, cadmium, chrome)
- Water that causes damage to the wastewater pipelines and treatment facilities (for example, highly acidic water)
- Water containing organic matters in high concentration (for example, oils and fats)

Wastewater Quality

IP Enterprise shall observe the permissible limit for wastewater discharged from its Plot into the common wastewater.

In case of the Zero Liquid Discharge (ZLD) Plant, quality of wastewater entering to the plant requires effluent parameter. IP Enterprise shall check the quality of wastewater at the discharging point not to exceed tit. Note that parameter varies according to the IP and capacity of the ZLD plant. Example of effluent parameters in Hawassa IP is shown in Table 1.

Table 1 Effluent Parameters for Hawassa ZLD Plant

No.	Parameters	Unit	Textile	Garment	Mixed parameters
1	Capacity	KLD/day	2,500	5,500	8,000
2	TDS	Ppm	5,000	1,200	2,387
3	COD	Ppm	2,500	500	1,125
4	BOD	Ppm	900	115	360
5	TSS	Ppm	300	110	170
6	Color	pct.	2,000	75	675
7	Oil & grease	Ppm	5	3	3.6
8	pH	pH	12.5	6.6	11.0

Source: Contract Agreement between IPDC and Arvind Envisol Private Limited

Monitoring

1 The Corporation shall check the quality of the IP Enterprise's wastewater at the point of discharge into the IP's drain, sewer line and common effluent pipeline.

2 In case that the waste quality exceeds the standard, the Corporation shall periodically monitor the wastewater quality discharged from each IP Enterprise plot by random sampling. Water quality test fee shall be included in the monthly operation and maintenance cost of the IP Enterprise.

3 If it is found that the discharged wastewater from the IP Enterprise's plot does not meet the requirement stated in this SOP and/or Ethiopian standards, the Corporation hall be entitled to prohibit the IP Enterprise from discharging wastewater into the IP's pipeline. Without prejudice to any right of the Corporation to terminate the Utilization Agreement or Lease Agreement, the IP Enterprise shall then be held responsible for all claims and payments made by the Corporation relating to any damage to the IP's pipeline, treatment plant and other systems.

4 The Corporation and IP Developer have the right to stop water supply to the IP Enterprise concerned. The IP Enterprise shall be held liable for any environmental damage or clam by any third party including, but not limited to neighboring communities and premises, residents in surrounding areas and/or the relevant authorities.

5 Monitoring sheet should include parameters and limited permissible value. Table 5 shows a sample of monitoring sheet.

Table 2 Sample of Wastewater Monitoring Sheet

Date		Person in charge	
Parameters or items		Measured value (mg/l)	Permissible limit for Non-specified factories/offices (mg/l)
1	Temperature		
2	pH		
3	Biochemical Oxygen Demand (BOD)		
4	Chemical Oxygen Demand (COD)		
5	Suspended solids (SS)		
6	N-hexane Extracts (mineral oil)		
7	N-hexane Extracts (animal and vegetable fats)		
8	Nitrogen		
9	Phenols		
10	Copper		
11	Zinc		
12	Dissolved iron		
13	Dissolved manganese		
14	Chromium		
15	Cadmium and its compounds		
16	Cyanide compounds		
17	Organic phosphorus compounds		
18	Lead and its compounds		
19	Hexavalent Chromium		
20	Arsenic and its compounds		
21	PCBs		
22	Tin		
23	Mercury		
24	Sulfide Ion		
25	Fluorine and its compounds		
26	Ammonia, Ammonium compounds		
27	Coliform		

Source: JICA EIPP Team

Air Pollution

The IP Enterprise shall consider the air quality emitted from its Plot to comply with the air pollution parameters, mentioned in the "Guideline Ambient Environment Standards for Ethiopia" prepared by Environmental Protection Authority (EPA), and the "Emissions Standards for Different Categories of Industry in Ethiopia" prepared by MEFCC, indicating limit value for each type of industry. Table 3 indicates Air Quality Standards and Table 4 indicates Provisional Standards for Industrial Pollution Control, both determined by EPA.

Table 3Air Quality Standards determined by EPA

No.	Pollutant	Value Microgram/m^3	No.	Pollutant	Value Microgram/m^3
1	Sulphur dioxide (10 minutes)	500	8	Carbon monoxide (8hours)	10,000
2	Sulphur dioxide (daily)	125	9	Ozone (8 hours)	120
3	Sulphur dioxide (annual)	50	10	Particulate matter less than 10 microns (annual)	50
4	Nitrogen dioxide (1 hour)	200	11	Particulate matter less than 10 microns (daily)	150
5	Nitrogen dioxide (annual)	40	12	Particulate matter less than 2.5 microns (annual)	15
6	Carbon monoxide (15 minutes)	100,000	13	Particulate matter less than 2.5 microns (daily)	65
7	Carbon monoxide (30 minutes)	60,000	14	Lead (annual)	0.5

Source: "Guideline Ambient Environment Standards for Ethiopia" EPA, 2003

Table 4 Provisional Standards for Industrial Pollution Control determined by MEFCC

1. TANNING AND LEATHER FINISHING	
Parameter	Limit Value
Total particulates	50 mg/Nm^3
Volatile orga nic carbons	75 g/m^2 produced
Total hydrogen sulphide, sulphides and mercaptans (as S)	5 ppm v/v
Ammonia	40 ppm v/v
Acid vapours (as HCl)	30 g/Nm^3
2. THE MANUFACTURE AND FINISHING OF TEXTILES	
Parameter	Limit Value
Particulate matter	50
Volatile organic carbons (as C) (excluding formaldehyde)	50
Formaldehyde	20
Isocyanates (as NCO)	0.1

3. PRODUCTION AND PROCESSING OF IRON AND STEEL	
Parameter	Limit Value
Particulate matter	50 mg/Nm^3
Hydrogen fluoride (as HF)	5 mg/Nm^3
Mercury (as Hg)	0.05 mg/Nm^3
Lead (as Pb)	0.5 mg/Nm^3
Zinc (as Zn)	10 mg/Nm^3
Chromium (as total Cr)	0.5 mg/Nm^3
Nickel (as Ni)	0.5 mg/Nm^3
Cadmium (as Cd)	0.05 mg/Nm^3
NO_x (as NO_2)	1000 mg/Nm^3
SO_x (as SO_2)	800 mg/Nm^3
Dioxins as International Toxicity Equivalent (I-TEQ)	1 ng/Nm^3

4. METAL WORKING, PLATING AND FINISHING	
Substance	Limit Value
Particulate matter	10 mg/Nm^3
Hydrogen fluoride (as HF)	5 mg/Nm^3
Mercury (as Hg)	0.05 mg/Nm^3
Lead (as Pb)	0.5 mg/Nm^3
Zinc (as Zn)	10 mg/Nm^3
Chromium (as total Cr)	0.5 mg/Nm^3
Nickel (as Ni)	0.5 mg/Nm^3
Cadmium (as Cd)	0.05 mg/Nm^3
NO_x (as NO_2)	300 mg/Nm^3
SO_x (as SO_2)	300 mg/Nm^3
Dioxins as International Toxicity Equivalent (I-TEQ)	1ng/Nm^3

5. BASE METAL AND IRON ORE MINING	
Parameter	Limit Value
Particulate matter	50 mg/l
Silica	15 mg/l
SO_2 (mg/Nm^3)	1000 mg/l
Nickel (as Ni)	5 mg/l
Iron (as Fe)	10 mg/l
Copper (as Cu)	20 mg/l
Sulphuric acid (as H_2SO_4)	50 mg/l
Nitric acid (as HNO_3)	50 mg/l
Ammonia (as NH_3)	300 mg/l
Arsine	5 mg/l
Dioxins as International Toxicity Equivalent (I-TEQ)	1ng/Nm^3

6. MALTING, BREWING, DISTILING, PRODUCTION OF WINES AND OTHER ALCOHOLIC LIQUOURS	
Parameter	Limit Value (mg/Nm^3)
Total particulates (at a mass flow of 0.5 kg/h or above)	100
Hydrogen chloride (as HCl) (at a mass flow of 0.3 kg/h or more)	30

7. MANUFACTURE OF DAIRY PRODUCTS	
Parameter	Limit Value (mg/Nm^3)
Total particulates (at a mass flow of 0.5 kg/h or above)	100
Hydrogen chloride (as HCl), at a mass flow of 0.3 kg/h or more	30

8. FRUIT AND VEGETABLE PROCESSING	
Parameter	Limit V alue (mg/Nm ^{3})
Total p articulates (at a mass flow of 0.5 kg/h or above)	100
Hydrogen chloride (as HCl) (at a mass flow of 0.3 kg/h or more)	30
9. MANFACTURE OF SUGAR	
Substance	Limit V alue (mg/Nm ^{3})
Total particulates (at a mass flow of 0.5 kg/h or above)	100
Hydrogen chloride (as HCl) (at a mass flow of 0.3 kg/h or more)	30
10. SLAUGHTERING MEAT PROCESSING AND RENDERING	
(1) Slaughtering and Meat Processing Plants	
Parameters	Limit V alue (mg/Nm ^{3})
Total particulates (at a mass flow of 0.5 kg/h or above)	100
Hydrogen chloride (as HCl) (at a mass flow of 0.3 kg/h or more)	30
(2) Rendering Plants	
Substance	Limit V alue
Total particulates	100 mg/Nm ^{3}
Ammonia	50 ppm v/v
Amines	5 ppm v/v
Hydrogen sulphide, and mercaptans	5 ppm v/v
11. MANUFACTURE OF FERTILIZERS	
(1) Phosphate Fertilizer Plant	
Parameter	Limi t V alue
Fertilizer Plant	
Total Particulates	100 mg/Nm ^{3}
E.g. Fluorides (as HF)	10 mg/Nm ^{3}
Sulphuric Acid Plant	
Sulphur Dioxide (as SO_2)	2 kg/t acid
Sulphur Trioxide (as SO_3)	0.15 kg/t acid
Phosphoric acid plant	
Total Particulates	100 mg/Nm ^{3}
Fluor ides (as HF)	10 mg/Nm ^{3}
(2) Nitrogenous Fertilizers	
Ammonium Production	
Parameter	Per ton of NH_3 produced
Nitrous oxides (as NO_2)	1.3 kg
Sulphur oxides (as SO_2)	0.1 kg
Carbon dioxide (as CO_2)	500 kg
Carbon monoxide (as CO)	0.03 kg
Fertilizer Plant	
Parameter	Concentration mg/Nm ^{3}
Total particulates	100
Ammonia	50
Amines	5

12. PULP AND PAPER	
Parameter	Limit V alue
Total particulates	150 mg/Nm^3
Hydrogen sulphide (as H_2S)	15 mg/Nm^3
Sulphur dioxide (as SO_2)	800 mg/Nm^3
Total Sulphur	
Sulphite mills	2 kg/ton ADP*
Kraft and other mills	1.5 kg/ton ADP*
Chlorine	20 mg/Nm^3
Nitrous oxide (as NO_2)	
Natural gas	100 mg/Nm^3
Liquid fuels	150 mg/Nm^3
Solid fuels	300 mg/Nm^3
Vo latile organic carbon compounds	20 mg/Nm^3
Smoke	2 Units of Ringlemann shade

13. CEMEN T MANUFACTURING	
Parameter	Limit V alue
Total particulates	150 mg/Nm^3
Sulphur dioxide (as SO_2)	1000 mg/Nm^3
Nitrous oxide (as NO_2)	2000 mg/Nm^3

14. PERTOCHEMICAL MANUFACTURING	
Parameter	Limit V alue
Total particulates	50 mg/Nm^3
Nitrous oxides (as NO_2)	500 mg/Nm^3
Sulphur dioxide (as SO_2)	800 mg/Nm^3
Hydrogen chloride (as HCl)	20 mg/Nm^3
Benzene	5 mg/Nm^3 0.1 ppb at plant fence
1,2-Dichloroethane	5 mg/Nm^3 1 ppb at plant fence
Vinyl chloride	5 mg/Nm^3 0.4 ppb at plant fence
Chlorine	20 mg/Nm^3
Ammonia (as NH_3)	15 mg/Nm^3

15. PESTICIDE MANUFACTURING	
Parameter	Limit value (mg/Nm ^{3})
Total particulates	10
Volatile organic carbon compounds	50
Hydrogen chloride (as HCl)	20
Chlorine (or chloride)	5

16. PESTICIDE FORMULATION	
Parameter	Limit value (mg/Nm ^{3})
Total Par ticulates	10
Volatile organic carbon compounds	50
Hydrogen chloride (as HCl)	20
Chlorine (or chloride)	5

17. PHARMACEUTICAL MANUFACTURING	
Parameter	Limit value (mg/Nm ^{3})
Total particulates	50
Active ingredients	0.2
Organic compounds (Listed in Annex 1 , p.36)	
Class I	20
Class II	100
Class III	300
18. PRINTING AND SURFACE COATING	
Solvent use or consumption	Concentration (mg/Nm ^{3})
Less than 15 tons per annum	
Class I	50
Class II	200
Class III	300
Greater than 15 tons per annum	
Cl ass I	20
Class II	100
Class III	300

Source: "Provisional Standards for Industrial Pollution Control" MEFCC

Noise Control

1 The IP Enterprise shall effectively control noise emission from any source within their rented shed and/or plot with sound-absorbing materials or other suitable means to comply with the Standard.

2 EPA has set 75 decibels (dB) for industrial park as the limit during day time and 70 dB during night time.[15]

Vibration Control

1 The IP Enterprise shall effectively control vibration caused by any source within their rented shed and/or Plot.

2 In the case of quarrying and mining operations, the peak particle vibration level of 12 mm/sec., measured in any three (3) mutually orthogonal directions at a receiving location when blasting occurs at a frequency of once per week or less. For more frequent blasting, the peak particle vibration level should not exceed 8 mm/sec. These levels are for low frequency vibrations, i.e., less than 40 Hertz. Blasting should not give rise to air overpressure values at sensitive locations which are more than 125 dB (Lin) max peak[16].

3 The IP Enterprise shall apply vibration reducing measures: (i) improvement of sources such as use of low-vibration materials/devices, operation means, and change of working time, (ii) shutdown of transmission route such as replacement of vibration sources, and (iii) improvement of affected area.

[15]Source: Provisional Standards for Industrial Pollution Control, MEFCC
[16]Source: Provisional Standards for Industrial Pollution Control, MEFCC

Soil Contamination

1 The IP Enterprise shall prevent soil contamination inside and surrounding the rented shed and/or plot by effective control of discharge of contaminated solid/dissolved substances, such as, mineral waste, animal and vegetable waste, waste containing fibers, and hazardous waste.

2 For the IP Enterprise's reference to the following Environmental Quality Standards for Soil Pollution.

Table 5 Environmental Quality Standards for Soil Pollution

No.	Substance	Target Level of Soil Quality Examined through Leaching and Content Tests
1	Cadmium	0.01 mg/l in sample solution and less than 0.4mg/kg in rice for agricultural land
2	total cyanide	not detectable in sample solution
3	organic phosphorus	not detectable in sample solution
4	Lead	0.01 mg/l or less in sample solution
5	chromium (VI)	0.05 mg/l or less in sample solution
6	Arsenic	0.01 mg/l or less in sample solution, and less than 15 mg/kg in soil for agricultural land (paddy fields only)
7	total mercury	0.0005 mg/l or less in sample solution
8	alkyl mercury	not detectable in sample solution
9	PCBs	not detectable in sample solution
10	Copper	less than 125 mg/kg in soil for agricultural land (paddy fields only)
11	Dichloromethane	0.02 mg/l or less in sample solution
12	carbon tetrachloride	0.002 mg/l or less in sample solution
13	1,2-dichloroethane	0.004 mg/l or less in sample solution
14	1,1-dichloroethylene	0.02 mg/l or less in sample solution
15	cis-1,2-dichloroethylene	0.04 mg/l or less in sample solution
16	1,1,1-trichloroethane	1 mg/l or less in sample solution
17	1,1,2-trichloroethane	0.006 mg/l or less in sample solution
18	Trichloroethylene	0.03 mg/l or less in sample solution
19	Tetrachloroethylene	0.01 mg/l or less in sample solution
20	1,3-dichloropropene	0.002 mg/l or less in sample solution
21	Thiuram	0.006 mg/l or less in sample solution
22	Simazine	0.003 mg/l or less in sample solution
23	Thiobencarb	0.02 mg/l or less in sample solution
24	Benzene	0.01 mg/l or less in sample solution
25	Selenium	0.01 mg/l or less in sample solution

Source: Ministry of Environment, Japan

Note: The above standards are not applicable to:1) Places where natural toxic substances exist such as near mineral veins, and 2) Places designated for storage of toxic materials such as waste disposal sites

Odor

The IP Enterprise shall prevent generation and spread of bad odor from their factory operation. The IP Enterprise shall keep lower intensity of substances listed below within the level of smell strength 2.5 to 3.5.

No.	Substances	Substances Concentration (ppm)		
		Smell Strength 2.5	Smell Strength 3.0	Smell Strength 3.5
1	Ammonia	1	2	5
2	Methyl mercaptan	0.002	0.004	0.01
3	Hydrogen sulfide	0.02	0.06	0.2
4	Methyl sulfide	0.01	0.05	0.2
5	Methyl di-sulfide	0.009	0.03	0.1
6	Tri-methyl amine	0.005	0.02	0.07
7	Acetaldehyde	0.05	0.1	0.5
8	Propionaldehyde	0.05	0.1	0.5
9	n-Buthylaldehyde	0.009	0.03	0.08
10	iso-Buthylaldehyde	0.02	0.07	0.2
11	n-Valericaldehyde	0.009	0.02	0.05
12	iso-Valericaldehyde	0.003	0.006	0.01
13	iso-Buthylalcohol	0.9	4	20
14	Ethylacetate	3	7	20
15	Methyl-iso-buthylketone	1	3	6
16	Toluene	10	30	60
17	Stylene	0.4	0.8	2
18	Xylene	1	2	5
19	Propionic acid	0.03	0.07	0.2
20	n-Butyric acid	0.001	0.002	0.006
21	n-Valeric acid	0.0009	0.002	0.004
22	iso-Valeric acid	0.001	0.004	0.01

Source: Guidance to Offensive Odor Control Law, Japan

Animals

Raising animals or birds inside the Industrial Park are regarded as a nuisance to neighbors and shall not be allowed at any of rented shed and/or development Plot.

Labour Condition

General Labor Condition

IP Enterprise shall prepare the appropriate working condition for its employees observing Proclamation No. 377/2003 “Labour Proclamation”. It shall include:

- Prohibition of child labor
- Avoidance of forced labor
- Holyday payment & overtime payment
- Equal training
- Guarantee of establishment of labor union

Gender Equality

1 IP Enterprise shall keep equality between both sexes in overall work conditions throughout their activity within the Industrial Park.

2 Employer shall establish a system of reporting gender-related violation to the relevant authority .

3 Employer must take appropriate measures to ensure the reproductive health right for female workers, such as maternity leave, in compliance with relevant Ethiopian Proclamations and Regulations.

Work Safety and Human Health

Work Safety

The IP Enterprise shall keep safety in compliance with Labor Proclamation No. 377/2003 (amended by Proc. No. 466/2005 and Proc. No. 494/2006) by avoiding accidents, injury or death of not only workers, but also visitors and residents of the neighboring premises and communities.

1 Avoiding use of accidental discharge and transportation of inflammable, toxic, explosive, chemical substances;

2 Prepare appropriate protection equipment for the workers being exposed to industrial activities such as painting, welding, electroplating, and battery manufacture;[17]

3 Periodical checking and maintenance of mechanical equipment and electric facilities;

4 Periodical monitoring of air quality, and take immediate action if the result exceeds the standard, especially for:

- IP Enterprise that release mineral dust, e.g. silica and asbestos-glass manufacturing industry, foundry, cement, asbestos, plants.
- IP Enterprise that release organic dust and those that process grain, cotton, coffee, sisal, wood etc.

5
- Monitor wastewater quality and production condition for:
- Solvents in printing industry
- Thinners in the manufacture of paints and glues
- Dyes in textiles, leather and shoes

Organic materials used in chemical industries

6
- Fire protection
- Protection of explosion, fire
- Setting of the meeting point inside the Plot where employees escape at emergency

Fire drilling

7 Training of workers in proper use of the equipment, chemicals and other hazardous items;

8 Employers are required to ensure that workers are properly instructed and informed about different hazards present at the workplace as well as precautions necessary to avoid accident and injury to health. Employer must also instruct workers about the proper use of protective equipment.

17 Ministry of Labour and Social

Human Health

1 The IP Enterprise shall consider the health of workers, visitors, residents of the neighboring premises and communities. Labor Proclamation No. 377/2003 (amended by Proc. No. 466/2005 and Proc. No. 494/2006) provides that every employee has the right to enjoy suitable measures of protection and safety and hygiene at work as the employer is required to take all necessary measures to safeguard the health and safety of workers.

2 Employer must take appropriate measures to ensure that workers are properly instructed and notified about the risks and imminent danger related to their respective occupations and precautions necessary to avoid accidents and injury to health.

1 Medical examination of newly employed workers and those engaged in hazardous work, at employer's expense, is necessary. Adding to this, it is recommended to implement periodical medical examination of all employees;

2 The processes of work shall not be source or cause of physical, chemical, biological, ergonomical and psychological hazards to the health and safety of the workers;

3 Employer shall establish an occupational safety and health committee in the establishment;

4 Employment accidents and occupational diseases must get registered and notified to the labor inspector;

5 Keep workplace and its premises free from hazards related to health and safety of worker, employer must implement the directives issued by the appropriate authority in accordance with this proclamation;

6 Workers must also obey all health and safety instructions issued by the employer

3 The Corporation recommends the IP Enterprise shall:

1 set a nurse's office inside its Plot to give first aid;

2 arrange its own car to transfer the patients to the clinic in case of emergency

Social relationship

1 IP Enterprise shall respect the right of other IP Enterprises and IP residents in the same IP.

2 IP Enterprise shall keep good relationship with residents in the surrounding communities.

3 IP Enterprise shall keep cleanness of inside the Plot, especially at solid waste collection and disposal points.

Inspection

A regulatory body composing of MEFCC and Ministry of Labor and Social Affairs (MLSA) undergoes inspection for environmental and social issues.

Penalty

The IP Enterprise who violates above-mentioned environmental protection may be imposed penalty in compliance with the Proclamation No.414/2004 "The Criminal Code of the Federal Democratic Republic of Ethiopia" - Article 519 on Environmental Pollution.

1 Environment is punishable with fine not exceeding ten thousand Birr, or with rigorous imprisonment not exceeding five years.

2 Where the pollution has resulted in serious consequences on the health or life of persons or on the environment, the punishment shall be rigorous imprisonment not exceeding ten years.

3 Where the act of the criminal is infringed, a criminal provision entailing a more severe penalty, the provisions on concurrence of crimes shall be applied.

Besides, Proclamation No.300/2002 "Environmental Pollution Control Proclamation" provides that a person who, under this Proclamation or under any other relevant law, commits an offence for which no penalty is provided for either in the Penal Code or under this Proclamation, is liable on conviction:

4 in the case of a natural person, to a fine of not less than five thousand Birr and not more than ten thousand Birr or an imprisonment of not more than one year or both;

5 in the case of a juridical person, to a fine of not less than ten thousand Birr and not more than twenty thousand Birr.

PART SIX

Construction Controls

Construction Procedure[18]

1 The IP Enterprise shall start to construct within six (6) months and complete to construct within two (2) years from the date of issuance of approved plans.

2 The IP Enterprise shall notify to the Corporation, in writing, the starting date of each stage of work before seven (7) working days of such starting date.

3 The stages of work for which a notice is required in advance in case of new construction shall be in the following order:

1. on completion of surveying work for the foundation;
2. before starting concrete cast for grade beam;
3. before starting floor concrete works at all levels;
4. before starting final concrete works;
5. during testing of completed water supply, sanitary, electrical and electro mechanical installations; and,
6. other stages of work required by the Corporation based on the type and method of construction.

4 After the time limit stated in the receipt that the Corporation fails to license or fails to issue written reply, the IP Enterprise has the rights to construct according to the design documents submitted to the licensing agency, upon meeting the construction starting conditions by notifying the corporation a week before commencing the construction.

5 The Corporation may require additional notices to be given according to the type and complexity of the building. In such instances, the time required for prior notice and the stages of work shall be clearly indicated and shall be issued in writing to the IP Enterprise together with the approved plans.

6 The IP Enterprise who has received an order from the Corporation to rectify certain works carried out in contravention of approved plans shall give notice to the Corporation in writing on completion of such rectification work.

7 The stage of works for which a notice is required in cases of alteration, extension, and demolition of existing buildings, shall be disclosed, in writing, to the Corporation at issuance of the building permit.

8 The notice to be given for the alteration and extension of existing buildings shall follow the same order of a new construction in accordance with Article 3.4 of this SOP

9 Any order or notice shall be given in writing. An order given orally is invalid.

18 Source: Ethiopian Building Proclamation No. 624/2009. Council of Ministers Building Regulation No. 243/2011

Validity Period of Plans[19]

1 The request for extension of validity period of a construction plan whose validity will be expired before commencement of the construction can be accepted for the following reasons if the delay is timely reported in writing to the commission:

1. there exists a border conflict preventing the construction activity;
2. the Corporation failed to fulfil the necessary infrastructure to begin the construction;
3. the Corporation failed to clear the existing infrastructure which prevented the construction; and
4. there exists a conflict of possession right over the construction site.

2 The request for extension of validity period of a construction plan whose validity has been expired before completion of the construction may be accepted for the following reasons if they were timely reported in writing to commission:

1. if there exists an apparent lack of construction materials at national level;
2. where a revision in the design was necessary during construction period resulting from an error which was unforeseen during design period; and
3. where there exists pending court case that prevents the construction work.

Excavation and Earthwork

1 The IP Enterprise shall consult with the Corporation regarding any underground work.

2 The IP Enterprise shall implement the underground work only after informing to all the parties concerned.

3 The IP Enterprise shall provide wash down point(s) for vehicles such as earth moving trucks, ready-mixed concrete trucks and material transport vehicles leaving the land on the IP Enterprise's plot.

4 No excavation shall be made except relating to the approved construction of the improvement and, upon completion thereof, exposed openings shall immediately be backfilled and leveled.

5 The IP Enterprise shall not fill up the plot without the prior written approval of the urban administration or the designated organ.

6 The IP Enterprise shall not make holes or puddles or lowlands by digging in the plot, unless the IP Enterprise has an inevitable technical reason to do so and obtains the prior written approval of the urban administration or the designated organ.

7 All surplus soil is not allowed to be carried out of the park and must be dumped at designated areas inside industrial park.

Construction and Maintenance of Access

The IP Enterprise is responsible to construct a temporary culvert to gain access to the plot over IP's surface drain, maintain it during construction period and reinstate the location after completion of the construction works. Plan of the temporary access shall be

[19]Source: Council of Ministers Building Regulation No. 243/2011

submitted to the Corporation for approval. The IP Enterprise shall apply for permission to use internal access roads for access to the site and shall observe all rules and regulations of the Corporation during the construction period.
The contractor shall propose for the approval by the Corporation of the development of (an) access road(s) needed for construction activities, if necessary.

Temporary Construction

Temporary constructions shall be built up with materials having no permanent nature and which are easily removable. Upon completion of the time limit, the temporary construction shall be demolished.

Measures for Refuse Disposal

1 Adequate measures like providing bulk containers and refuse bins shall provide to dispose of waste properly. The waste should be disposed regularly.
2 Open burning of waste is strictly prohibited.

Drilling Works

No drilling or mining operation, shall be permitted in any plot, except the drilling for soil investigation and digging well. Blasting must be approved by the relevant authority to ensure minimal disturbance and disruption to the occupied area.

Supervision of Contractors

The IP Enterprise shall supervise the construction works of contractor not only from viewpoint of the progress of construction but also work safety and avoid or mitigating impacts on environmental and social conditions.

Work at Night

1 If a construction activity is to be carried out at nights, it shall be permitted by the Corporation that such activities do not cause nuisance to the public and could be carried out safely and conveniently.
2 No sleeping overnight at the construction site of the plot, except security guards, storage keepers or maintenance shift personnel and other similar persons need a temporary place to sleep in, subject to the prior written approval of the Corporation.

20Source: Council of ministers, Building Regulation 243/2011

PART SEVEN

Operation and Maintenance

Charges

Water Supply Charges

1 Water charges shall be calculated monthly from the starting date based on the actual consumption read by the meter, in principle, at the beginning of each month.

2 The calculation period shall be, in principle, in units of a month; from the starting date, the meter was read in the previous month to the date immediately preceding the meter reading date of the current month. For the case of less than one month, the calculation of the charges shall be made based on the actual number of days elapsed.

3 The charges of water from deep well that the Corporation developed and owns is setting the different price from common water supply.

Electric Charges

1 In normal condition, power shall be supplied from Ethiopian Electric Utility (EEU) to the IP Enterprise through the Corporation's distribution network what was handed over from the Corporation to EEU. The electric charges shall follow the Ethiopian Energy Authority (EEA) tariff regulation. At power failure, the factory's emergency generator can supply power only for the critical/manufacturing related loads (not necessary to cover all loads). Tenants are responsible to operate backup generator at the readily available generator house for critical loads at their own expense.

2 Electric charges shall be calculated monthly from the starting date based on the actual consumption read by the meter, in principle, at the beginning of each month.

3 The calculation period shall be, in principle, in units of a month; from the date meter was read in the previous month to the date immediately preceding the meter reading date of the basis of the actual number of days elapsed.

Telecommunication Charges

1 Telecommunication system shall be supplied from Ethiotelecom to the IP Enterprise through the Corporation's distribution network what was handed over from the Corporation to Ethiotelecom. The telecommunication charges shall follow the Ehiotelecom tariff regulation.

2 Telecommunication charges shall be calculated monthly from the starting date based on the actual consumption.

Changes in Utilities Charges

In case of a change in the cost regarding the power supply due to an increase in the price of fuel, change of similar electric and water supply bill charged publicly in Ethiopia, change in taxes or other public charges imposed upon real estate, power generating facilities, substations, electricity transmitting facilities or facilities of water supply, change in prices and labor cost, alternation to the regulations of Ethiopia or other matters necessary for operation of the industrial park, the Corporation may amend the amount of the electricity and water charges upon consultation with, and with prior notice to the IP Enterprise, and the IP Enterprise shall agree to such amendment. Electric tariff amendment proposal request is EEU's responsibility; whereas EEA is responsible to make electric tariff amendments upon approval by the Government. The Corporation can give prior notice to tenants upon electric tariff amendment.

Maintenance and Service Fee

1 The Corporation shall charge each IP Enterprise a fee that will cover administrative charges ("Management Fee") deemed necessary for the effective management of the IP. The Management Fee is separate from any other charges that the Corporation may impose and includes, but not limited to, charges for supply industrial water, connection of any infrastructure and the like. It is showed the following type of the Management Fee;

1 Security Services
- Personal and cargo access/exit control at the gate
- Traffic control service within the park
- Maintenance and use of CCTV system to for 24 hours monitoring of the park
- 24 hours security patrol
- Fire prevention and fire fighting

2 Sanitation
- Sanitation and cleaning services in common areas
- Solid waste collection from individual sheds and collective disposal

3 Landscaping
- Watering all public green areas and trees
- Maintaining and improving public landscaping areas

4 Facility Maintenance
- Maintain and provide water supply services
- Maintain and provide power supply services
- Maintain and provide telecommunication services
- Maintain and provide effluent treatment and sewage treatment services
- Maintenance of road and integrated pipeline systems
- Maintenance of repair of sheds and related areas for the IP Enterprise

2 Apart from the Management Fee mentioned in 7.1.5 (1), the Corporation imposes parking fee applied to parking in the common parking areas both inside and outside IP.[21]

[21] This fee is exclusively imposed

3 The Management Fee and all other fees to be imposed by the Corporation may be revised from time to time as the Corporation deems fit to do so due to general inflationary increases, any extraordinary expense that may be incurred in managing the IP, or upon the introduction of additional facilities into the IP, such as, but not limited to, expansion of existing Common Areas/Facilities, improvements and/or increase in security measures, and the like. The revised price of the remaining term already paid based on former price, if any, shall be paid upon the Corporation's debit note.

Interest and Collection Costs for Unpaid Charges and Fees

1 In the event that the IP Enterprise fails to deposit the rental payments within a grace period of 30 days after the end of the month, the Corporation shall send a notification of late payment both by E-mail and in written form to the IP Enterprise; and the IP Enterprise shall incur a five per cent (5%) penalty in addition to the base rental fees. In the event of failure of payment after two months, the IP Enterprise shall incur an additional five per cent (5%) penalty, and after a period of three (3) months during which the IP Enterprise fails to regularize rental payments, the Corporation shall have recourse to the following disciplinary actions:

- Prohibiting the entrance and exit of the containers and finished products of the IP Enterprise
- Prohibiting the entrance and exit of the employees of the IP Enterprise
- Suspension of customs processing for the IP Enterprise

2 In the event that the IP Enterprise fails to regularize rental payments within a period of six (6) months, the Corporation has the right to annul the lease agreement and take steps to reclaim the land or space rented by the IP Enterprise.

Deposit for Common Area Damages

The IP Enterprise shall deposit security deposit fund for repair of common area.

Insurance

On its own responsibility, the IP Enterprise should take out insurance to cover for its own property in the IP (including the Corporation property) in respect of loss and liability risks. The IP Enterprise shall subscribe and maintain in full force the following insurance policies with a reputable first ranking local or international insurer approved by the Corporation, for an amount reasonably required by the Corporation;

1 Public liability in relation to its operation and activity within the IP and to any property erected, built, installed or located in the rented shed and/or plot.

2 Insurance against risks and damage to the rented shed and/or plot and any properties erected, built, installed or located in the rented shed and/or plot due to external causes and airplane crash, and the like including insurance of content reasonably required by the Corporation, for the full replacement value of any properties belonging to the Corporation

and present in the rented shed and/or plot that may be lost, damaged or destroyed due to external cause or natural disaster as well as insurance for loss of revenues by the IP Enterprise due to such events, acts or circumstances.

3 The aforementioned insurance policies shall contain a clause to the effect that the insurance coverage there effected and the terms and conditions thereof shall not be cancelled, modified or restricted without the prior written consent of the Corporation and the IP Enterprise shall provide to the Corporation a copy of such policies and the receipt for the current premium or a letter of confirmation from the IP Enterprise's insurers containing sufficient information to satisfy the Corporation as to the adequacy of such insurance.

Specifically permitted operation and uses

Operations and uses which are specifically prohibited herein can be permitted by Commission and only then if strictly complying with all governmental proclamations, regulations and requirements. In such a case, the written approval of the Commission is required, and such approval can be subject to Conditions imposed by the Commission from time to time.

Fire Protection

The IP Enterprise shall be responsible for fire protection in compliance following regulations and standards:

1 Proclamation No. 624/2009 Ethiopian Building Proclamation;
2 EBCS 13: Fire Precautions during Building Construction Design, Works and Use
3 The international standard of the National Fire Protection Association or NFPA 5000, 2015 Edition and other complementary NFPA standards; and,
4 Fire-Fighting Guideline to be prepared by the Corporation

Abandoned buildings and offices space

1 In the event that an IP Enterprise's lease agreement is annulled, the IP Enterprise shall remove all machinery, raw materials, equipment, furnishings, buildings that have been constructed by the IP Enterprise, and any other goods belonging to the IP Enterprise have a period of 30 calendar days from the date of annulment to. As of the 31st calendar day from the annulment, the Corporation will retain the right to take possession or dispose of any remaining goods found on the IP Enterprise's premises.

2 In the event that an IP Enterprise abandons their premises for the period of sixty (60) consecutive calendar days from the first date when there is no evidence of productive activity, the lease agreement will be considered to be null and void on the 61st calendar day, and the Corporation shall retain the right to take possession or dispose of any remaining goods and buildings on the IP Enterprise's premises.

3 In both cases 7.7 (1) and (2), the Corporation shall inform the Commission in writing of the annulment of the lease agreement within a 48 hours period.

Termination Procedures for IP Enterprises:

1 In case of termination of business operation, the IP Enterprise shall give notice to the Corporation.as per the lease agreement to enable all formalities to be completed.

2 The following procedure applies to the termination of land lease:

- A formal request letter is signed and stamped by an authorized signatory of the license holder and submitted to the Operations Department of the Corporation.
- All outstanding charges, fees, invoices, and/or lease payments are settled and cleared with the Finance Department of the Corporation.

3 The following procedure applies to the termination of an IP rented shed lease:

- A formal request letter is signed and stamped by an authorized signatory of the lease along with the Lease Termination Form;
- All outstanding charges, fees, invoices and lease payments are settled and cleared with the Finance Department of the Corporation:
- IP Enterprise returns all facility keys to the Operation Department of the Corporation;
- IP Enterprise returns all issued passes and IDs to the Operation Department of the Corporation;
- Pro-rated rent will be charged for the days required for maintenance and restoring the facility to original condition.

4 The following procedure applies to clearance of rented land and rented shed

- IP Enterprise provides operation department of the Corporation with clearance letters from all utility providers (i.e., electricity, water, telecommunication, sewage, etc.);
- IP Enterprise obtains clearance from the financial department of the Corporation that all outstanding dues have been paid;
- Operation department of the Corporation requests the Custom to provide an outstanding report or clearance letter.

Duties and Rights of the IP Enterprise relating to Business

Quality Control

IP Enterprise shall acquire the export permit in compliance with the ultimate purpose of IP development in Ethiopia. For this, IP Enterprise shall increase the quality of its products to at least minimum level required by the country/area where it exports the goods.

Corporate Social Responsibility

IP Enterprise shall understand the Corporate Social Responsibility (CSR) concept and run its business in accordance with it in order to become a more trusted company.

Right of Service Reception

IP Enterprises has the right to be beneficiary of the following services provided by the Corporation.

- Social services:
- Operator services
- Regulator services

PART EIGHT

Remedies

Violation

If the IP Enterprise breaches any provision of this SOP or fails to comply with the applicable proclamations, regulations, and requirements of any competent governmental authority, in addition to its right to claim compensation from the IP Enterprise for any loss or damage incurred as a result of such breach or failure, the Commission has the right to send a notice of default to the IP Enterprise identifying the IP Enterprise's breach within ten (10) calendar days of the date of the notice. The Commission may, but is not obliged to, exercise the following rights and remedies in addition to the rights and remedies contained in the Utilization Agreement, Lease Agreement signed by the IP Enterprise.

1 To enter upon the rented shed and/or plot where such said violation or breach exists and, at the expense of the IP Enterprise, to remedy the IP Enterprise's reach or failure to comply and to maintain and enforce such remedy until corrective measures or safeguards have been instituted by the IP Enterprise and accepted as adequate and satisfactory by the Corporation; and/or

2 To bring proceedings against the person or persons who have directly or indirectly caused such breach or prevent such persons from continuing such breach and to cause such breach to be remedied, and to recover all damaged and expenses.

3 In the event of the exercise of any of the remedies above, the Corporation shall not be liable for any damages for such exercise, provided good faith basis existed for such entry onto the rented shed and/or plot and remedy of the breach.

4 To cancel the investment license of the IP Enterprise.

Inspection[22]

1 The IP Enterprise shall keep a site book on the construction site.

2 The Corporation staff shall be permitted access to any building completed or under construction at any working hours.

3 The Corporation staff visiting a site of a completed or building under construction shall record the objective of his/her visit and the findings thereof on the site book.

4 The Corporation may issue any orders, regarding construction not conforming to this SOP. Each order shall be made on site book or inspection report form.

22 Source: BSD10.3.3

5 The Corporation shall specify the period within which rectification, removal or demolition of works not conforming to this SOP are to be carried out and give the order in writing to the IP Enterprise. The period to be specified shall consider the critical nature of the order to the progress of construction and the sequence of works.

6 Where the IP Enterprise fails to execute the order issued to the IP Enterprise in accordance with Article 8.2 (5), the Corporation may cause the work to be rectified, removed or demolished at the expense of the IP Enterprise.

Penalties

Matters to be Imposed Penalty

If any of the following matters occurs, the Corporation may, in its discretion, suspend or restrict water to an IP Enterprise during period, or to the extent, deemed appropriate by the Corporation;

1 IP Enterprise has used the electricity and water supply illegally due to changes in the electric facilities or the meters for water supply charges.

2 IP Enterprise has failed to pay to the Corporation the charges for water supply and sewerage, electricity, telephone, and Wi-Fi (exclusively Wi-Fi users) maintenance or service and has not made payment in whole or part within a month after demand for payment given by the Corporation.

3 IP Enterprise has breached any of provisions set forth in this SOP and not remedied such breach pursuant to an order to remedy by the Corporation.

4 IP Enterprise has breached the instructions incidental provided by the Corporation, and has not remedied such breach notwithstanding the Corporation's demand; and/or

5 IP Enterprise has committed an action, which seriously betrays the Corporation's confidence.

Breaches of Laws, Rules and Regulations

The followings are considered breach of IP's rule and regulations and each breach shall cause the defaulting contractor to pay to the Corporation an administrative fee of USD 1,000 per breach;

- Dirty of road
- Unauthorized use of IP utilities, facilities
- Damage to common properties including vandalism
- Illegal dumping in IP
- Unauthorized works carried out on site
- Uncleared debris outside boundaries
- Any other incident that disrupts the daily operation of IP
- Open burning

If the IP Enterprise has breached any terms of regulation which is regulated on Council of Ministers Building Regulation No. 243/2011, the Corporation shall impose to the IP Enterprise to pay as fine .[23]

23 Source: Ethiopia Building Proclamation PART 2.23.1

Delay in Completion

1 If there is any delay in the schedule of completion of construction work as set out in the construction schedule submitted to the Corporation, IP Enterprise shall inform to the Corporation in writing of the same, stating the justifiable reason(s) for the delay and indicating therein a new completion schedule.

2 If there is any delay of completion of works beyond any time limit of constructing the building(s) and other structures stated in the Investment License of Industrial Park, the Corporation has the sole and exclusive option to declare Industrial Park in default of the conditions of its utilization or lease and to exercise all its rights and/or remedies under Article 8.1 and 8.2.

3 In case that the time limit for constructing the building(s) and other structures is not set out in the Investment License of Industrial Park Enterprise, two (2) years after the date of the Lease Agreement is the said time limit.

4 In case of being declared in default by the Corporation as set in Article 8.3.3 (2), IP Enterprise shall forfeit the unfinished building(s) and other structures in the rented shed and/or plot as well as all expenses paid for the construction and vacate the rented shed and/or plot. Otherwise, the Corporation shall be free to assume possession of the rented shed and/or plot and the unfinished building(s) and other structures. The Corporation requires the complete removal of the building, structure or any movable property found in the rented shed and/or plot and reinstatement of the rented shed and/or plot to its initial condition before commencement of construction at the sole expense of IP Enterprise.

Failure in Commencement or Completion of the Construction

1 In the event that the IP Enterprise fails to commence with and complete the construction of their factories or facilities, or to commence with operations according to the timeframes indicated in the original construction plan submitted to the Corporation for the request of license, the Corporation has the right to follow the same disciplinary procedures as mentioned in 7.1.6 (1).

2 In the event of failures to pay and failures to construct within the time agreed upon in on building permit, it is incumbent upon the Corporation to inform the Commission of all changes in status of these agreements, and failures of the IP Enterprise to develop their factory and facilities or commence operation according to the original plan and timeframes agreed upon in the original license.

PART NINE

Miscellaneous Provisions

Arbitration

Any dispute unable to be resolved through negotiation and amicable discussion between the parties may be referred, to organs of court in Ethiopia.

Language

1 The official text of this SOP shall be in English.

2 Translation into other language(s) than English may be prepared for reference purposes only in case that the Corporation deems it necessary at its own direction. Should there be any discrepancy between the English version of this SOP and its translation, the English version shall prevail.

Effective Date

This SOP for IP Enterprises of IPs comes into force on the day of signature of Lease Agreement between the Corporation and the IP Enterprise.

APPENDICES

Appendix A Application Formats

Following formats are used when the IP Enterprise applies to request approval or decision from the Corporation on the issues relating to leasing and operation in the IP.

A-1	Application to Lease
A-2	Standard Lease Agreement with IP Enterprise
A-3	Application for Building Permit
A-4	Application for Design Modification
A-5	Application for Occupancy Permit
A-6	Standard Letter of Request for Termination of Lease Agreement
A-7	Application for Renewal of Lease Agreement
A-8	Annual Report of the Industrial Park Enterprise

*Formats other than A-*4 "Application for Building Permit", *A-5* 'Design Modification' *and A-6* "Application for Occupancy Permit" are included in the "Industrial Pak Standard Operation Procedure, March 2016".

A-4 Application for Building Permit

THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

INDUSTRIAL PARKS DEVELOPMENT CORPORATION (IPDC)

Application form for Building Permission

1. Name of the industry park _____ Owner _____
   Company Name _____ dead no. _____
   Address, City _____ Zone _____ Sub city _____ Woreda _____
   Region _____ Block no. _____ Size of Plot _____
   Floor Height above ground level _____ Parking _____
   Total shed cost (Birr) _____

2. Type of buildings
   Residence _____ commerce _____ Shop _____ other facilities _____
   New _____ Old _____ Modification _____

3. Consultants profile
   Name _____ Address _____ Class _____
   License no. _____

Designer type	Designer Name	License number	Tel. no	signature
Architectural				
Structural				
Electrical				
Sanitary				
Mechanical				

4. I under signed, as per Ethiopian Building code and standards on the bases of Rules and regulations. We design on behalf of those professionals, if any defect on design and construction, the company is responsible to mitigate or modify the problems.
   Name of Responcible person _____
   Signature _____ Tel No. _____ Date _____

5. Applicant name _____ signature _____
   Tel No. _____ Date _____

A-5 Application for Design Modification

APPLICATION AND APPROVAL FORMAT FOR MODIFICATION OF INDUSTRIAL SHED AND ADDITIONAL CONSTRUCTION

1. Applicant's name _____ Address_____

Name of Industrial Park_____ Lot no. _____

2. Building permit number and date of issue No. _____ Date_____

3. Current situation of the Plot

☐ Before commencement of construction ☐ Under construction ☐ Under opera

4. Details of Modification

(1) Type(s) of Modification

☐ New building ☐ New foundation ☐ New addition

☐ Re-design/ ☐ Repair ☐ Renovation c

☐ Interior demolition ☐ Demolition of structure ☐ Signage

☐ Setting of telecommunication facilities ☐ Insulation of generator, motor, and tra

☐ Change in function/usage

☐ Other (please specify_____

(2) Target(s) of Modification

(Example: Construction of a new room detached)

_____

_____

5. Reason(s) of Modification

(Example: a separate examination room is needed in response to the customer's requirement)

_____

_____

_____

6. Explanation of modification

(Example: area, height, construction/demolition method, etc.)

_____
_____
_____
_____
_____

7. Drawings: location and design of modification

Please attach following drawings.

(i) location map of the modification point(s) in the Plot
(ii) design drawings of the modification

8. Implementation schedule

Please attach implementation schedule

Approved by

For the Consultant	For the IPDC _____IP	For the Operator _____IP
Name	Name	Name
Signature	Signature	Signature
Date	Date	Date

A-6 Application for Occupancy Permit

The Federal Democratic Republic Of Ethiopia Date: -

Industrial Parks Development Corporation (IPDC) Serial No.

BUILDING OCCUPANCY PERMISSION CERTIFICATE

1. Name of the industry park _____ Owner _____
   Lessee's name _____ Title dead no. _____
   Address, City _____ Sub city _____ Woreda _____
   Region _____ Shed no. _____ Size of Shed. _____
2. Shed Type - New _____ Old _____
   Building Uses _____ Floor level _____
   No. of parking area _____ coordinate X _____
   Y _____
3. Total shed cost (Birr) _____ Building Permit no. _____
   Building Permit date. _____
4. Reason for Occupancy

   _____.

Architectural _____ Electrical _____ Sanitary _____ structure _____

This Building Occupancy Permission Certificate is given to the above stated company by the IPDC as per the delegation of Authority from Ethiopian Investment Commission (EIC) in Mar 04, 2016, concerning Issuance of construction and /or occupancy Permits .

Appendix B Environmental Items and Issues to be Considered

The Corporation, IP Developer, IP Operator and IP Enterprises shall consider the environmental items and issues during the IP and shed construction and operation phases. Chapter 5 of the "Environmental Impac Assessment Guideline Document (draft) (EPA, 2000)" describes issues to be assessed in the EIA of several important sectors.

Project owners (IP Developers and Industrial Park Enterprises) shall receive EIA approval for these issues before starting IP development but also, they must make strong effort to prevent or mitigate negative impact for sound IP development and operation. Issues for the IP Enterprise must consider during the shed construction and operation are as follows.

Table-1 Issues for Environmental Assessment in the Industrial Sector

No.	Environmental Issues	Sources/causes	Impacts
1	Pressure on the natural resource base (effect on the overall ecosystem operation)	⊠ Extraction of raw materials ⊠ Water consumption ⊠ Energy consumption ⊠ Influx of workers	⊠ Unsustainable utilization of natural resources, e.g. water, trees coal, soil
2	Water quality	⊠ Discharge of solid/dissolved substances from construction site and factory shed, e.g. mineral waste, animal and vegetable waste, waste-containing fibers, hazardous waste	⊠ Pollution of ground and surface water, silting, sedimentation, eutrophication
3	Soil quality	⊠ Discharge of solid/dissolved substances, e.g. mineral waste, animal and vegetable waste, waste-containing fibers, hazardous waste	⊠ Sanitation, pollution of soil
4	Air quality	⊠ Emission of dust ⊠ Emission of gases ⊠ Noise	⊠ Air pollution-damage ⊠ Discomfort to natural and human environment
5	Hazardous substances	⊠ Environmentally hazardous substances, e.g. toxins, carcinogenic substances, ozone depleting substances, explosive or inflammable materials, radioactive substances	⊠ Environmental and human health
11	Competition between land-uses: Negative economic impacts on other sectors e.g. agriculture	⊠ Occupation of land, impacts of industry	⊠ Negative economic impacts on other sectors, e.g. agriculture
12	Human health (chemical substances, activities using chemical materials, noise, mineral dust, organic dust, solvent)	⊠ Use of accidental discharge and transportation of inflammable, toxic, explosive, chemical substances ⊠ Industrial activities such as painting, welding, electroplating, and battery manufacture result in exposure of workers to heavy metals ⊠ Noise ⊠ Factories that release mineral dust, e.g. silica and asbestos-glass manufacturing industry, foundry, cement, asbestos, plants ⊠ Factories that release organic dust and those that process grain, cotton, coffee, sisal, wood etc. ⊠ Solvents in printing industry, thinners in the manufacture of paints and glues, dyes in textiles, leather and shoes, organic materials used in chemical industries	⊠ Sludge and dust of toxic, explosive, chemical, and organic factors may cause Ill -health if they are not appropriately managed. ⊠ Inhalation of dust in high doses over long duration can result in respiratory diseases.
13	Human safety (mechanical equipment, explosion, fire)	⊠ Mechanical equipment ⊠ Explosion, fire ⊠ Manufacture of chemicals	Accident, Injury, Death

Source: Arranged by EIPP team based on "Environmental Assessment and Management Guidelines" (EPA, 2000)

IP Enterprises shall also deeply consider the recommendations for environmental management mentioned in the same Guideline Document. Following is the recommendations combined for the industrial sectors who operate in the IP.

Recommendation to the Industry Sector Operating in the Industrial Park

1. New industry to be sited at a sufficient distance from environmentally sensitive areas wherever practically possible
2. Environmental monitoring during construction and operation
3. Implement an environmental management system which ensures environmental responsibility at all levels
4. Utilize environmentally friendly technologies
5. Implement cleaner production strategy - alternative products, production processes, raw materials, energy sources, prevent or reduce waste, waste recycling, re-use
6. Introduce water and energy saving measures
7. Discharge points should be located downstream of supply sources of drinking water
8. Delineation of location of waste dumps
9. Locate chimneys and waste pipes appropriately
10. Monitor volume and composition of discharges regularly
11. Ensure that sensitive environments, and residential areas will not be affected by noise, especially at night
12. Reliable information system and a mechanism for labelling, handling, and stocking of dangerous substances
13. Maintain safety equipment
14. Avoid the use of hazardous pesticides or preservatives
15. Computerized measurement and dosing of process chemicals and dyestuffs
16. Controlled separation of discharge liquids adds to efficiency of recycling - reduction of chrome consumption
17. Remove unwanted parts of hide/skin such as hair, trimmings and unusable bottom splits before tanning. Can be profitably marketed as animal feeds / high humus-level dressing for agricultural land
18. Use high exhaustion chemicals
19. (Consider) United States EPA has established standards (1985) for the control of sulphides, chromium and acidity (tannery)
20. Replace solvents with water / foam in roller-coating or spraying (tannery)
21. Liquid dyestuffs instead of powders (tannery)
22. Safety committees should be formulated and procedures well-known (tannery)
23. Proper identification of all chemicals (tannery)
24. Consider operation of hazardous machines; EC has the code of practice for it (tannery)
25. Consider noise level; most countries have standards of 90 dB (A) for 8 hours of continuous exposure and use of ear protectors, sound absorbent hoods etc. (tannery)
26. Follow the international standard of textile sector; International Association for Research and testing in the Field of Textile Ecology (Oeko -Tex) has developed European standards (textile)
27. Safety procedures to be understood well (textile)
28. Rehabilitation upon closure of industry (textile)
29. Training programmer to assist labor force in adapting to an industrial way of life (textile)

Source: Integrate by EIPP team from recommendations mentioned in "Environmental Assessment and Management Guidelines" (EPA, 2000)

Appendix C Environmental Monitoring Sheet (sample)

A. Construction P hase

Name of the construction site /_____/

Date of monitoring /_____/ Date of reporting /_____/

Person in charge of monitoring /_____/

Person in charge of reporting/_____/

1. Response/Actions to comments and guidance from Government Authorities and the Public

Monitoring item	Monitoring Results during the Reporting Period
Number and contents of formal comments made by the public, if any	
Number and contents of responses from the Government agencies, if any	

2.Pollution control

Item	Unit	Measured Value (mean)	Measured Value (max)	Ethiopian standards	Standards for contract	Referred international standards	Measurement points	Frequency
(1) Air Q uality								
Temperature	□							Once/ three months
humidity	%							
wind velocity	m/s							
SO2	μg/m³							
NO2	μg/m³							
CO2	μg/m³							
PM10	μg/m³							
Pb	μg/m³							
(2) Waste Water Quality								
Color	Hazen							Once/ three months
Odor	-							
pH	-							
Turbidity	NTU							
Total Dissolved solids	mg/l							
Total Hardness as CaCO3	mg/l							
(3) Solid Waste								
Kind of waste	Type							

Amount	Ton/ day							Once/ month
Record of collection	Frequenc y							
(4) Soil C ontamination								
Oil & Grease	mg/l							
(5) Noise and Vibration								
Noise (dB)	db							Once/three months

3. Social Environment

Item	Monitoring Results	Measures to be taken
(6) Resettlement		
Progress of land title transfer		
(7) Working Conditions		
Daily recording		
Construction accidents		
Traffic accidents		
Others		

B. Operation phase

Name of the construction site /_____/

Date of monitoring /_____ / Date of reporting /_____/

Person in charge of monitoring /_____/

Person in charge of reporting /_____/

1. Response/Actions to comments and guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during the Reporting Period
Number and contents of formal comments made by the public, if any	
Number and contents of responses from the Government agencies, if any	

2. Pollution control

Item	Unit	Measured Value (mean)	Measured Value (max)	Ethiopian standards	Standards for contract	Referred international standards	Measurement points	Frequency
(1) Ambient Air Q uality								
Temperature	□							
humidity	%							
wind velocity	m/s							
SO2	μg/m³							
NO2	μg/m³							
CO	μg/m³							
(2) Indoor Air Q uality								
SO2	μg/m³							
NO2	μg/m³							
CO	μg/m³							
Pb	μg/m³							
(3) Diesel Generator Stack Emission Monitoring								
SOx	mg/Nm3							
NOx	mg/Nm3							
CO	mg/Nm3							
Pb	μg/m³							
(4) Waste W ater								
Refer to "Inf luent Parameters as each CETP" and "Quality Standard of Wastewater Discharged from Factories/Offices and Entering to Sewage System"								
(5) Solid Wastes								
Kind of waste	By type							
Amount	t/day							
Cleanness of collection points	-							
Record of collection	Frequency							

3. Social E nvironment

Item	Monitoring results	Measures to be taken
(6) Working Conditions		
Daily recording		
Health condition of EKI staff and workers		
Labor accidents		
Traffic accidents		
Others		

Source: Prepared by EIPP Team

IPDC
Industrial Parks Development Corporation
የኢንዱስትሪ ፓርኮች ልማት ኮርፖሬሽን

EIPP

SEPTEMBER 2018

別添資料 7

工業団地の需要バランス分析

Attachment 2.4

Comparison between Demand and Supply of Area

1. Estimation of Workers of Manufacturing Sector (Medium/Large Enterprises: note)

Number of workers in manufacturing sector in 2020 and 2025 are estimated by adapting 15% growth rate indicated in GTP2 (Table 1).

Note: Only medium/large enterprises with more than 10 workers per enterprise are the target to be established in IP.

Table 1 Estimation of Number of Workers of Ethiopia Manufacturing Sector (cumulative)

Item	2015	2020	2025
Workers in Manufacturing Sector	333,084	760,000	1,500,000

Source: 2015 (Report on Large and Medium Scale Manufacturing and Electricity Industries Survey, Sep. 2016, CSA), 2020,2025 (estimation)

2. Estimation of Necessary IP Area

(1) Necessary IP area in future is estimated base on the estimated number of workers as shown in Table 2. (Estimation method is in Figure 1)

Table 2 Necessary IP Area in Ethiopia (cumulative increase)

(Cumulative)

	2016-2020	2021-2025
Workers in IP	321,000	938,000
Necessary IP Area (ha, gross)	2,396	7,586

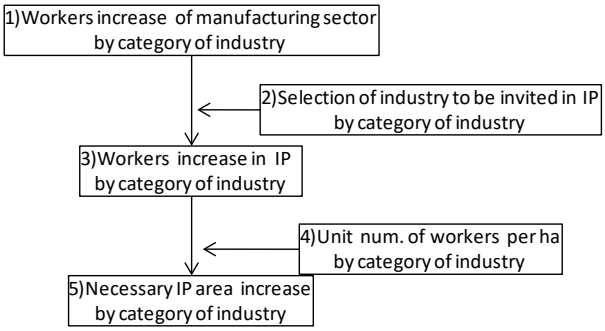
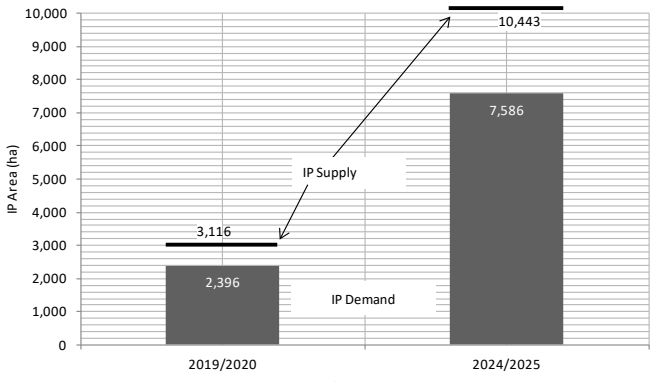


Figure 1 Method for Estimation of Necessary IP Area

(2) Excessive supply of IP area will be happened in both year as shown in Figure 2 and Table 3.



Note: IP Supply covers IPs of IPDC+UNIDO+private

Figure 2 Balance of Demand and Supply of IP Area in Ethiopia

Table 3 Balance of Demand and Supply of IP Area in Ethiopia

		2019/2020	2024/2025
Necessary IP Area (cumulative, ha)		2,396	7,586
Area of Existing IPs (under developing/planned, cumulative, ha)	IPDC IP	1,786	2,046
	IPDC IP(subletting to private)	234	7,034
	UNIDO IP	677	677
	Private IP	419	686
	Total	3,116	10,443
Balance (cumulative, ha)		-720	-2,857

(3) More imbalances between demand and supply of IP area will appear by category of industry distribution as shown in Figure 4. Imbalance of IP area for textile and apparel industry will be approximately 400ha in 2020. Shortage of IP area for metal industry, food industry and chemical industry will be seen as shown in Figure 4.

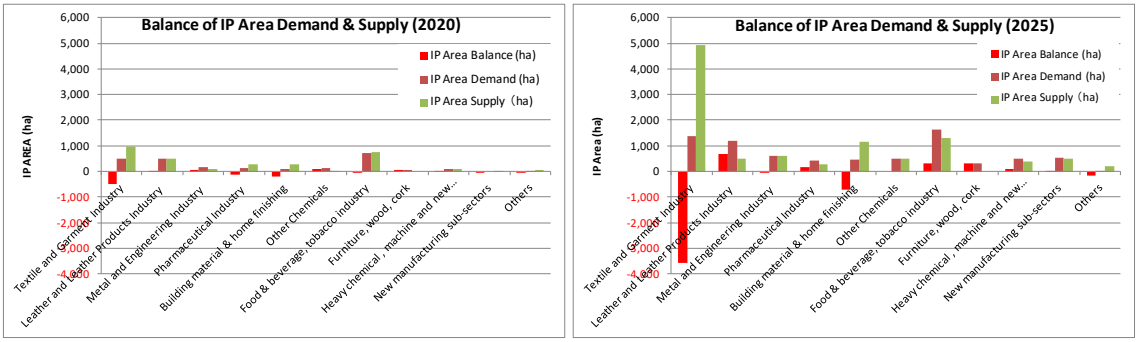


Figure 4 Demand and Supply Balance of IP Area by Category of Industry (20205, 2025)

3. Recommendations

Rearrange the development schedule of IPs and/or change of target category of industry of IPs, i.e. from textile/garment to leather product, pharmaceutical industry, etc. is recommendable. Detailed idea will be proposed by considering the characteristics of IP, demand trends, etc. after IP site visits.

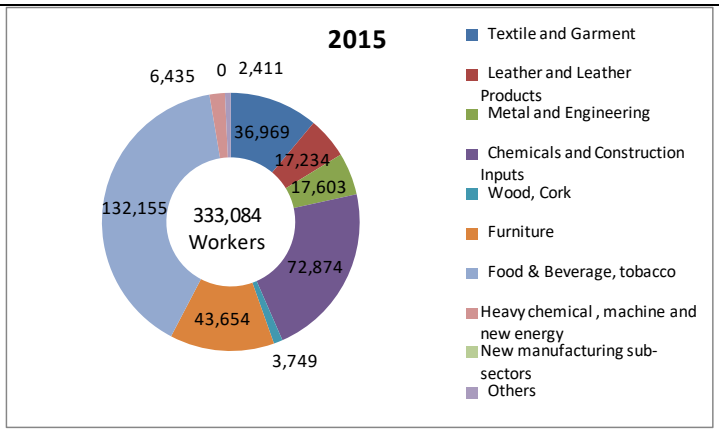
Material 1: Existing Development Projects of IP (under developing, planned)

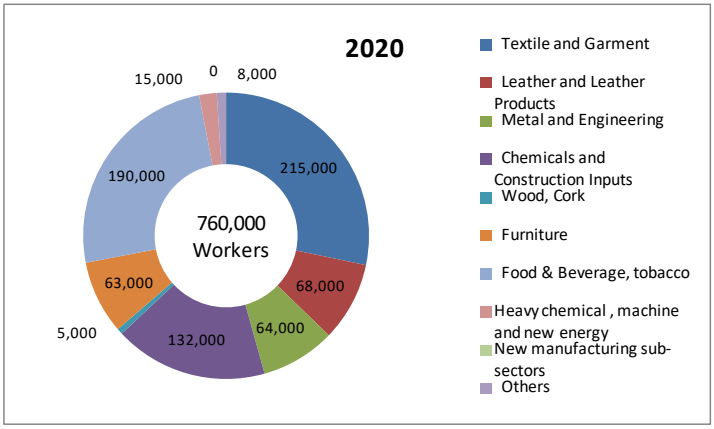
	No	Industrial Park	Completion Period	Factory Sheds	Area (ha)				Manufacturing Sector
					2020	2025	2030	Total	
IPDC IP	1	**Bole Lemi I**	2015	20	156			156	Textile & Apparel, Leather products
	2	**Hawassa Phase-1 Cycle-1**	2016	37	130			130	Textile & Apparel
		Hawassa Phase-1 Cycle-2	2017	15	10			10	Apparel
	3	Hawassa Phase-2	-	-		160		160	-
	4	**Mekele**	2017	15	75			75	Textile & Apparel, Food processing
	5	**Kombolcha**	2017	9	75			75	Textile & Apparel, Food processing
	6	**Adama I**	2017	19	100			100	Textile & Apparel, Vehicle assembly, Food
	7	Diredawa	2017	15	150			150	Textile & Apparel, Heavy industry, Vehicle assembly, Food, Electronic, Paper & allied products, Chemicals
	8	Jimma	2017	9	75			75	Apparel
	9	Bole Lemi II	2018	2	171			171	Textile & Apparel
	10	Kilinto	2018		279			279	Pharmaceutical
	11	Bahir Dar	2017	9	75			75	Textile & Apparel
	12	Debere Birhan	2017	-	75			75	Textile & Apparel
	13	Arerti-1	-	-		100		100	Building material & Home finishing
		Arerti-2	2018	-	50			50	Building material & Home finishing
	14	Aysha	2018	-	75			75	-
	15	Modjo leather city	-	-	290			290	Leather, Leather products
	Total			69	1,786	260	0	**2,046**	
Private IP or IPDC	1	Mekele		-		760	190	950	Textile & Apparel, Food processing
	2	Kombolcha		-		500	125	625	Textile & Apparel, Food processing
	3	Adama I		-	234			234	Textile & Apparel, Vehicle assembly, Food processing
	4	Adama II		-		200	1,481	1,681	
	5	Diredawa		-		2400	600	3,000	Textile & Apparel, Heavy industry, Vehicle assembly, Food, Electronic, Paper & allied products, Chemicals
	6	Jimma		-		690	173	863	Apparel
	7	Bole Lemi II		-					Textile & Apparel
	8	Kilinto		-					Pharmaceutical
	9	Bahir Dar		-		1095	274	1,369	Textile & Apparel
	10	Debere Birhan		-		495	124	619	Textile & Apparel
	11	Arerti-2		-		522	130	652	Building material & Home finishing
	12	Aysha		-		138	137	275	-
	Total			-	234	6,800	3,234	**10,268**	
Private IP	1	George shoe			49			49	Leather, Leather products
	2	Huajian			137			137	Leather, Leather products
	3	Eastern Industry Park			233	267		500	Building material & Home finishing
	Total				**419**	**267**	**0**	**686**	
UNIDO IAIP					**677**	**0**	**0**	**677**	
Total					3,116	7,327	3,234	13,677	

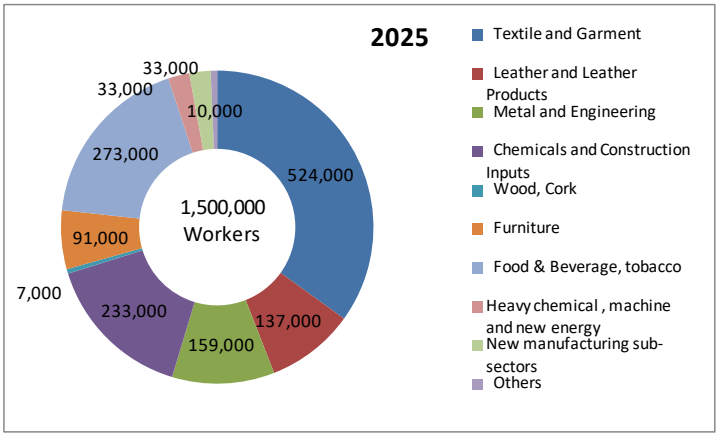
Source: IPDC, Modjo leather city: UNIDO brochure

cumulative	3,116	10,443	13,676

Material 2







Estimate of Workers Number by Category of Manufacturing Industry

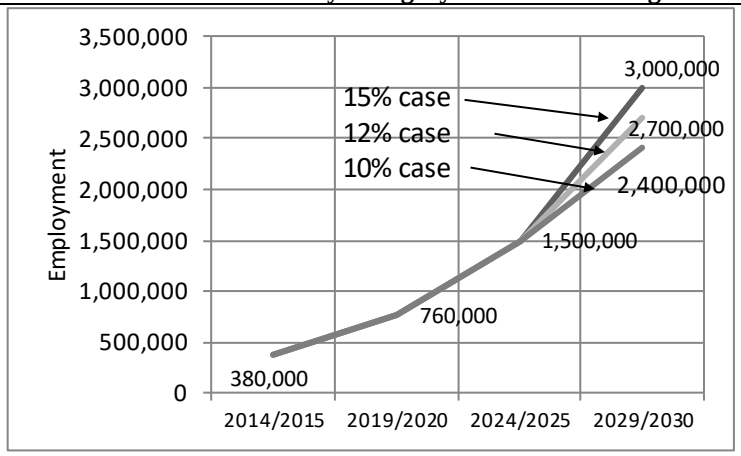


Image of Increasing Trend of Number of Workers of Manufacturing Industry

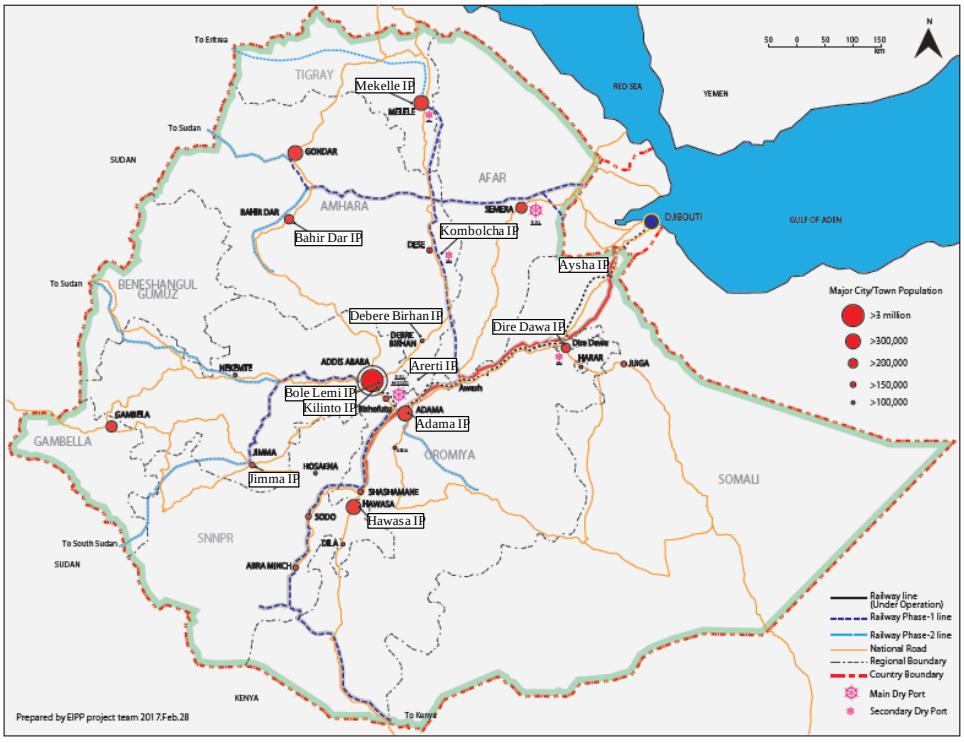
Material 3: Number of Workers by Category of Industry

	Employment (Cumulative)			Growth Rate	
	2014/2015	2019/2020	2024/2025	2015-2020	2020-2025
Total manufacturing industry	***333,084***	***760,000***	***1,500,000***	15%	15%
Labor intensive and agro-processing industries	**324,238**	**737,000**	**1,424,000**		
Textile and Garment Industry	36,969	215,000	524,000	42%	20%
Leather and Leather Products Industry	17,234	68,000	137,000	32%	15%
Metal and Engineering Industry	17,603	64,000	159,000	29%	20%
Chemicals and Construction Inputs Industry	72,874	132,000	233,000	13%	12%
Fertilizer industry	2,000	18,000	29,000	55%	10%
Basic chemical industry	1,182	2,000	4,000	11%	15%
soap and detergent industry	7,089	9,000	14,000	5%	10%
paper and paper products industry	9,628	12,000	24,000	5%	15%
plastic and related products industry	19,250	29,000	47,000	9%	10%
cement industry	11,143	19,000	33,000	11%	12%
ceramics industry	1,072	2,000	4,000	13%	13%
marble and granite industry	17,874	24,000	39,000	6%	10%
Pharmaceutical Industry	3,108	9,000	22,000	24%	20%
Rubber industry	528	7,000	17,000	68%	20%
Food & beverage, tobacco industry	132,155	190,000	273,000	8%	8%
Furniture	43,654	63,000	91,000	8%	8%
Wood, Cork	3,749	5,000	7,000	6%	6%
Heavy chemical , machine and new energy	**6,435**	**15,000**	**33,000**		
Machine tools	1,842	5,000	10,000	22%	18%
Heavy electric equipment	0		1,000		
Heavy transport, construction and mining equipment	4,593	10,000	20,000	17%	16%
Heavy petrochemical and chemicals	0		1,000		
Renewable energy generators	0		1,000		
New manufacturing sub-sectors	**0**		**33,000**		
Biotechnology	0		2,000		
Petrochemicals	0		1,000		
Electrical and electronics	0		10,000		
ICT (hardware)	0		20,000		
Others	**2,411**	**8,000**	**10,000**	27%	15%

Source: Yellow (2014/15)-Report on Large and Medium Scale Manufacturing and Electricity Industries Survey, Sep. 2016, CSA

Green- GTP2

Blue- Team assumption



IP Distribution Plan by IPDC

別添資料 **8**

IP 需要予測とエチオピアの工業団地配分コンセプト

Attachment 2.5

IP Area Demand Projection and IP Distribution Strategy in Ethiopia

1. Long Term Demand of IP Area

Short and medium term demand of IP area targeting 2020 and2025 was made by EIPP Team of JICA in July. Long term demand of IP area targeting 2030 and 2035 is proposed in this report as shown in Table 1.

Table 1 Projection of IP Area Demand of Ethiopian

(Cumulative)

	2020	2025	2030	2035
IP Area Demand (ha)	2,400	7,600	15,400	29,600

Note: Only medium/large enterprises with more than 10 workers per enterprise are the target to be established in IP.

IP area for additional IP projects is calculated by deduction of developing/planned IPs area from IP area demand (Table 2). Results are 1) area of developing/planned IPs satisfies demand in 2020 and 2025, 2) additional IP area of 1,200 ha and 15,000 ha will be necessary in 2030 and 2035 (Table 2 and Figure 1).

15,000 ha additional IP area development in 2035 is roughly equivalent to developing/planned IP area of 14,000 ha.

Table 2 Necessary Additional IP Area in Ethiopia

(Cumulative)

	2020	2025	2030	2035
IP Area Demand (ha)	2,400	7,600	15,400	29,600
IP Supply: area of developing/planned IPs	3,200	10,700	14,200	14,200
Balance of IP Area (ha)	-800	-3,100	1,200	15,400

Note: IPDC owned IP, IPDC and private joint development IP, private IP, UNIDO IP, and local government Industrial Zone are inclusive in developing /planned IPS.

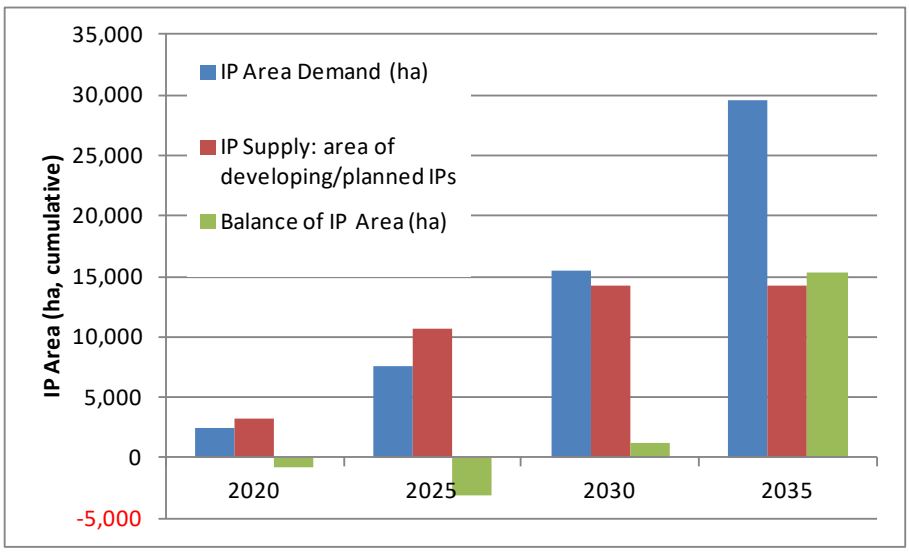


Figure 1 IP Area Demand and Necessary Additional IP Area

2. Method of Projection

Number of Workers in Manufacturing Sector of Ethiopia

15% annual increase rate is applied for the projection of number of workers of manufacturing sector for short and medium term period of 2020 and 2025. For long term period projection, 10% annual increase rate is assumed. Results are shown in Table 3.[1] Figure 2 shows number of workers in manufacturing industry by category of industry.

Table 3 Estimation of Number of Workers of Manufacturing Sector in Ethiopia

	2015	2020	2025	2030	2035
Growth rate assumed of manufacturing sector employment	-	15%	15%	10%	10%
Num. of employment of manufacturing sector	333,000	760,000	1,500,000	2,400,000	3,900,000

Source: 2015: Report on Large and Medium Scale Manufacturing and Electricity Industries Survey, Sep. 2016, CSA, 2020 – 2035; estimate of EIPP

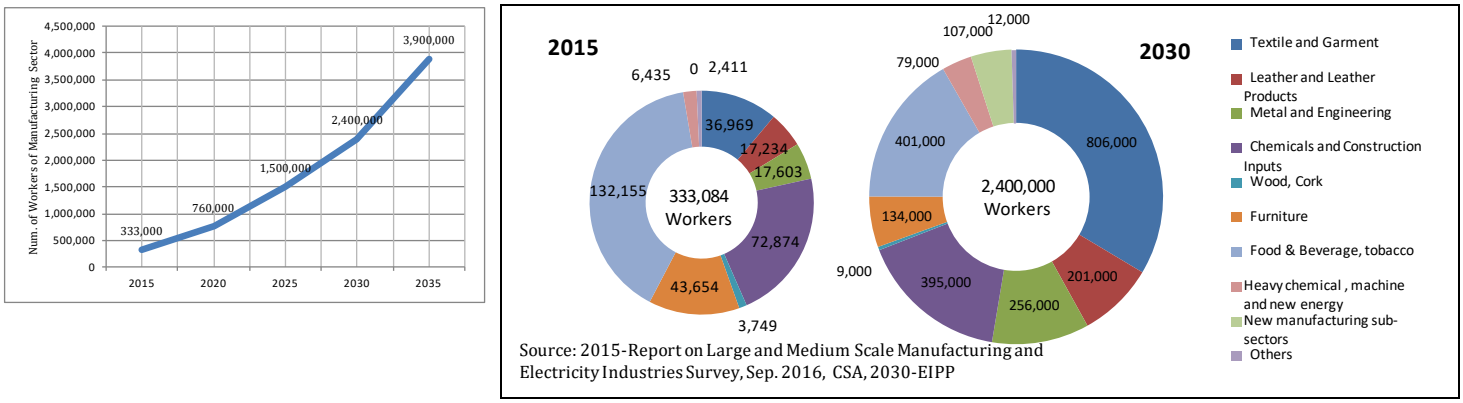


Figure 2 Estimation of Number of Workers of Manufacturing Sector in Ethiopia

Projection Method of IP Area Demand

IP area demand was projected based on number of workers by category of industry. Work flow is shown in Figure 3.

[1] "THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT, Goal 8.1" indicates that at least 7% annual growth rate of GDP is necessary to sustain per capita economic growth in the leased developed countries. 7% GDP growth rate corresponds to 10% increase rate of number of workers in manufacturing sector.

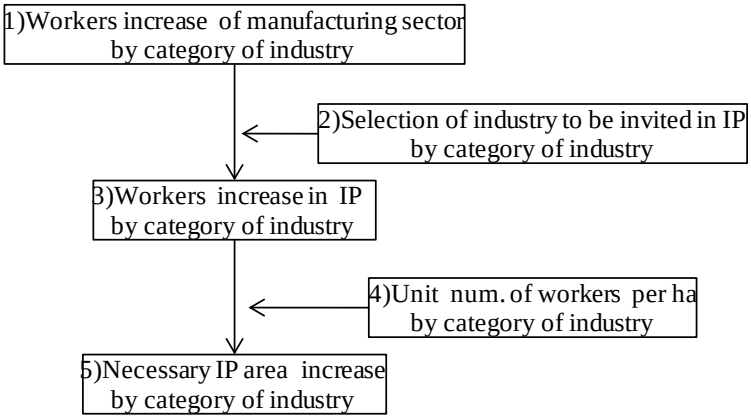


Figure 3 Work Flow for IP Area Demand Projection

3. IP Distribution Strategy

IP area Demand by Category of Industry

IP area demand of the current major categories of textile/apparel, leather product, and food processing will be increased constantly in future. Furthermore, IP area demand of machinery and equipment, electric apparatus, transportation machinery, etc. and new manufacturing industry such as bio-chemical, electronic devices, ICT hardware, etc. will be increased in long term future (Figure 4).

Figure 5 shows demand and supply balance of IP area in terms of category of manufacturing industry. Adequate IP area can be supplied by developing/planned IPs in categories of textile/apparel and building materials & home finishing, while shortage of IP area will be happened from medium term period in leather products, furniture and pharmaceutical industry. Further machinery and equipment industry and new manufacturing industry will require IP area development in long term period.

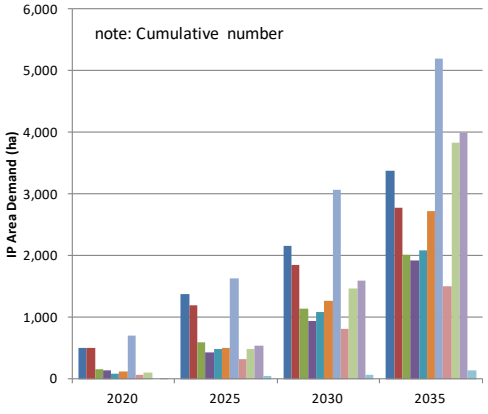


Figure 4 IP Area Demand by Category of Industry

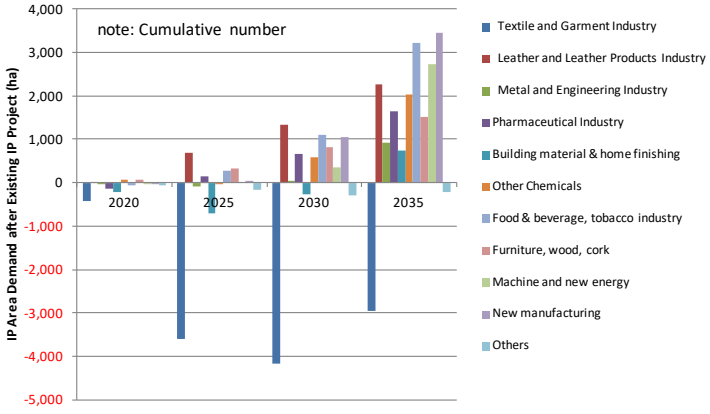


Figure 5 IP Area Demand and Supply Balance by Category of Industry

Distribution Strategy of IP

In consideration of existing industrial accumulation, developed infrastructure, available labor force, cities and regions, in which IP of IPDC is under developing or planning, can be prospective target area for additional IP.

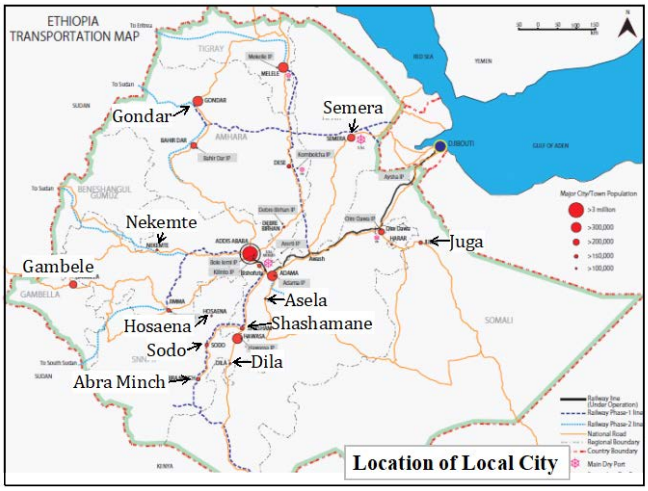
To identify other areas for additional IP development, local cities are assessed by using evaluation elements of transportation infrastructure, power supply infrastructure, water resource, availability, labor forces, environmental weakness, disaster potential, etc. Table 4 shows that candidate city for new IP development can not identified except for city of SODO（SNNPR）and Nekemte.

Table 4 Evaluation of Appropriateness for New IP Development

Local City (Map below)	Evaluation Element							Overall evaluation
	Transportation infrastructure	Power supply infrastructure	Water resource	Labor force	Enviro n-ment	Disaster potential	Others	
Gondar	○(future)	○(future)	○	○	×	○	Tourism destination	×
Semera	○	○(future)	×	×	○	×		×
Nekemte	○(future)	○(future)	○	△	○	○		○
Gambela	×	○(future)	○	×	×	○		×
Hosaena	×	×	○	×	○	○		×
Asela	×	×	○	△	○	○		×
Shashamane	○(future)	○(future)	○	○	○	○	Close to Hawassa	×
Sodo	○(future)	○(future)	○	△	○	○		○
Abra Minch	○(future)	○(future)	○	△	×	×		×
Juga	×	○(future)	×	○	○	○		×
Dila	×	×	○	×	○	○		×

×: inappropriate for IP　△: difficult for IP　○ : appropriate for IP

Note: Maps for evaluation element are shown in Appendices.



Distribution strategy of IPs by category of industry is proposed hereunder considering the prospective target area for additional IP development mentioned hereinabove (Attachment Figure 1-10).

1) Textile/apparel: Adequate IP area will be ready by the developing/planned IP even in the long term period. Therefore, additional IP development is unnecessary.

2) Leather: Additional IP development will be necessary from medium term period. Modjo area where Modjo leather IP is planned will be the target region for additional IP development.

3) Metal: Additional IP development will be necessary in long term period. Adama and Diredawa where metal related IPs exist will accumulate new IPs.

4) Pharmaceutical: Additional IP development will be necessary from medium term period. Addis

Ababa capital region where Kilinto IP is under development will accumulate the pharmaceutical industry.

5) Building materials: Additional IP development will be necessary from long term period. Adama and Diredawa where relevant IPs exist will accumulate new IPs.

6) Other chemical product: Additional IP development will be necessary in long term period. Addis Ababa capital region and Diredawa will be prospective region.

7) Food processing: Additional IP development will be necessary from medium term period. Moreover IP area demand will increase in long term period. Adama、Diredawa、Mekele、Kombolcha where developing/planned IPs for food industry are on-going are prospective region for additional IP. Foods IPs in local city/region are also prospective by utilizing agricultural products harvested locally (This is not presented in attached figure). Well coordination with Integrated Agro-industrial Park of MOI/UNIDO is necessary.

8) Furniture: IP project related to furniture industry is not planned yet. Then, IP development in medium term period is recommendable. Addis Ababa capital, Diredawa and Mekele are prospective region for IPs of furniture industry.

9) Machinery & equipment: Additional IP development will be necessary in long term period. Addis Ababa capital, Diredawa and Mekele region where IP development is on-going are the target for additional IP to accumulate machinery industry.

10) New manufacturing sector (bio-chemical, electronic devices, ICT hardware, etc.): Additional IP development will be necessary in long term period. The capital – Adama industrial corridor and Diredawa region will be prospective area for new manufacturing sector.

On the basis of the IP distribution strategy described above, an integrated IP distribution concept of Ethiopia for long term period is conceived in Figure 6.

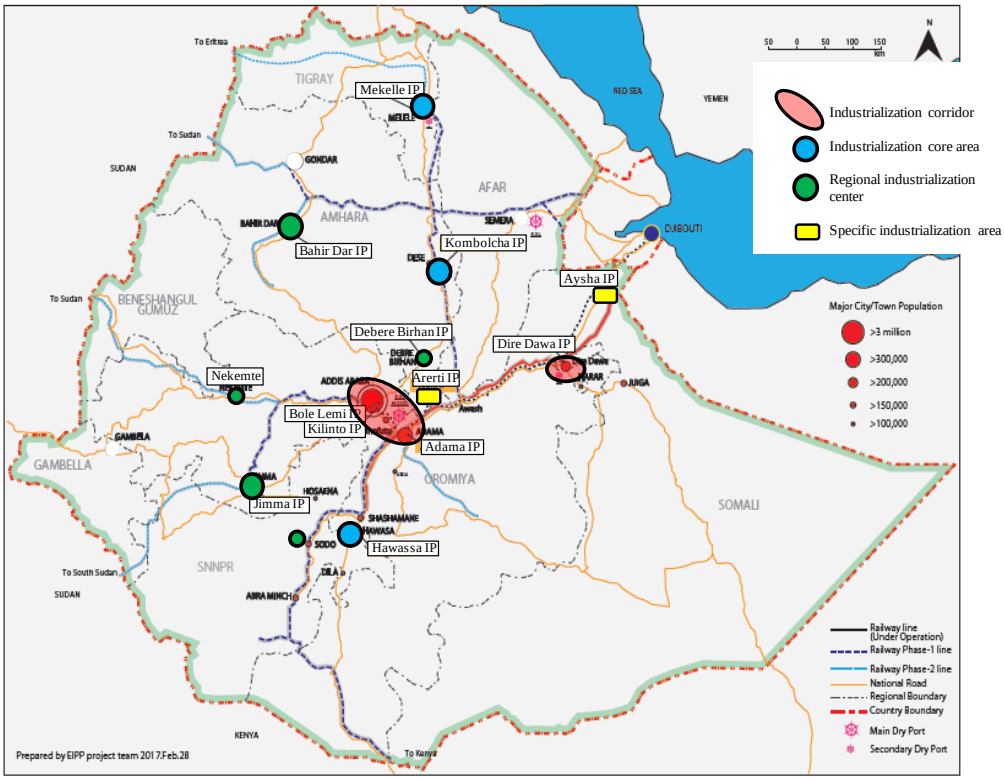
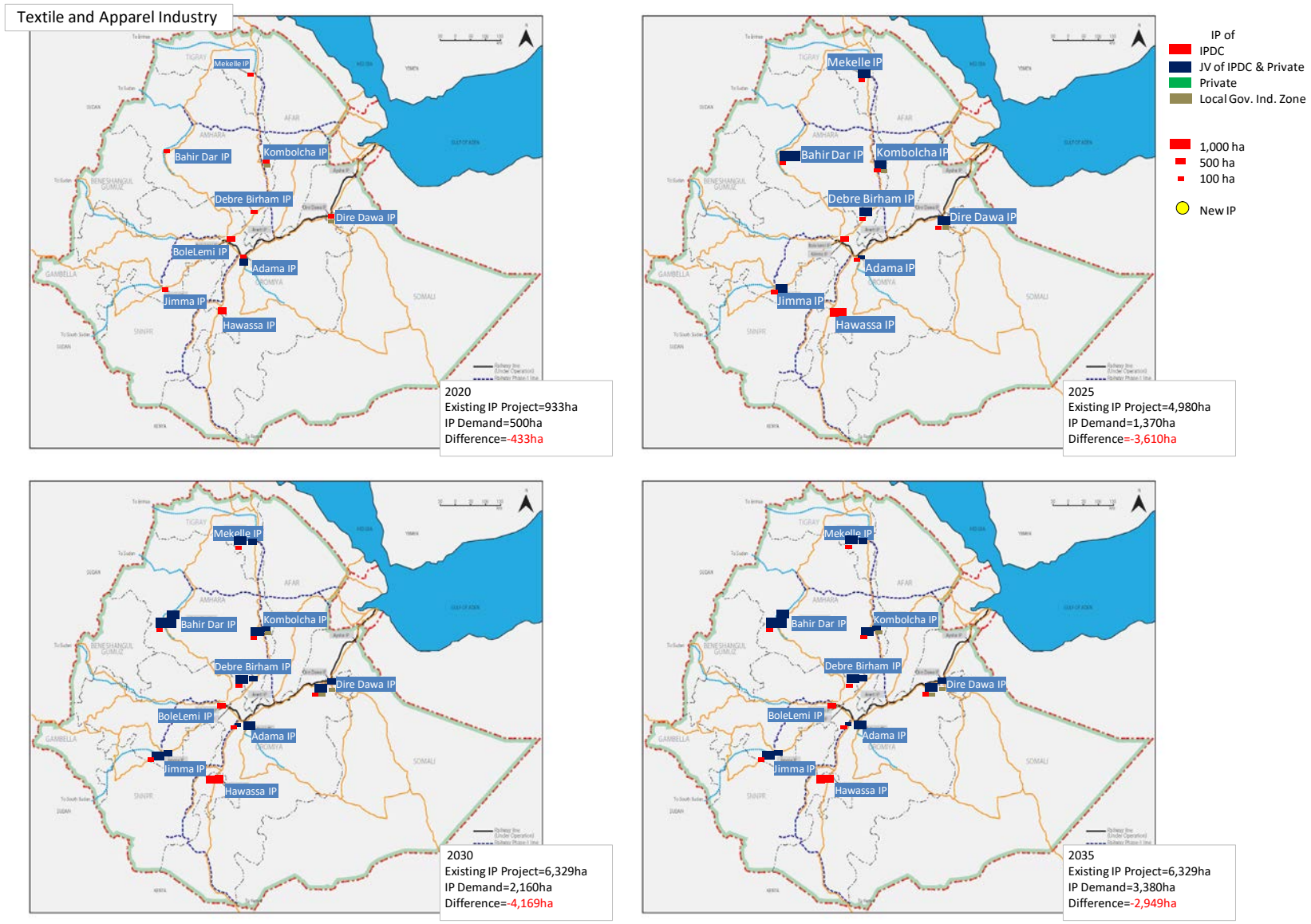
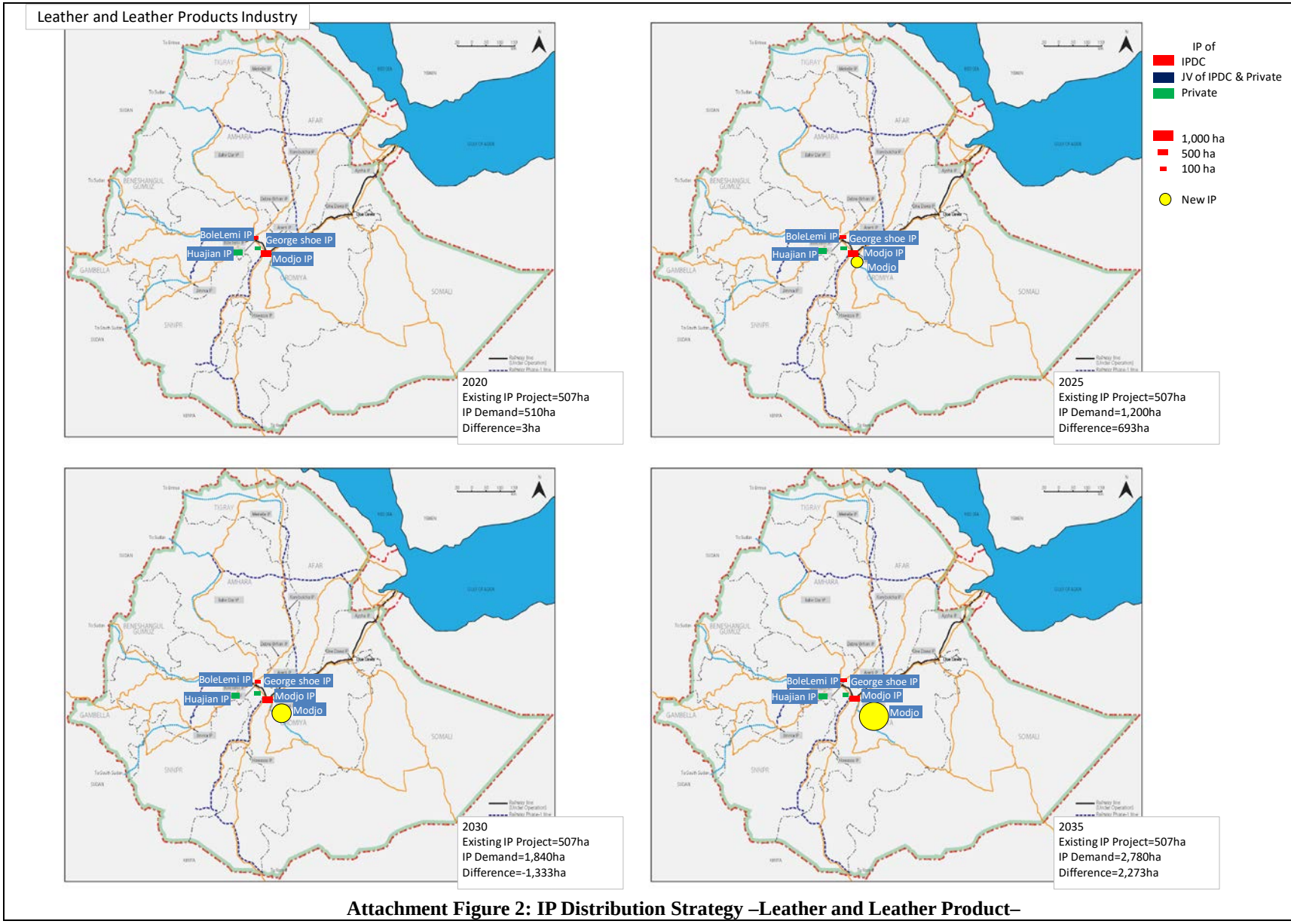


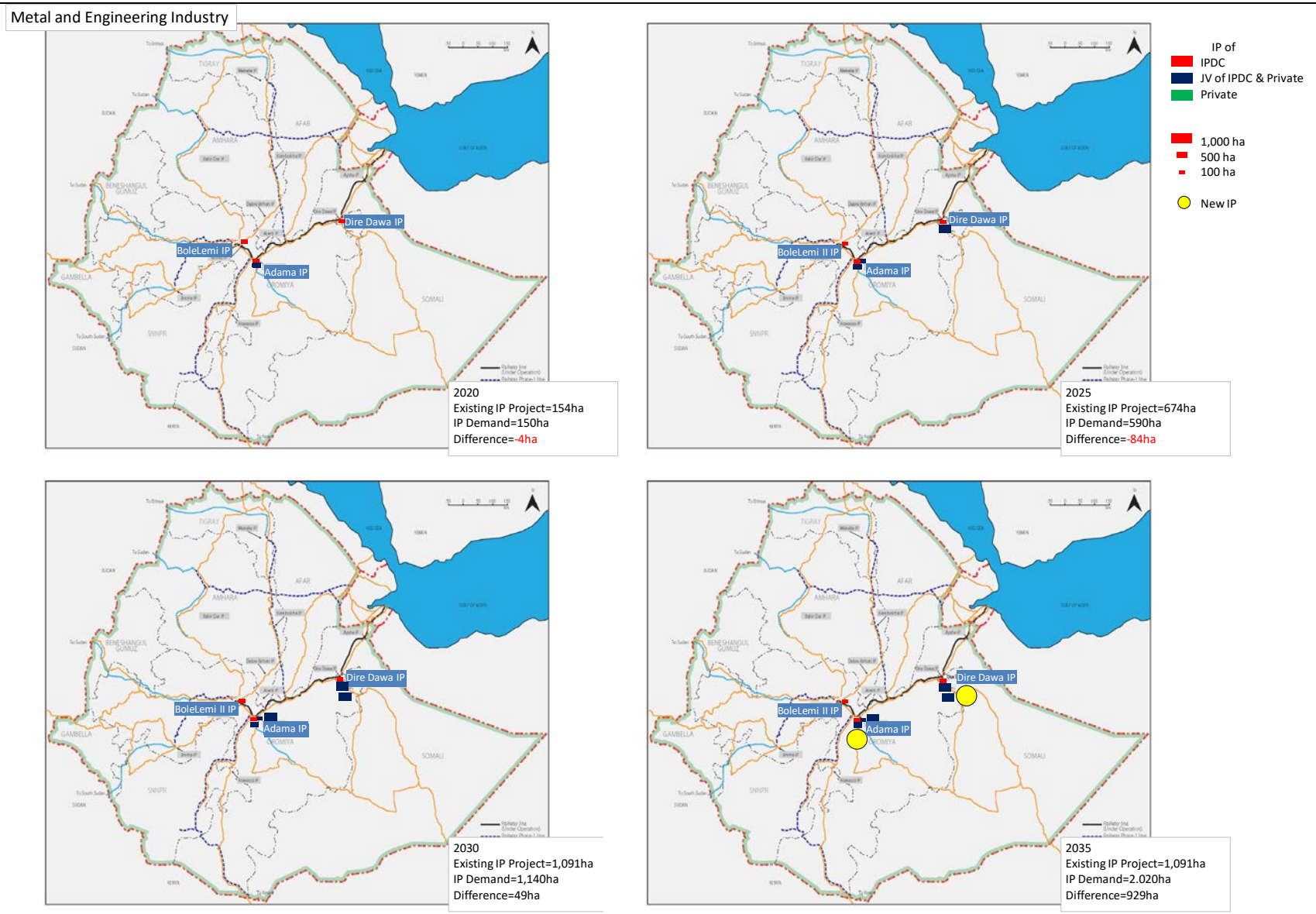
Figure 6 Integrated IP Distribution Concept (Long Term Plan)



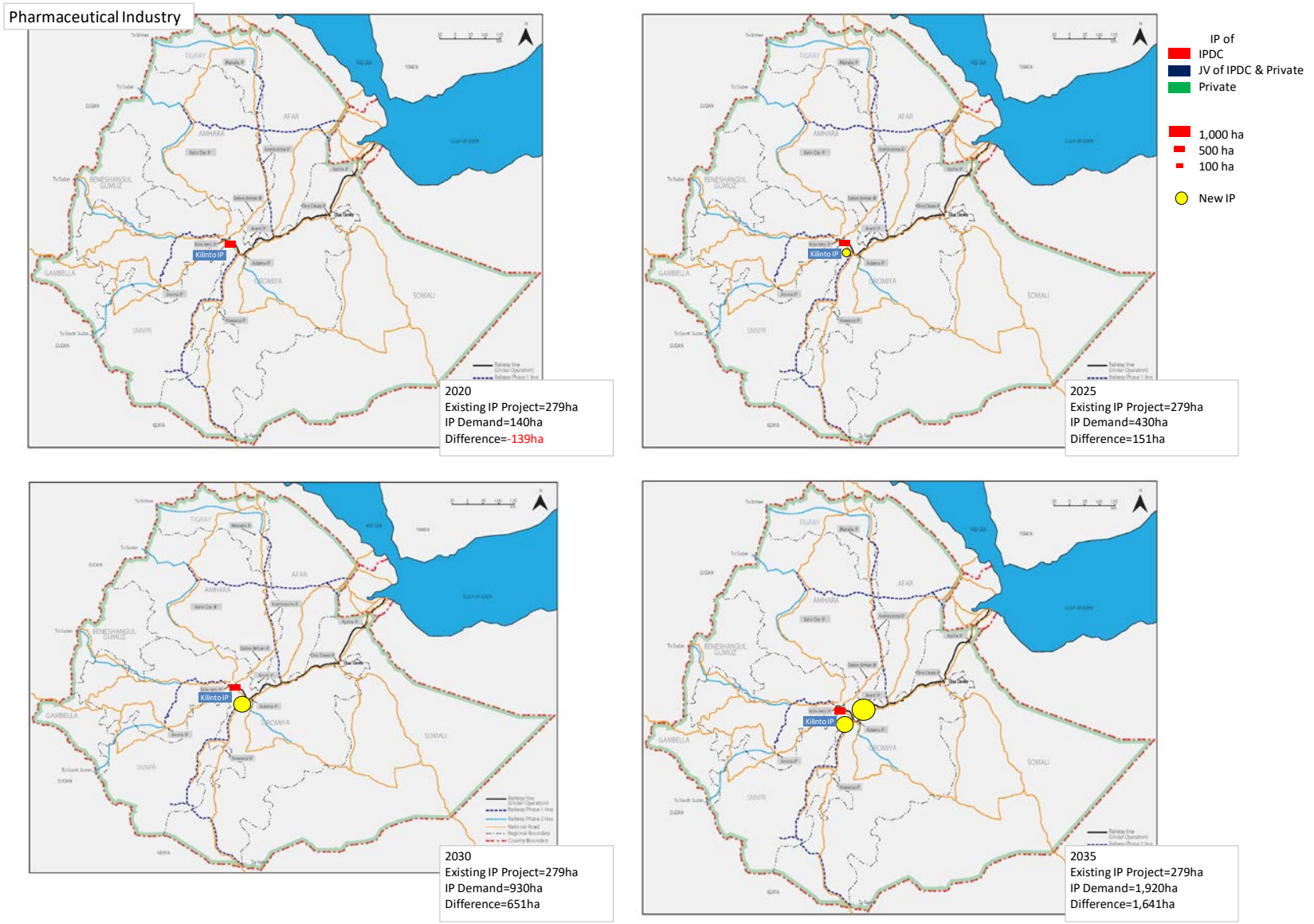
Attachment Figure 1: IP Distribution Strategy –Textile/Apparel–



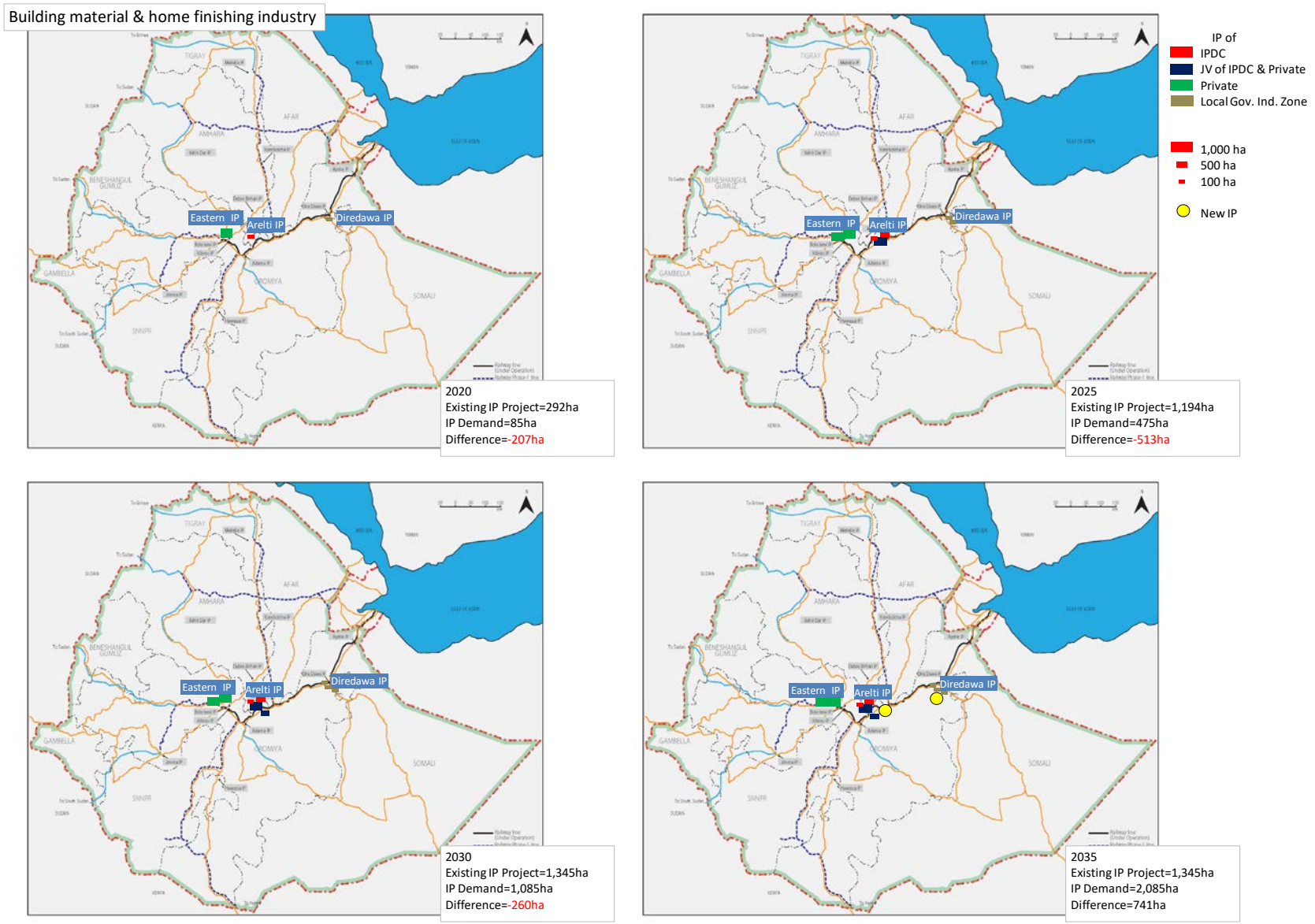
Attachment Figure 2: IP Distribution Strategy –Leather and Leather Product–



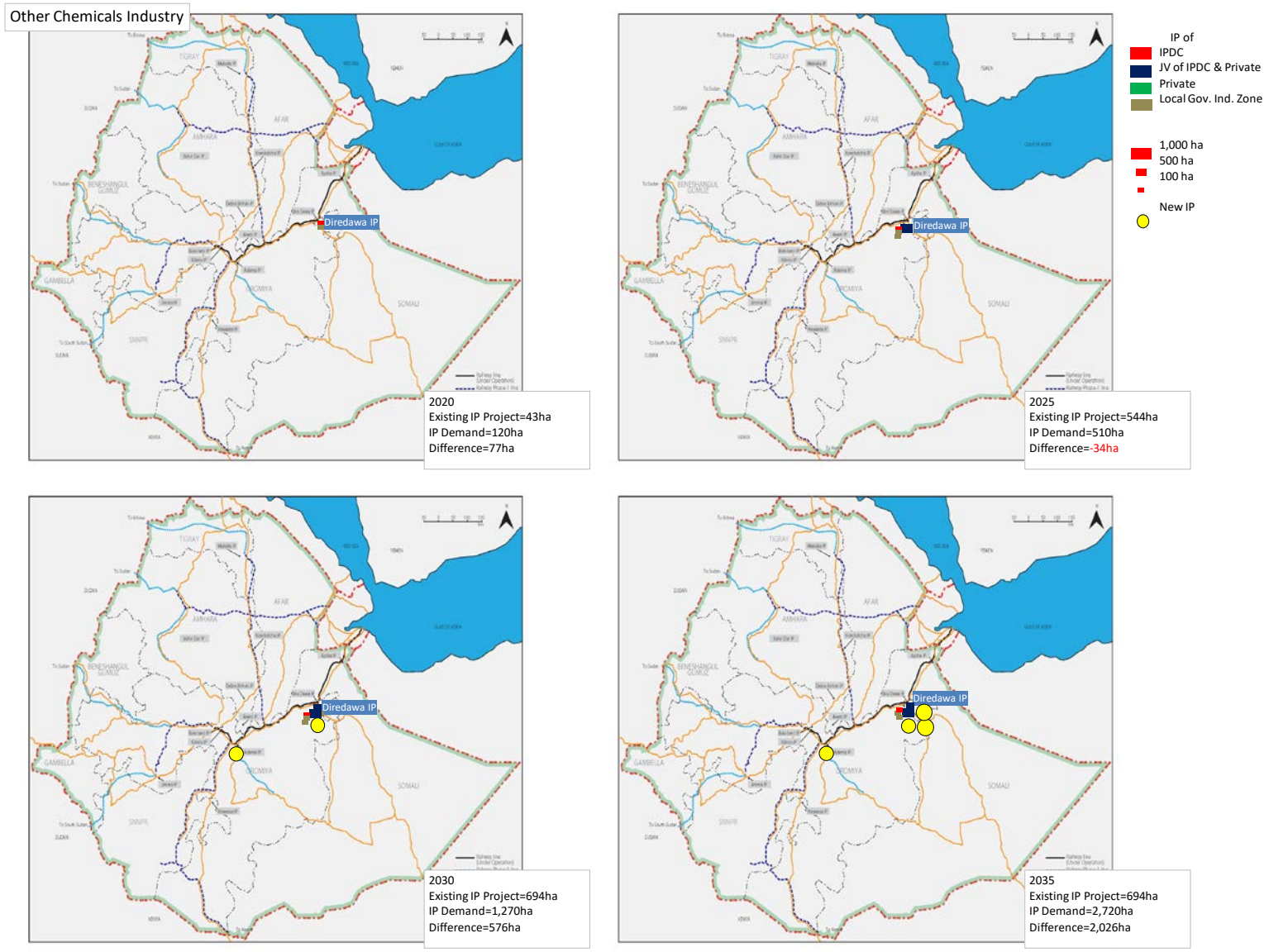
Attachment Figure 3: IP Distribution Strategy –Metal Product–



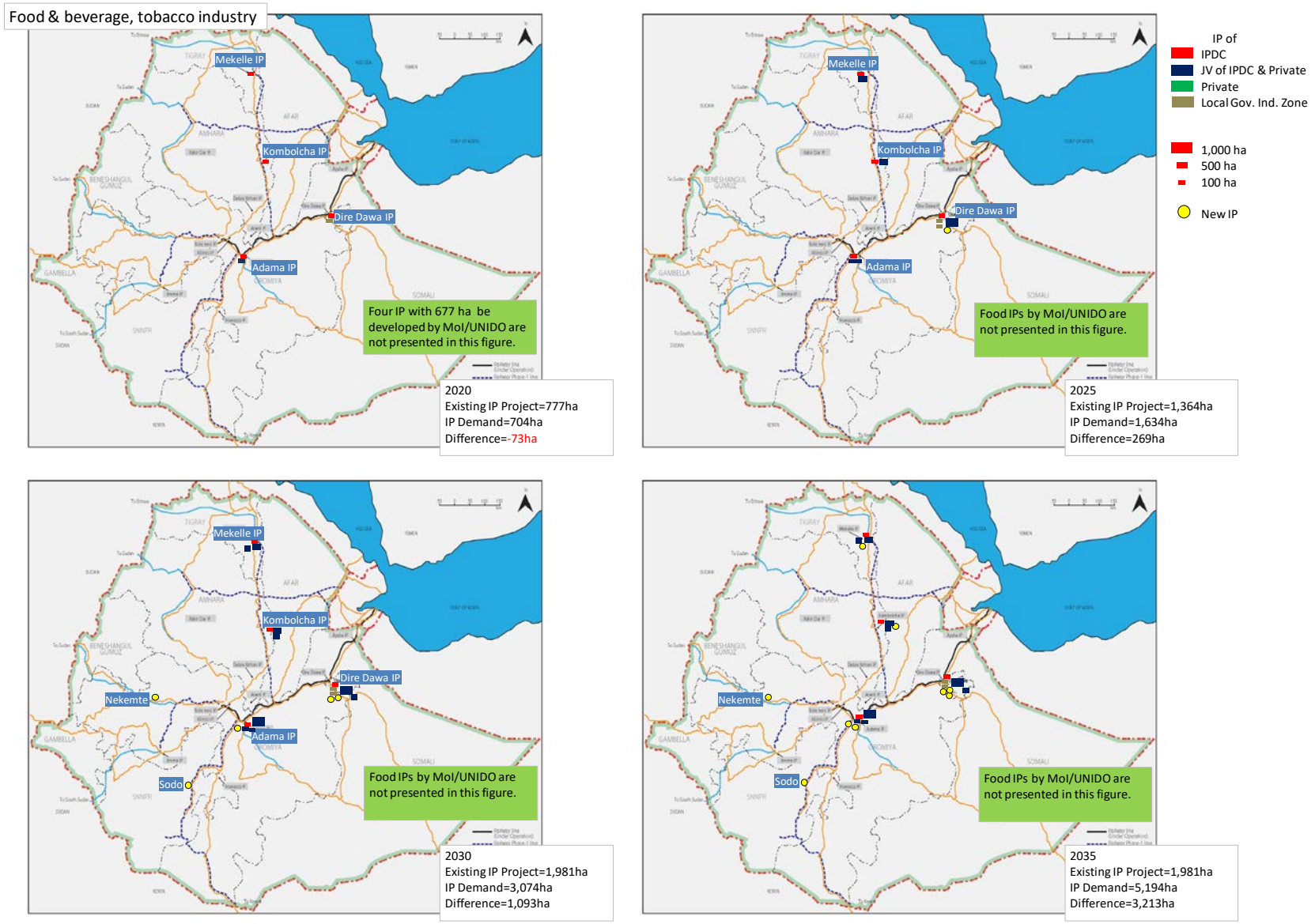
Attachment Figure 4: IP Distribution Strategy –Pharmaceutical Industry–



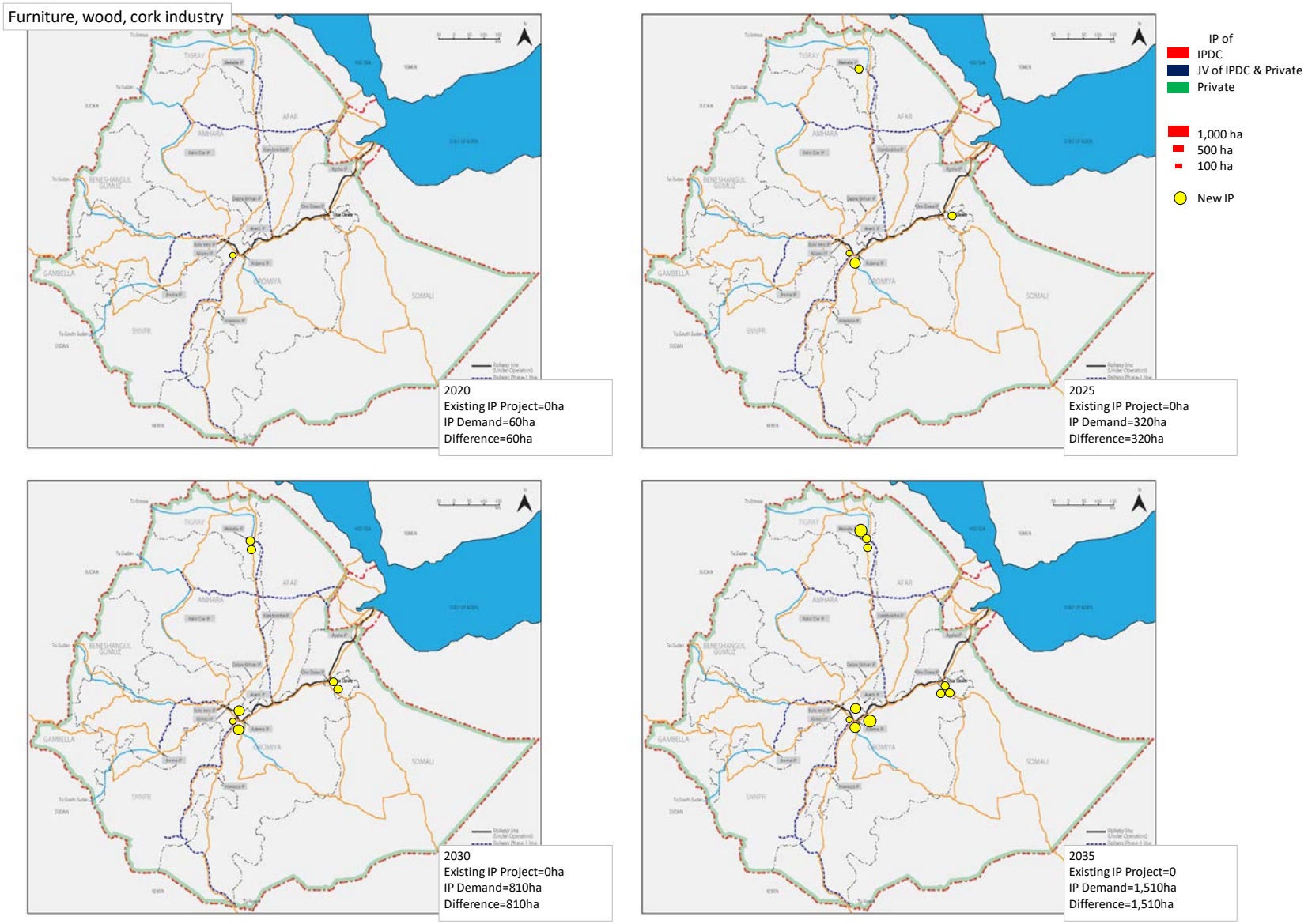
Attachment Figure 5: IP Distribution Strategy –Building Material & Home Finishing Industry–



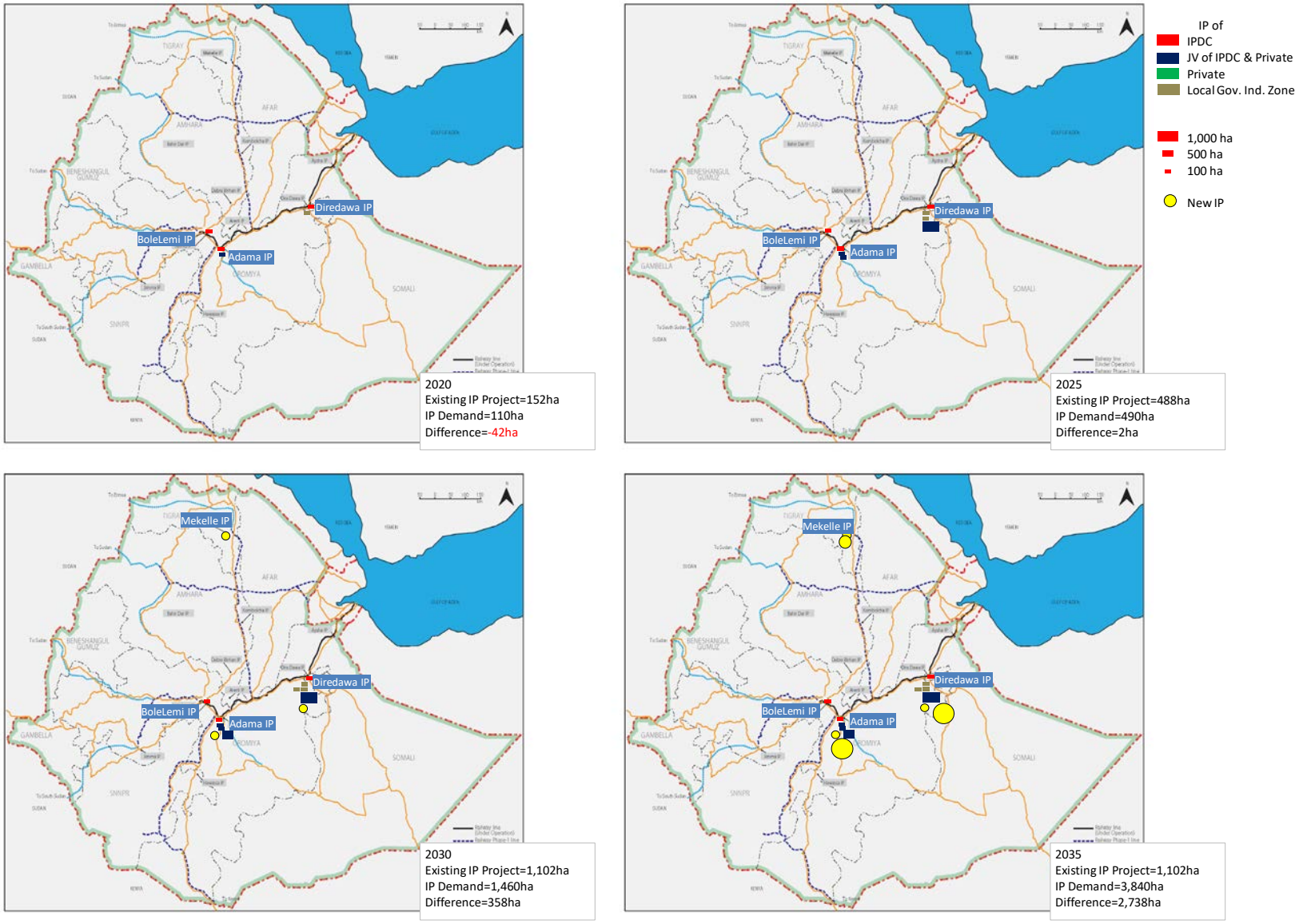
Attachment Figure 6: IP Distribution Strategy –Other Chemicals Industry–



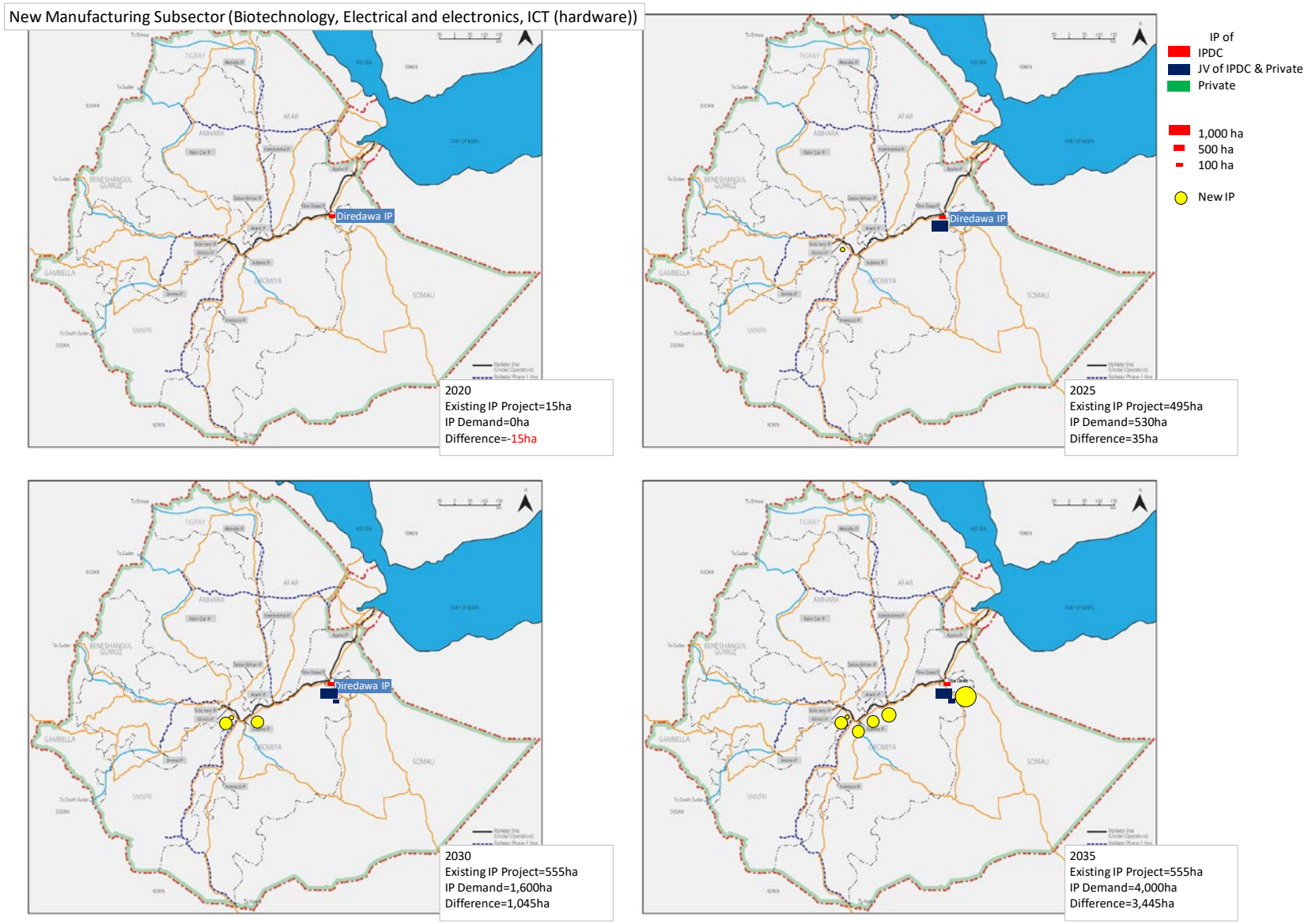
Attachment Figure 7: IP Distribution Strategy –Food and Beverage–



Attachment Figure 8: IP Distribution Strategy –Furniture–



Attachment Figure 9: IP Distribution Strategy – Machinery, Electric Apparatus, Transportation Machinery, etc. –

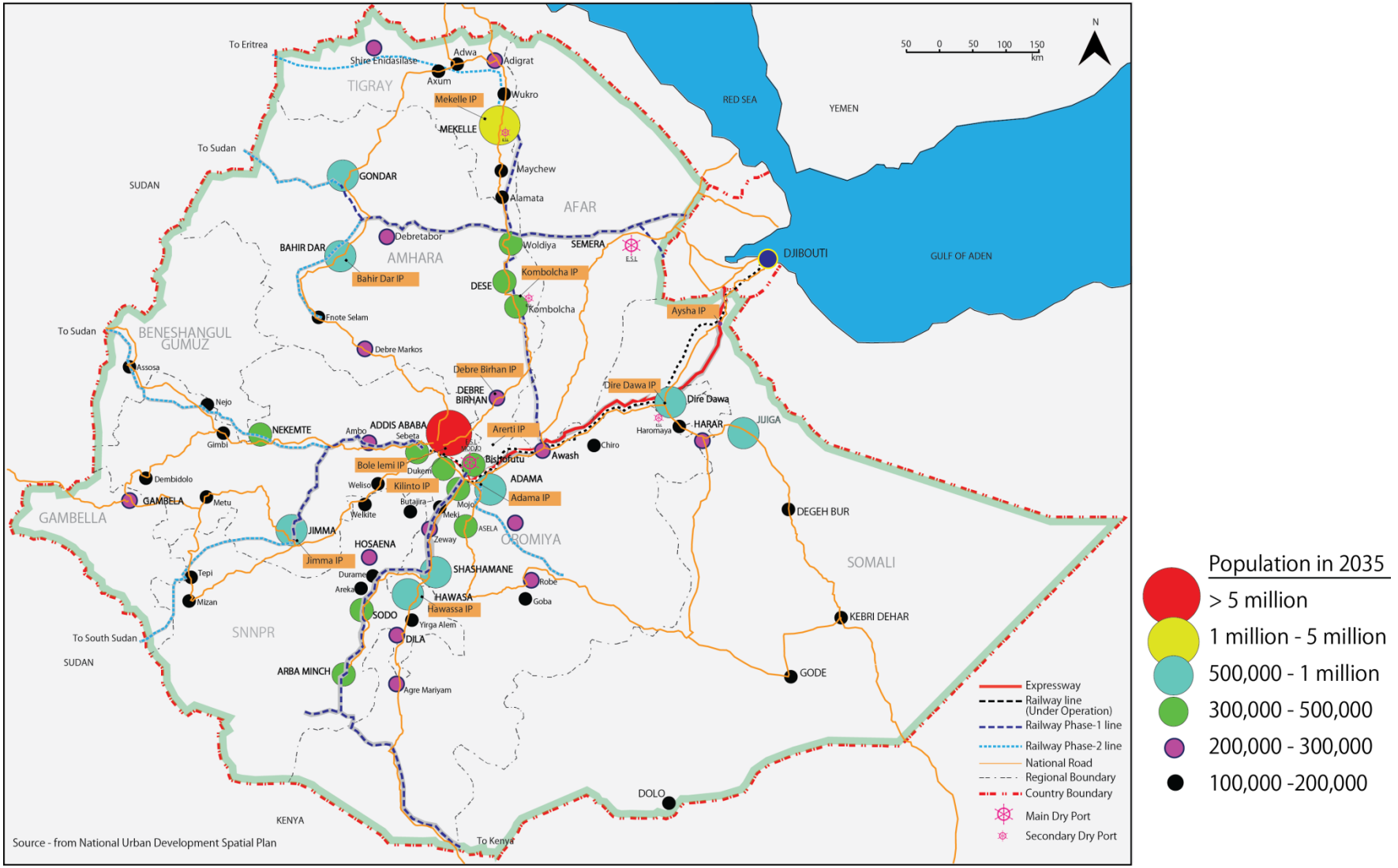


Attachment Figure 10: IP Distribution Strategy – New Manufacturing Sector: Bio-chemical, Electronic Devices, ICT Hardware, etc.–

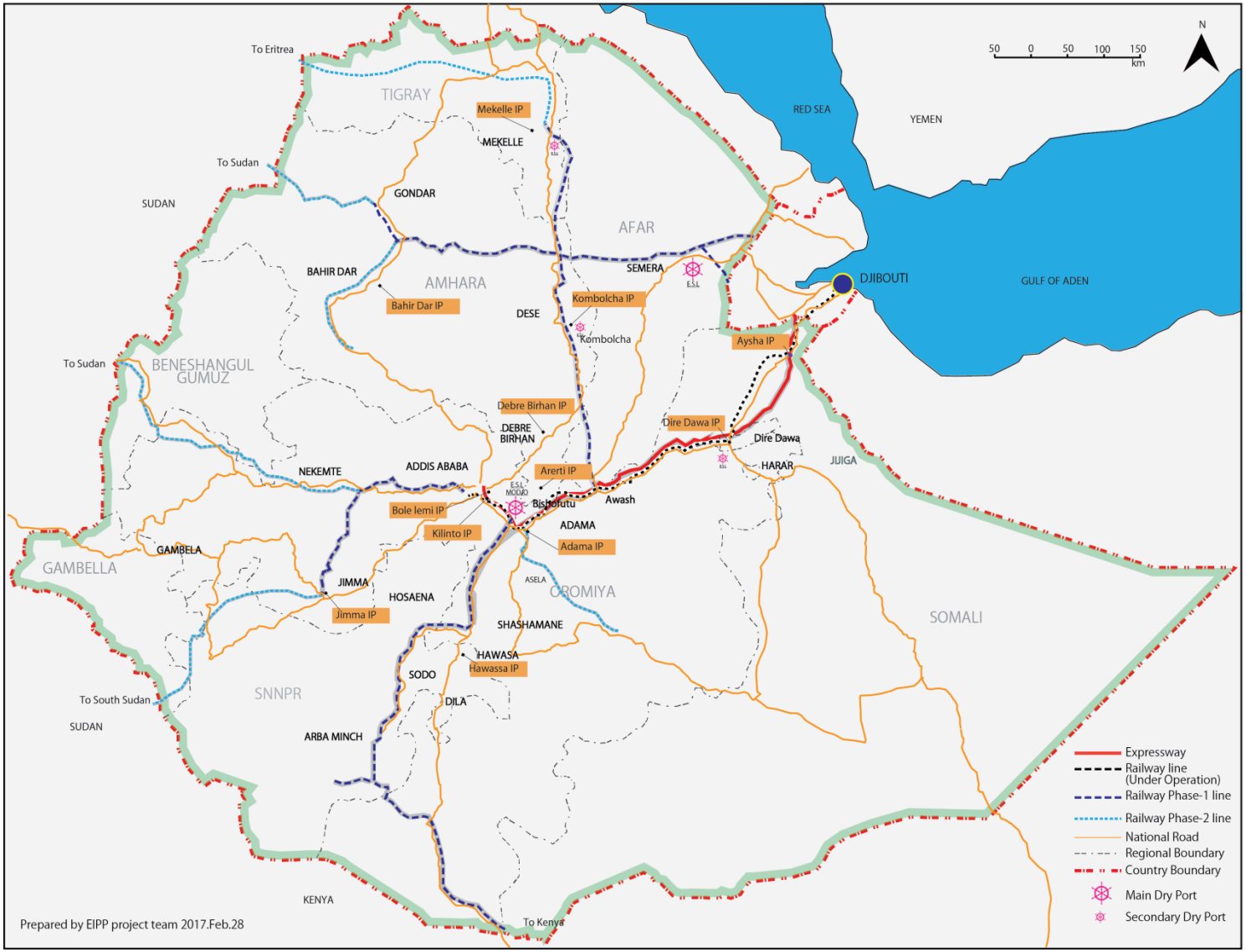
Appecdices： Evaluation Element Maps for Cities/Regions for Additional IP Development

1. Ethiopia Population Density
2. Ethiopia Transportation Infrastructure
3. Ethiopia Underground Water Resources
4. Ethiopia Power Supply System
5. Ethiopia National parks and Tourism Destination
6. Ethiopia Drought and Prone Area

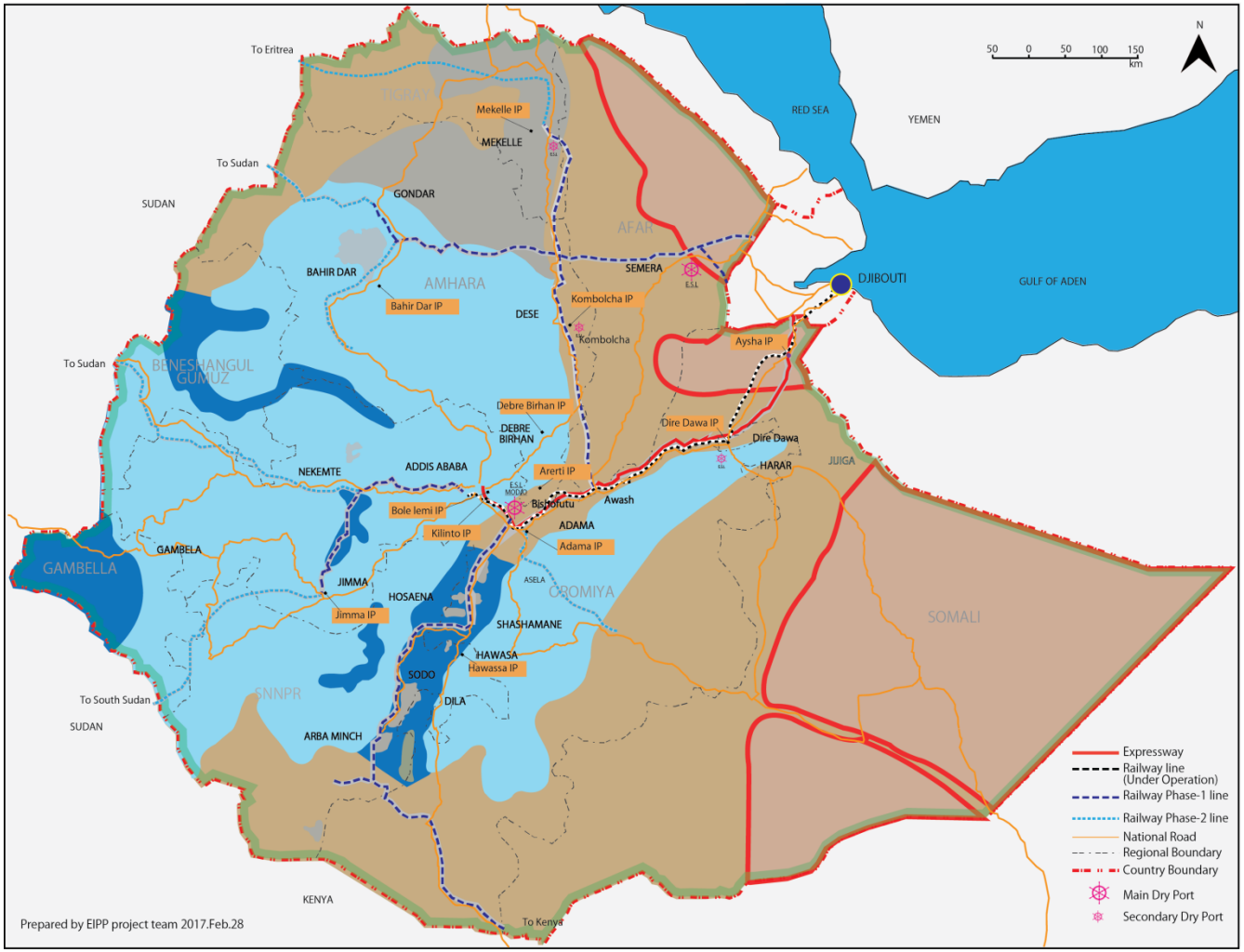
Ethiopia Population In 2035



Ethiopia Transportation Map



Ethiopia Underground Water Resources



Highland 1- Widespread and moderate to large quantities of surface water and/or ground water. Good chemical quality (TDS 0 - 1500 ppm). most streams are perennial, cold springs are common. depth to ground water 0-100m. exploitable in low relief areas.

Highland 2 - Widespread and moderate to low quantities of surface water and /or ground water. Good to fair chemical quality (TDS 0-3000 ppm). some streams are perennial and some intermittent. depth to groundwater 0-100m, exploitable in low relife areas.

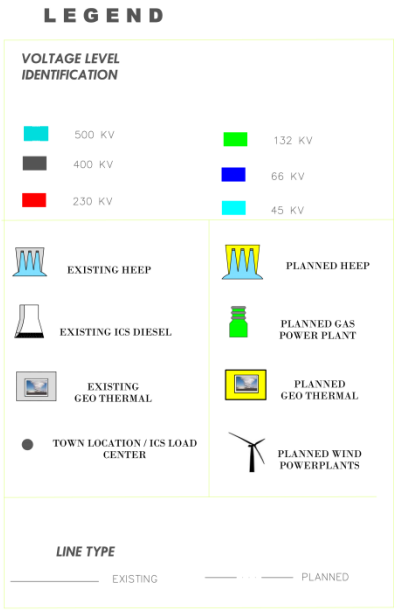
lowland 1 - Widespread and moderate to large quantities of surface water and/or groundwater. Variable chemical quality (TDS 500-3000 ppm). Most streams are perennial. Depth to groundwater 0-150m.

lowland 2 - Localized and moderate to large quantities of groundwater specially along valleys. fair to poor chemical quality (TDS 1000 - 3000 ppm). most streams are intemittent, some are perennial. Depth to groundwater 0 - 270m.

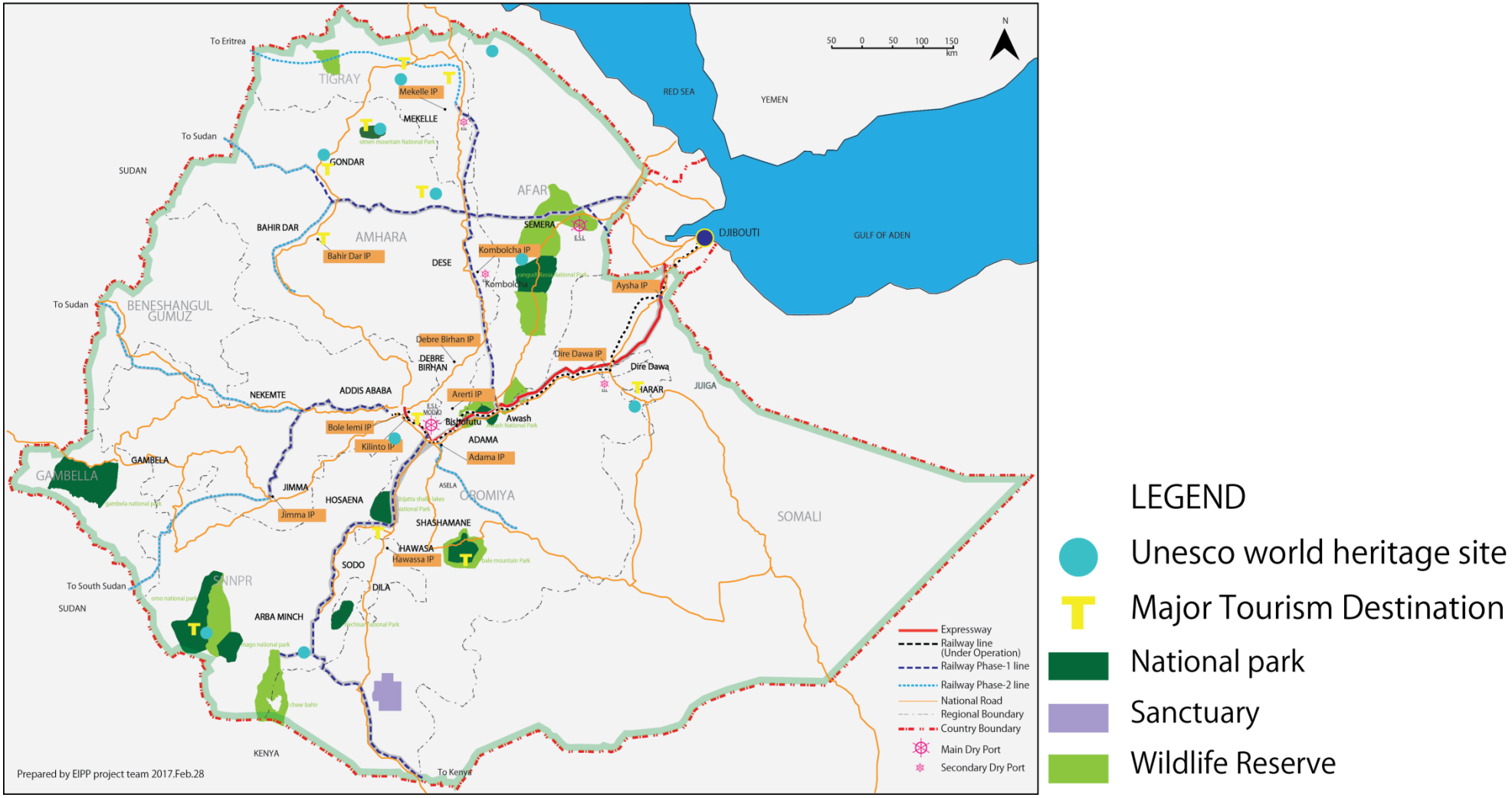
lowland 3 - Localized and limited quantity of groundwater. Fair to poor chemical quality (TDS 1000 - 3000 ppm). All streams are intermittent. Depth to groundwater 0 - 300m. recommended to collect rainfail and quick runoff in cisterns and use groundwater without over mining (determine safe yield).

Main problem areas - areas with high salinity of natural waters (greater than 3000 ppm) and/or high fluoride (greater than 1.5 ppm) and/or large depth to groundwater (greater than 100m) and/or possibility of striking thermal groundwater and/or very low recharge to groundwater.

Ethiopia Power Supply System



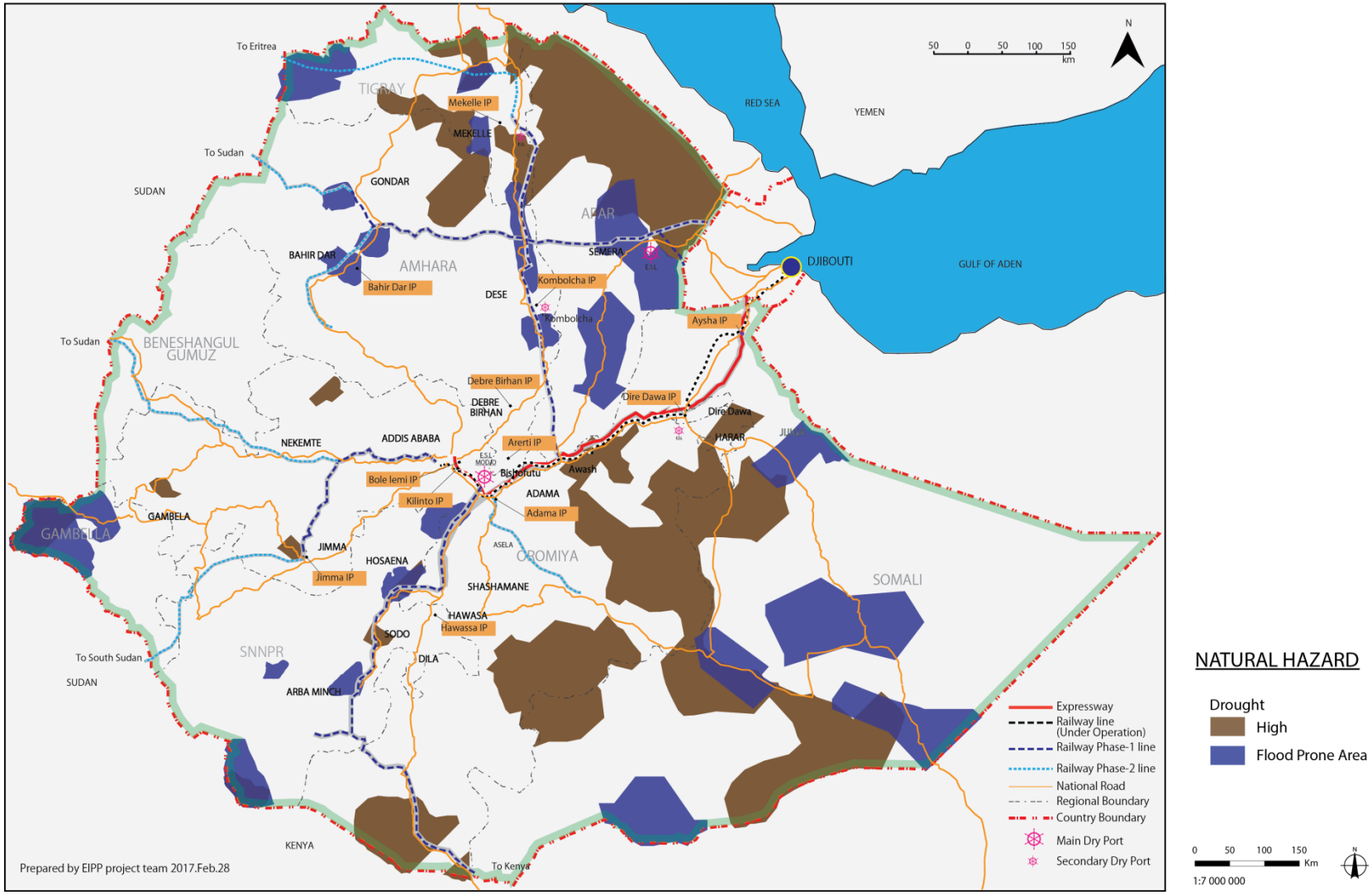
Ethiopia National parks and Tourism Destination



LEGEND

- Unesco world heritage site
- Major Tourism Destination
- National park
- Sanctuary
- Wildlife Reserve

Ethiopia Drought and Prone Area



別添資料 9

工業団地開発ガイドライン（Industrial Park Development Guidelines：IPDG）

IPDC
Industrial Parks Development Corporation
የኢንዱስትሪ ፓርኮች ልማት ኮርፖሬሽን

EIPP

INDUSTRIAL PARK DEVELOPMENT GUIDELINES

September 2018

IPDC-EIPP JICA Team

CONTENT

List of Table

List of Figures

PART 1: PURPOSE OF INDUSTRIAL PARK DEVELOPMENT GUIDELINES

PUPROSE

In Ethiopia, "Vision 2025" which will be a middle-income country by 2025 is set up, and emphasis on industrial promotion place great importance.

At "The Second Growth and Transformation Plan: GTP 2 (2015-2020))" approved by the parliament in December 2015, strengthened such as quality, productivity, competitiveness, promotion of foreign investment, export promotion, promotion of small and medium enterprises, human resources development, therefore increase the share of GDP of manufacturing industry, increase share of manufacturing industry in export, create employment in manufacturing industry, and aim for economic growth of 10% or more.

In GTP 2, as a strategy, it is stipulated to attract foreign-affiliated companies by measures such as industrial park development and tax incentive grant, therefore to increase added value in the manufacturing industry and transfer technology to domestic companies.

In accordance with the policy of GTP 2, concrete development plans of industrial parks are being throughout Ethiopia to promote industrial development aiming at the development of the manufacturing industry and promoting technology transfer from developed countries.

However, the infrastructure development of the industrial park is not sufficient, so that it is an obstacle to attracting foreign companies. In addition, the land is provided under conditions favourable to each tenant of the industrial estate, the balance of land expropriation, development expenses and operation expenses is poor, and profitability is low. While each tenant is profitable, Industrial Parks Development Corporation (IPDC) and residents have not benefited from it. To promote economic growth in the future, making the benefits widely throughout the country is a problem now.

For this reason, we organized the development and operation method of the infrastructure development of the industrial park, contract type, and compiled the "Industrial Park Development Guidelines" with the aim of developing an efficient and high-quality industrial park.

We urge active investment and technology transfer of foreign-affiliated companies, and we hope that industrial park development will contribute to improvement of income of Ethiopia, expansion of employment, economic development.

SCOPE

「SCOPE of "Industrial Park Development Guideline" is as follows.

(1) Review of regulatory system of industrial park development drafted by World Bank

(2) Support for Mandating Implementation of Feasibility Study

(3) General design methodology for each infrastructure

(4) Organization of Contracts and System with Contractors / Consultants

PART 2: FEASIBILITY STUDY

1. DEVELOPMENT CONCEPT

1.1 SETTING UP DEVELOPMENT AIM OF INDUSTRIAL PARK

At the begging of conceptual plan formulation of Industrial Park (IP), development aim should be clearly defined. Aim of IP development should contribute to realize the regional development challenge and contribute to settle the issues to be tackled with.

(1) Regional development targets to which IP development should contribute shall be identified through searching the present socio-economic issues, regional development concept and plan.

(2) Development direction of IP should be certified to be incorporated with the national industrial development policy and scheme.

(3) Following development aim should be identified.

- Purpose of IP development
- Development achievement: increase number of workers, industrial gross value production
- Development scheme: type of IP (general IP, EPZ, SEZ, high-tech IP, etc.), expected category of industry
- Development year: construction, commencement of factory production

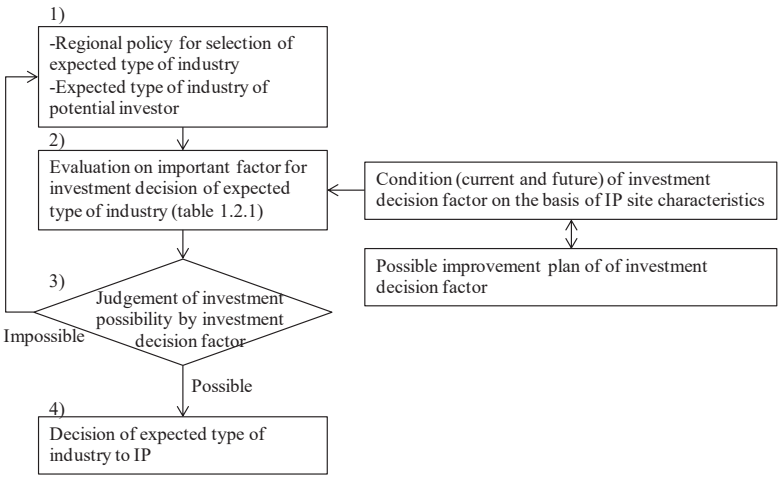
1.2 SELECTION OF TARGET INDUSTRY

1.2.1 Purpose of Target Industry Selection

The target industry selection is necessary for the setting-up of development framework of IP including factory lot demand, estimation of number of workers, preliminary demand calculation of infrastructure demand and common facilities of IP.

1.2.2 Procedure of Target Industry Selection

To select the type of target industry for IP development, 3 digits industrial category of "International Standard Industrial Classification of All Economic Activities (ISIC), United Nations Statistics Division" should be applied. Selection work shall be done in accordance with following procedure.



Source: EIPP (JICA Team)

Figure 1.2.1: Workflow for Target Industry Selection

Evaluation of types of industry shall be started from 1) identification of candidate type of industry by paying full attention to regional development policy and possible types of industry of potential investors and then 2) evaluation by important investment decision factors searched based on IP site characteristics.

1) Regional development policy

   Candidate type of industry contributing to fulfill regional development policy should be recognized through the consultation with the regional administration. In case the regional development policy is to create employment opportunity, labor intensive industry shall be selected. If the target is to improve industrial value by advanced technology industry in the region, high value-added category of industry will be selected as the candidate type of industry.

2) Potential investor's interest

   Prospective type of industry can be identified in consideration of the investors movement. Generally, entrepreneur spends preparation time before decision of investment, therefore, investment potential by type of industry and investment destination can be analyzed by means of discussion, interview, and questionnaire survey, etc. and on domestic and overseas potential investors.

3) Evaluation by investment decision factor

   Candidate type of industry shall be evaluated by means of investment decision factor. Table 1.2.1 shows investment decision factor by type of industry. Most important and important decision factor shall be assessed by researching the present and future location characteristics of IP site. For instance, the iron and steel industry regards following factors as the most important for investment decision, 1) quantity of land area, 2) available fresh water volume, 3) stable and large quantity of power supply, 4) accessibility to the seaport, and secondary important factor of; 1) presence of highway, 2) availability of skilled labor and engineers, 3) accessibility to better urban living condition, and 4) adequate regional bearing capacity for environmental impact. If IP site characteristics cannot afford one of the most important decision factor. Evaluation that candidate type of industry is unsuitable for IP site should be made.

1.2.3 Final Selection of Type of Industry

At the preliminary stage of IP planning, several types of industry shall be cited instead of identification of single candidate type of industry. Final selection from several types of industry will be done in accordance with the progress of IP development project.

Table 1.2.1: Important Factor for Investment Decision Making by Type of Manufacturer

Type of industry		Factor for investment decision	Infrastructure			Transportation				Labor resource		Technology environment		Information, communication	Urban living condition	Information integration	Material	Proximity to market	Environmental capacity
			Land	Water	Electricity	Seaport	Highway	Railway	Airport	Skilled labor	Engineer	Accumulation of related industries	Research institutions						
Basic types of resources	Iron and steel	Blast furnace	◎	◎	◎	◎	○			○	○				○				○
		Steel rolling (EAF furnace)		◎	◎					◎							◎	◎	
	Non-ferrous metal	Steel refining	◎	○	◎	◎	◎			○	○						◎	◎	
		Lead refining, zinc refining																	
		Aluminum rolling and processing	○	○	◎	◎													
		Wire/Cable manufacturing	○	◎			○			◎								◎	○
		Wiring/Cabling				○	○			○	○								
	Chemical	Petrochemical	◎	◎	○	◎	◎			○		◎			○	○		◎	
		Chemical fiber			◎	◎	◎			◎		◎						◎	
		Soap, oil, fat, etc.	◎		○	○	◎			○		○						◎	
		Pharmaceutical products	◎	◎			◎				◎	◎	◎					◎	◎
	Petroleum, coal	Oil refinery	◎	◎	○	◎	◎	○	○	◎						○			
Type of metal processing	Electrical machinery	Electronic application equipment	○			○	◎	○	○	◎	◎	◎	○	○	◎	◎		◎	
		Communication equipment	◎			○	◎			○	◎	◎	○			◎		○	
		Electronic parts (IC)	○	◎	◎		◎	◎	◎	◎	◎	◎				◎		◎	
		Electricity meter					○				◎	○	○			◎		◎	
		Household electricity equipment				○	◎			◎		○							
	Precision machinery	Optical machine					◎		○	◎	◎	◎				○			
	Transportation machinery	Automobile	◎			◎	◎			◎		◎			○				
		Ship building	○			◎				◎		○							
		Equipment and parts in aircraft	○			○	○		◎		◎	◎							
	Metal products	Heating, warming equipment					◎			◎									○
		Steel frame/bridge	◎			◎												◎	

	General machinery	Boiler motor	◎			◎				◎	○	○							
		Office equipment				◎	○	○	○	○		◎				◎			
	General machinery	Construction mining machine	○		○	◎	○			◎									
		Metal manufacturing machine	◎			○	○	○	○	○	○	◎							
Basic types recess	Pottery, stone	Cement	◎			◎					○						◎	◎	
	Pulp and paper	Pulp	◎	◎	◎	◎	○			○							◎	○	◎
	Foodstuff	Beer		○			◎											◎	
	Wooden products	Plywood	◎			◎				◎		○					◎		
	Furniture and fixtures	Furniture	○			○				◎							○		
Other types of goods	Textile	Spinning cotton		◎	◎					◎		◎						◎	
	Apparel	Apparel for women, children					○					○			◎	◎		◎	
	Printing, publishing	Printing								◎		○			○	○		◎	
	Leather and similar products	Tannery	◎	◎						◎									
	Rubber products	Rubber products		◎			◎			◎								◎	○
	Other	Plastic products								◎								◎	

Source: EIPP (JICA Team)

Note: Symbols in the table have the following meanings: ◎ Most important decision factor ○ Important factor

1.3 SETTING UP OF DEVELOPMENT FRAMEWORK

To achieve the development aim decided in Chapter 1.1, development framework should be set out based on industrial unit demand and selected category of industry. The following items will be decided:

a Number of workers

b Area (ha) by type of use (manufacture, logistic, commercial, residential, etc.)

c Gross Value of Industrial Production (and/or Value Added of Production)

d Water demand (industry, domestic)

e Electricity demand

Different unit demand by type of industry will be used for setting-up of development framework. Development framework should be incorporated with the demand of full operation stage.

The following unit demand concerning factory area and fresh water of "Industrial Statistics of Japan" can be referable for framework assumption.

Table 1.3.1: Unit Number of Workers per Factory Plot Area (Workers/ha, Japanese Standard)

(as of 2014)

	Manufacturing Industry	40
1	Food	83
2	Beverages, tobacco and feed	21
3	Textile mill products	44
4	Garments and shirts	130
5	Lumber and wood products, except Furniture	20
6	Furniture and fixtures	40
7	Pulp, paper and paper products	24
8	Printing and allied industries	105
9	Chemical and allied products	19
10	Petroleum and coal products	4
11	Plastic products	45
12	Rubber products	52
13	Leather tanning, leather products and fur skins	91
14	Ceramic, stone and clay products	17
15	Iron and steel	10
16	Non-ferrous metals and products	22
17	Metal products	43
18	General - purpose machinery	48
19	Production machinery	52
20	Business oriented machinery	61
21	Electronic parts, devices and electronic circuits	70
22	Electrical Machinery, equipment and supplies	73
23	Information and communication electronics equipment	91
24	Transportation equipment	50
25	Miscellaneous manufacturing industries	54
26	Bulk pharmaceuticals manufacturing	14
27	Pharmaceutical formulations manufacturing	35
28	Biologics manufacturing	102

Table 1.3.2: Unit Fresh Water Demand by Category of Industry (Japanese Standard)

(as of 2014)

Category of Industry	Num. of enterprises	Refilled water volume (m3/day)	Site area of factory plot (ha)	Refilled water volume (m3/day/ha)
Food	7,239	2,516,772	10,461	241
Beverages, tobacco and feed	689	870,426	2,904	300
Textile mill products	631	1,220,068	2,227	548
Garments and shirts	1,277	158,784	1,075	148
Lumber and wood products, except Furniture	597	45,906	2,061	22
Furniture and fixtures	530	20,699	1,240	17
Pulp, paper and paper products	1,473	6,769,184	5,282	1,282
Printing and allied industries	1,973	53,019	1,604	33
Chemical and allied products	2,130	5,682,314	16,344	348
Petroleum and coal products	99	810,815	4,511	180
Plastic products	3,049	858,426	6,284	137
Rubber products	597	171,400	1,689	101
Leather tanning, leather products and fur skins	139	4,305	107	40
Ceramic, stone and clay products	1,430	614,317	7,854	78
Iron and steel	1,215	3,504,072	17,268	203
Non-ferrous metals and products	788	641,294	5,422	118
Metal products	3,952	359,155	7,484	48
General - purpose machinery	1,623	139,293	5,099	27
Production machinery	3,498	147,666	7,244	20
Business oriented machinery	1,134	97,056	2,752	35
Electronic parts, devices and electronic circuits	1,778	775,270	5,023	154
Electrical Machinery, equipment and supplies	2,617	196,909	5,509	36
Information and communication electronics equipment	619	41,053	1,527	27
Transportation equipment	3,557	649,691	17,772	37
Miscellaneous manufacturing industries	827	54,797	1,559	35
Total	43,461	26,402,691	140,303	188

Source: Industrial Statistics of Japan

As a reference, following unit demand by type of industry calculated based on "Report on Large and Medium Scale Manufacturing and Electricity Industries Survey, Sep. 2016, CSA, Ethiopia" can be referred.

Difference between unit demand of Ethiopia and Japan is seen, 167 workers/ha in Ethiopian leather industry while 91workers/ha in Japan, for instance. Adjustment should be appropriately done for the unit demand assumption and setting up of development framework by paying due attention to the reasons of difference.

Table 1.3.3: Unit Demand by Type of Industry Calculate in Ethiopia

Unit Number of Workers per Enterprise by Industroal Group by Region in Ethiopia (2014/2015)

Industrial group	Tigray	Afar	Amhara	Oromia	Somalie	Benshan.	SNNP	Gambela	Harari	Addis Ababa	Dire Dawa	Total
Food & beverages	590		67	136	19	14	49		43	125	83	140
Tobacco										2,246		2,246
Textiles	1,484	158	168	341			125			315	209	379
Apparel except fur			40	81			29			75	49	73
Leather, footwear, luggage, handbags	675		76	155			57		49	143		167
Wood, cork except furniture			24	50			18			46		39
Paper, paper products, printing	237		27	55	8		20		17	50	33	53
Chemicals, chemical products	563		64	129	18		47		41	120		127
Rubber & plastic products	372		42	86	12		31			79	52	84
Other non-metric mineral products	170	18	19	39			14		12	36	24	49
Basic iron and steel	280		32	64						60	39	122
Fabricated metal products	241		27	55	8		20		17	51	34	46
Machinery & equipment	173		20	40	6		15			37		43
Motor vehicles, trailers, semi-trailers	968			223						206		328
Furniture	543		61	125	17	13	46		39	115	76	114
Total	384	53	45	108	17	14	32		24	100	62	106

Source: EIPP (JICA Team) estimated based on Census data

Unit Gross Value Product per Worker by Industrial Group by Region in Ethiopia (2014/2015) (1000 BIRR/worker)

Industrial group	Tigray	Afar	Amhara	Oromia	Somalie	Benshan.	SNNP	Gambela	Harari	Addis Ababa	Dire Dawa	Total
Food & beverages	86		495	577	588	123	646		455	410	573	396
Tobacco										779		779
Textiles	45	471	257	300			336			213	298	211
Apparel except fur			129	150			168			107	149	118
Leather, footwear, luggage, handbags	73		418	488			547		385	347		341
Wood, cork except furniture			159	186			208			132		177
Paper, paper products, printing	90		516	602	613		674		474	428	597	426
Chemicals, chemical products	103		593	692	705		775		546	492		561
Rubber & plastic products	85		492	574	585		643			408	570	481
Other non-metric mineral products	154	1,626	888	1,036			1,160		816	736	1,028	535
Basic iron and steel	581		3,344	3,902						2,774	3,874	1,564
Fabricated metal products	142		819	956	973		1,070		753	679	949	739
Machinery & equipment	185		1,065	1,243	1,266		1,391			883		899
Motor vehicles, trailers, semi-trailers	411			2,759						1,961		1,733
Furniture	33		193	225	229	48	252		177	160	223	162
Total	130	767	510	623	554	74	586		431	410	670	426

Source: EIPP (JICA Team) estimated based on Census data

Unit Value Added per Worker by Industrial Group by Region in Ethiopia (2014/2015) (1000 BIRR/worker)

Industrial group	Tigray	Afar	Amhara	Oromia	Somalie	Benshan.	SNNP	Gambela	Harari	Addis Ababa	Dire Dawa	Total
Food & beverages	33		171	243	219	29	231		57	174	267	164
Tobacco										275		275
Textiles	9	33	45	64			61			46	70	44
Apparel except fur			44	62			59			44	68	49
Leather, footwear, luggage, handbags	19		100	142			135		33	102		98
Wood, cork except furniture			47	67			64			48		62
Paper, paper products, printing	28		144	205	184		195		48	147	225	144
Chemicals, chemical products	20		105	149	134		142		35	107		121
Rubber & plastic products	10		49	70	63		66			50	77	58
Other non-metric mineral products	70	264	361	512			487		121	368	563	248
Basic iron and steel	74		379	538						386	591	212
Fabricated metal products	60		309	438	395		416		104	314	481	329
Machinery & equipment	-4		-19	-26						-19		-19
Motor vehicles, trailers, semi-trailers	167			1,217						873		759
Furniture	4		21	30	27		28		7	21	32	20
Total	39	92	168	205	178	10	194		49	133	268	139

Source: EIPP (JICA Team) estimated based on Census data

1.4 SITE SELECTION

This work can be divided into two steps. Firstly, according to the development concept, several candidate sites shall be selected by referring to the necessary IP land area calculated hereinabove; secondly, survey and review of present conditions of site selected in Step 1, and then establish the preliminary development plan.

1.4.1 First Selection for Suitable Development Land

Based on the 1/50.000 scale regional map of the target area, first candidate site selection shall be carried out. Consultation and cooperation with local administration is most important. City master plan and urban planning should be the basis for the site selection.

1) Exclusion of protected area

Exclude the protected areas as inappropriate for IP development is shown below.

Table 1.4.1: Protected Area to be Excluded from IP Development Candidate

Regulatory purpose	Regulatory area is subject to be eliminated
Regulation on disaster prevention	Area of land utilization unchangeable in terms of disaster prevention
Regulation on natural protection	Natural park and nature reserve
Regulation on agro-forestry-fishery preservation	Superior agricultural and forestry land, effective area for agro-forestry land conservation

Source: Comprehensive Development Plan - Japan Industrial Location Center

2) Exclusion of built-up area, etc.

Land use shown in Table 1.4.2should be excluded from the IP development candidate.

Table 1.4.2: Land to be Excluded from IP Development Candidate

Land area	Land area is subject to be eliminated
Existing and future urban area	Land area used as existing and prospective urban land including residential land
Existing & future settlement	Land area used as existing and prospective rural and communal land for residential purpose
River, lake, swamp	Land area unsuitable for develop due to natural conditions
Recreational facility	Land area used as a large-scaled recreational facility
National defense land	Military area or surrounding area

Source: Comprehensive Development Plan - Japan Industrial Location Center

3) Exclusion of land with slope over 20°

The areas with the topographical slope over 20 ° are classified as unsuitable for development due to the difficulty of land grading and over-costed construction.

4) Exclusion based on available land extent

Areas which are unable to secure enough land extent in one location will be excluded.

5) Proximity to existing infrastructure

If the distance from the existing infrastructure, high way, rail way lines and power supply substation etc. to the target areas is long, a large budget is needed for roads and power supply from the existing infrastructure to the target areas. Therefore, in site selection, it is necessary to consider the distance from existing infrastructure and the cost of necessary new infrastructure to the target site.

6) Environmental soundness

As the influence on the environment, it is necessary to investigate and analyze the contents of 1) existing greenery, 2) major water resources (existence of ground water), 3) Soil Condition etc. in advance.

1.4.2 Second Selection for Suitable Development Land

In this step, candidate sites selected in the first step shall be compared in terms of land use appropriateness, land filling volume, development cost etc., to be finally chosen as the IP site for the development.

Conceptual Plan of each candidate site shall be made for comparison, which will be composed with 1) zoning plan, 2) construction work volume, and 3) preliminary construction cost estimation.

(1) Zoning plan

Preliminary land use concept by zoning measures will be made based on the topographic map of 1/5,000 scale. The example of land use classifications is shown below.

Table 1.4.3: Land Use Classification for Zoning Plan

Major land use	Content
Factory lot	Factory land development framework should be secured appropriately.
Road	In consideration of surrounding regional road network and future, the access road to IP and internal main road network shall be planned.
Park & green	Location and size of park shall be clarified.
Utility land	Reserve land for power sub-station, water/wastewater treatment plant, etc.
Other	Residential area, common use facilities, commercial land and other types of land use.

Source: EIPP (JICA Team)

(2) Construction work volume

Calculate quantity of the following construction work items preliminarily.

- Land grading volume
- Road
- Park, green space
- Utility
- Residential building
- Common use facilities

(3) Preliminary construction cost estimate

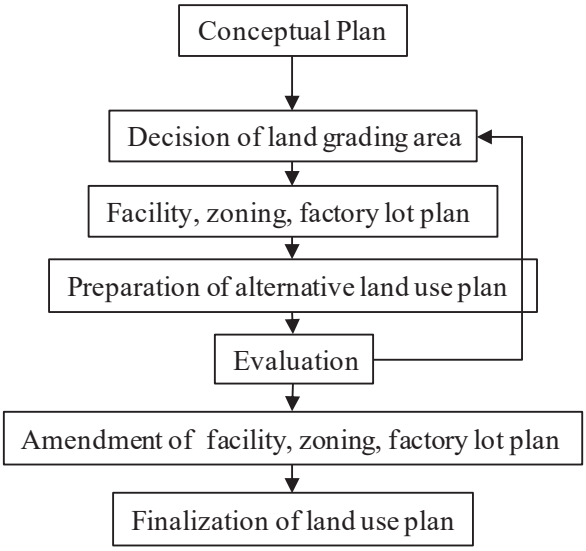
Preliminary construction cost should be estimated based on the work volume and the unit price of the works item. Cost for external infrastructure such as access road, garbage dumping site, substation of power supply, etc. are also estimated to measure total cost. Furthermore, resettlement cost of local families is also estimated and included in the construction cost.

(4) Judgment of development possibility

Candidate sites can be compared based on unit construction cost (construction cost per unit factory lot area). However, other factors such as land acquisition easiness, location advantages for investor, environmental impact scale to surrounding area, etc. shall be considered for comprehensive comparison.

1.5 MASTER PLAN

The work flow for Master Plan formulation is shown in **Figure 1.5.1**. Drawings of the Master Plan shall be prepared on 1/2,500 base map.



Source: EIPP (JICA Team)

Figure 1.5.1: Workflow of Master Plan Formulation

1.5.1 Land Grading Area

Land grading area should be precisely identified by paying due attention to following items.

- Exclude the untouchable land use such as cemetery, natural valuable area, cultural sacred area, etc. Discussion with local community will be advisable.
- Existing green area such as grove, forest, stream, etc. should be preserved by excluding form grading area.
- Land grading cut-fill volume shall be simulated roughly to ensure economic land grading work.
- Land grading area should be designed to balance the volume of cut and filling work within the site area in order to minimize the land grading cost.

1.5.2 Facility Zoning Plan

In site selection stage, facility and zoning plan has been studied. However, the scale of base map is changed to 1/2,500, and precise land grading area is identified in land grading plan, therefore facility zoning plan is to be studied again by planning of following items.

(1) Park - green space

The size of green space and suitable layout shall follow urban planning law, etc. Considering financial affects, normally green space recommended to not exceeds 25% of IP development area including 3% for park facility. Arrangement for the park and green space including buffer green shall maximally utilize the existing green land.

(2) Arterial road system

Referring to land grading plan, the arterial road system should be planned in the IP area. Location of access road to connect with the regional road network will be decided to attain effective transportation flow from every factory lot of IP.

(3) Service facility area

IP management office including one stop service, relevant public organization branch such as custom control office, commercial service such as bank branch, shopping center, and vocational training center, etc. will be opened as common facility.

a. It shall be in the place where can be easily accessed from the every factory lot.

b. In case of considering the usage by people outside the area, it is desirable to arrange the utility along main access road for easy access.

c. Approximately 1 ha premises for 100 ha IP development shall be prepared for service facility at the facility zoning plan stage.

(4) Utility and drainage system

In zoning stage, the following items shall be considered for facility plan, i) water reservoir tank, ii) sewage treatment plant, iii) substation of power supply, and iv) solid waste disposal facility. The location of these utility shall be determined based on the topographic conditions and land grading plan.

- Water reservoir tank

  The supply of clean water and industrial water in IP is based on the gravity flow, taking advantage of the terrain with deference of elevation, so the fresh water reservoir is desirable to be placed at the highest position within IP, and so it will not interfere in the linkages with the external works and facilities. Elevation of the reservoir shall be determined in consideration of securing required residual pressure on the distribution network.

- Sewage treatment plant (STP)

  Necessary area for sewage treatment plant is defined in accordance with treatment method. In case ZLD (Zero Liquid Discharge) treatment is applied, treatment plant area will be larger than conventional treatment system. Location of STP is recommendable to be the lowest elevation area of IP to gain gravity sewer flow generated from factories and service facilities.

- Substation of power supply

  Plot area for power substation should be built inside the IP to use exclusively for industrial production activity.

- Solid waste storage facility

  Industrial and domestic solid waste generated from factories, facilities and residence shall be appropriately collected and disposed. Basically, relevant local administration and/or authorized private company should prepare the solid waste final disposal site, while IP may equip temporary storage facility and compaction devices also arrange.

1.5.3 Preparation of Alternative Land Use Plan

Planning principles of land area distribution of Japan by land use item is shown below.

Table 1.5.1: Land Use Area Distribution Guideline by Land Use Item

Land use item	Area distribution guideline (tentative)
1) Factory lot	Basically, area of factory lot should be decided to attain project viability. General industrial park in Japan has 50% factory lot area of total IP area in average.
2) Road	Road area ration excluding of access road area varies 10 % - 25 % generally by depending of plot size distribution.
3) Park & green	Total area of park and green area about 20-25 % (including 3% for park) of the total extent of IP.
4) Administration buildings	Total area of administration building about 1 % of the total extent of IP. Include office, rental office, workshop, restaurant, shop, bank / insurance company.

Source: Planning Guideline of Core Industrial Park in Japan
Note: Land area of factory building, facilities for common use, infrastructure, residence and related buildings should be 50% - 75 % of land under possession as defined in Industrial Parks Regulation (Regulation No 417/2017).

Alternative land use plans shall be formulated based on land grading plan and facility zoning plan. Land use ration table shall be prepared for each alternative plan as shown below.

Table 1.5.2: Land Use Preparation of Alternative Plan

Land use	Alternative1		Alternative 2		Alternative 3	
	Area (ha)	Ratio (%)	Area (ha)	Ratio (%)	Area (ha)	Ratio (%)
1) Factory lot						
2) Residential area						
3) Commercial area						
Subtotal						
4) Community land						
5) Water supply facility						
6) Sewerage treatment plant						
7) Power supply facility						
Subtotal						
8) Park						
9) Green space						
Subtotal						
10) Retention pond						
11) Road						
12) Others						
Subtotal						
13) Reserved area						
Total		100.0		100.0		100.0

Source: EIPP (JICA Team)

1.5.4 Evaluation and Selection of Final Land Use Plan

Most reliable land use plan shall be selected among several alternative plans. Following evaluation criteria shown in Table 1.5.3 should be utilized to select the best plan.

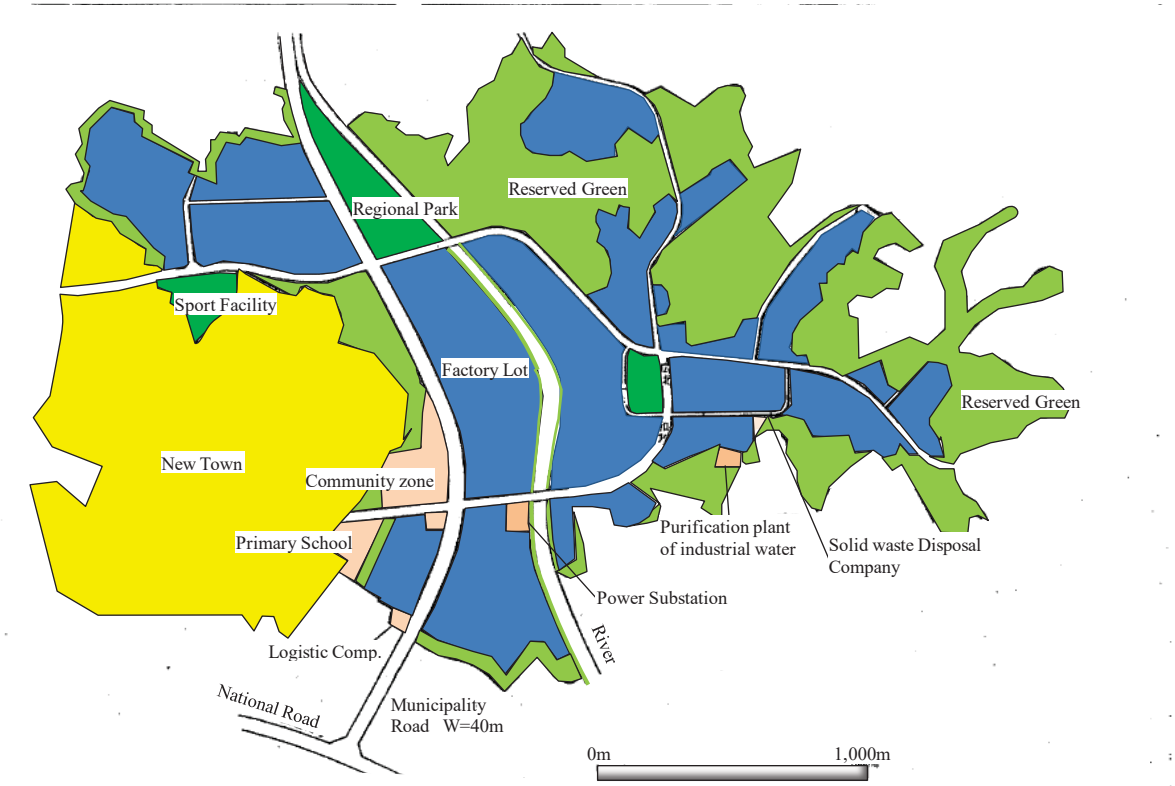
Business viability as for IP development project is important. Alternative plan of the largest salable area is to be given advantageous evaluation. However, other criteria of grading efficiency, common facility contribution, and environmental soundness are also to be checked to finalization.

Table 1.5.3: Evaluation Criteria for Land Use Plan Alternative

Evaluation Category	Evaluation Item
Business viability	- Salable land area
	- Volume of infrastructure per salable area (i.e. road area per factory area)
	- Construction period
Grading efficiency	- Total earthwork volume
	- Earthwork volume per unit graded land area
	- Height of earth slope (maximum, average)
	- Vertical gradient of internal road and access road (steep road is inappropriate for IP)
Common facility contribution	- Harmony with surrounding community
Environmental soundness	- Total quantity of green spaces - waste management and sludge disposal - major water resources and existence of ground water

Source: EIPP (JICA Team)

Example of Land Use Plan of IP in Japan



Source: Handbook for Industrial Park Development, 1993, Japan Industrial Location Center

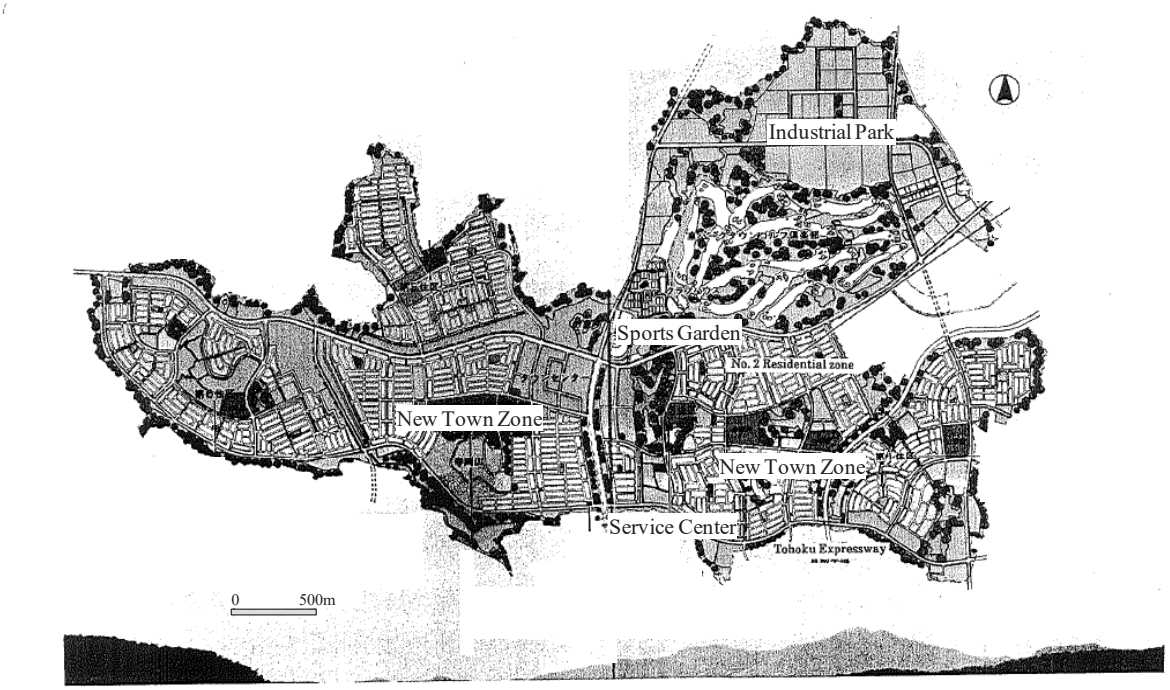
- IP area total: 384 ha
- Factory lot area: 165 ha
- Park & green area: 156 ha (40%)
- Width of IP access road: 50 m
- Domestic water supply volume: 1,000m3/day
- Industrial water supply volume: 14,000m3/day
- Residential new town with 120 ha for 10,000 population was developed by local administration (Yonezawa City Land Development Corporation)
- Major investor: metal, electronic parts, pharmaceutical, IC micro parts
- Development Authority: Regional Development Corporation of Japan

Source: Handbook for Industrial Park Development, 1993, Japan Industrial Location Center

Figure 1.5.2: Typical Land Use of Industrial Park

Yonezawa Hachimanbara Core Industrial Park

Example of Land Use Plan of Integrated Urban & IP Development in Japan



- Total area: 1,000 ha
- Industrial area: 155 ha
- Sports recreation area:151 ha
- Residential new town area: 696 ha
- Town center area: 28ha
- Major manufacturing investor: IC parts, electronic ,machinery, food (Milk), furniture
- Development Authority: Mitsubishi Estate Company

Source: Handbook for Industrial Park Development, 1993, Japan Industrial Location Center

Figure 1.5.3: Typical Land Use of New Town and Industrial Park Complex

Izumi Park Town

Example of Land Use Plan of Techno Park in Japan

- Project area: 28ha
- Park & green area: 41.6% of project area
- Major investor: IT software, IT system
- Developed in1986
- Development Authority: Sapporo City administration

Source: Handbook for Industrial Park Development, 1993, Japan Industrial Location Center and Web site of Sapporo Techno Park

Figure 1.5.4: Typical Land Use of Software Techno-Park

Sapporo Techno Park

2. INFRASTRUCTURE PLAN

2.1 PRELIMINARY DESIGN OF INFRASTRUCTURE

2.1.1 Land Grading Plan

Inland grading plan, based on the land use plan, grading elevation of factory lot and the road will be determined. In addition, the disaster prevention measures during construction will be proposed.

1) Land grading plan

(i) Gradient of factory lot

To attain smooth rainwater drainage flow, the factory lot area needs to have a slight gradient. Considering the natural flow of rainwater drain and sewer, normally the gradient will be designed at 0.5%.

(ii) Road and factory lot

The slight elevation difference between factory lot elevation and connecting road elevation for easy access from the road and easy installation of a drainage system

(iii) Slope plan

In the case of hilly land, slopes will appear in the boundary between the leveled site land and the remaining existing land area. The slope stability shall be seized maintained the construction stage.

2) Earthwork plan

The earthwork plan of the Feasibility Study should be made by using the topographic map with the scale of 1/2500 to calculate the volume of earth volume and then to make an appropriate earth distribution plan. Besides, if there is soft soil in the land grading area, soil strength improvement plan is necessary to ensure the stability of the ground.

2.1.2 Factory Lot Plan

1) Factory lot layout

Various size (large-medium-small) of factory lot should be prepared in the industrial park to meet diverse needs from tenant investors. Basically, area distribution ratio by each lot size shall be planned to be almost same, therefore a number of the plot of small size plot will be large, while large size plot will be minimized. Design of average lot size could be done based on the Japanese examples of average plot size by category of industry shown in **Table 2.1.1**.

Basically, it is recommended to arrange collected plants of the same industry type and same lot scale. As the reason,

(i) Environmental consideration

Industries in which odor and noise are excessively generated are planned collectively and industries of little environmental pollution are arranged in isolation from its industries, and consider to the environment. Industries that inhibit landscapes (for example, plants) are also placed in isolation.

(ii) Employee size

Transport demand of commuting transportation facilities and employees affects road system

(iii) Environmental consideration accompanying the transportation of materials and products

Transportation traffic such as trucks affect road system and environment, etc.

(iv) Scale and quality of infrastructure demand

Facilities can develop effectively by isolating industries with different infrastructure

demands for communication, electricity, sewage treatment, and waste disposal

In addition to the above, the following factors may also need to be considered.

(v) Grouping by enterprise (management) country of origin and region

(vi) Preferred arrangement of brand factories

2) Factory lot size

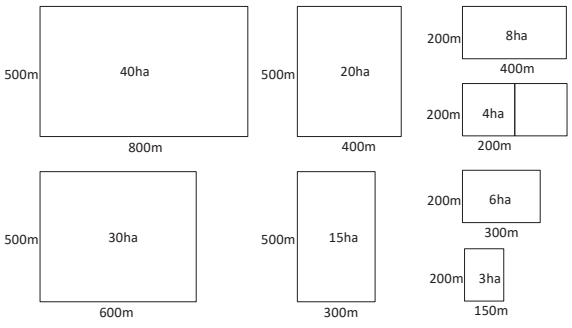
Since the size and shape of the factory lot are determined by the production plan or from the production line design of each enterprise, lot size and shape should be flexible and changeable. For that purpose, typical lot size module should be designed to be combined or divided easily to make larger or smaller size lot in accordance with the investors' request. Module size idea is shown in **Figure 2.1.1**.

Table 2.1.1: Japanese Examples of Plot Size by Category of Industry

(as of 2014)

Category of Industry	Num. of enterprises	Plot area (ha)	Unit area of factory plot (ha/factory)
Food	7,239	10,461	1.4
Beverages, tobacco and feed	689	2,904	4.2
Textile mill products	631	2,227	3.5
Garments and shirts	1,277	1,075	0.8
Lumber and wood products, except Furniture	597	2,061	3.5
Furniture and fixtures	530	1,240	2.3
Pulp, paper and paper products	1,473	5,282	3.6
Printing and allied industries	1,973	1,604	0.8
Chemical and allied products	2,130	16,344	7.7
Petroleum and coal products	99	4,511	45.6
Plastic products	3,049	6,284	2.1
Rubber products	597	1,689	2.8
Leather tanning, leather products and fur skins	139	107	0.8
Ceramic, stone and clay products	1,430	7,854	5.5
Iron and steel	1,215	17,268	14.2
Non-ferrous metals and products	788	5,422	6.9
Metal products	3,952	7,484	1.9
General - purpose machinery	1,623	5,099	3.1
Production machinery	3,498	7,244	2.1
Business oriented machinery	1,134	2,752	2.4
Electronic parts, devices and electronic circuits	1,778	5,023	2.8
Electrical Machinery, equipment and supplies	2,617	5,509	2.1
Information and communication electronics equipment	619	1,527	2.5
Transportation equipment	3,557	17,772	5.0
Miscellaneous manufacturing industries	827	1,559	1.9
Total	43,461	140,303	3.2

Source: Japan Industrial Statistics



Source: EIPP (JICA Team)

Figure 2.1.1: Modularization of Plots Standard Factory

Provision of rental factory (shed) to tenants can be constructed as an effective promotion of investors by giving advantages investment situation for tenants with reduction of the initial

investment cost drastically. In export oriented enterprise, especially apparel and leather production, etc. companies have strong demand for rental factory.

2.1.3 Road Network Plan

With consideration of access from regional road network, internal road network shall be planned with suitable scale and appropriate hierarchy.

1) Regional road network system and access to the industrial park

Regional transportation network includes expressway, airport and port etc. Based on previous study and additional information access road to industrial park shall be decided.

2) Internal road network

Internal road network shall consider the relationship with land use plan and topographic characteristics etc. The internal road network shall and land use plan shall feedback to each other and adjustment shall be made accordingly.

3) Traffic volume forecast

The traffic flows generated inside the industrial park are summarized into four categories as follows:

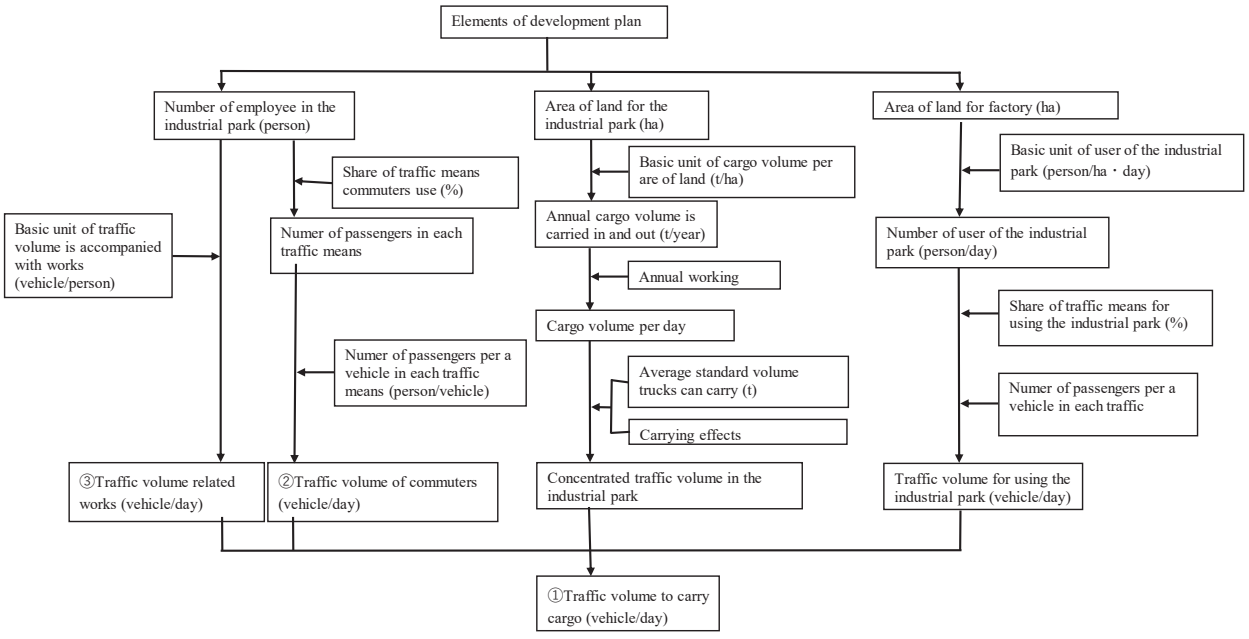
(i) Cargo traffic

(ii) Commuting traffic

(iii) Operation related

(iv) Others (for commercial, park etc.)

Industrial park traffic volume forecast flow is shown in the following:



Source: EIPP (JICA Team)

Figure 2.1.2: Estimated Traffic Flow Concentrated in Special Zone

4) Road hierarchy and structure

- Traffic distribution

Based on the above traffic volume forecast, the traffic volume shall be distributed to the internal road network. Traffic from each factory lot shall be collected to the sub-main road, and then

distributed to arterial road. The road width and lanes shall have the capacity to accommodate the maximum traffic.

- Road hierarchy

  Based on related regulations, road hierarchy shall be determined by traffic volume, region, topographic characteristics.

- Typical cross-section structure

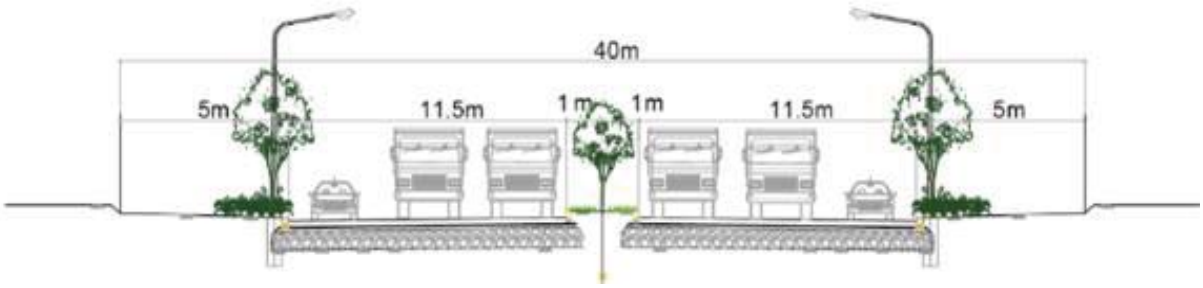
  The cross-section structure includes carriage ways and pedestrian ways. Normally, the carriageways include carriage lanes, median, road shoulder, parking lane, drainage system; Pedestrian zone include sidewalk, bike lane and plantation. However, not all the roads need all the above parts in accordance with the road standards.

- Road alignment

  Road alignment shall be decided based on the land use plan and geographic conditions.

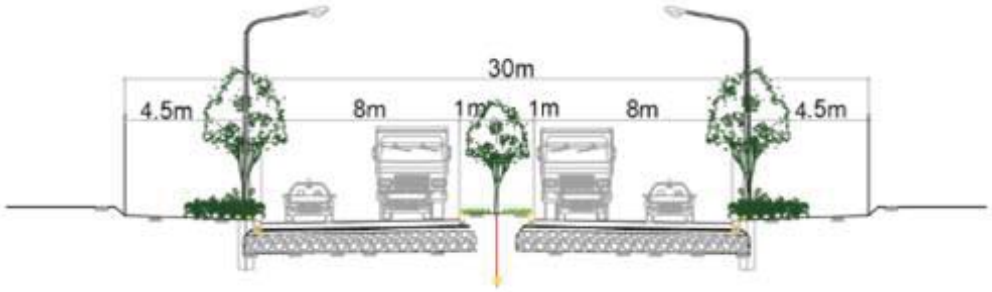
- Plantation

  Plantation can be arranged in median, sidewalk etc. for landscape and environment consideration.



Source: EIPP (JICA Team)

Figure 2.1.3: Sample of Arterial Road



Source: EIPP (JICA Team)

Figure 2.1.4: Sample of Secondary Road

2.1.4 Water Supply Plan

The water supply in an industrial park is divided into the domestic water supply for employees and the industrial water for the production. When the water supply system is planned, it is required to carefully consider whether both systems of potable water and industrial water or not. In case factories with mass water consumption are lured in IP, the adoption of the industrial water supply system will be effective. In case factories like IC industry which the quality of the water than quantity of the water, the potable water supply system is required. Besides, if it is a multi-functional park with a housing zone, it is not necessary to establish the industrial water supply system due to the high demand for potable water.

(1) Formulation of development frameworks

The frameworks for developing IP are formulated based on the results of the previous studies as follows;

- Target industries
- Factory lot area at each target industry
- Number of workers at each target industry
- Population of housing zone if planned in IP (Type of buildings shall be classified such as detached house, condominium and dormitory, etc.)
- Number of employees and visitors at commercial zone if planned in IP

At the same time, it is also necessary to consider water sources and their water intake capacities. For the water source, it is crucial to examine not only the possibility for use of the existing public water supply system but also the necessity of water resources development for IP, and then available water sources shall be listed with description of the location and water intake volume.

(2) Planning water supply demand

The planning water supply demand is calculated by unit water consumption and lot area below;

The planning daily water supply (m^3/day) = Σ {unit water consumption (m^3/day) x lot area at each industry category (ha)}

Unit water consumption: water demand per day per hectare at each target industry

It notes that the green space and the slope will be excluded from factory lot area.

Three (3) types of water supply volume are set to account for designing various water supply facilities:

- DAWF (Daily Average Water flow): Generally applied to based data for designing water treatment plant, reservoir and water tower (Factor: 1.00)
- DMWF (Daily Maximum Water flow): Generally applied to designing water treatment plant which can be retain the maximum inflow around year (Factor: 1.25)
- HMWF (Hourly Maximum Water flow): Generally applied to designing water supply pipeline network (Factor: 2.00)

(3) Water resources development

Based on the projected water supply demand, the water source shall be selected and confirmed to meet the required water supply volume. The following water resources are supposed;

- Public water supply system: conformation of present and future supply capacity
- Surface water development: acquisition of water right and analysis of water intake amount
- Groundwater development: analysis of groundwater recharge system and allowable pumping discharge

(4) Water reservoir and purification plant

An effective capacity of a water reservoir is to be pondage for 2 to 4 hours to a daily water supply demand to secure the stable water supply. The water purification plant shall have ability for treatment appropriate to meet the industrial water quality standard.

2.1.5 Sewerage System Plan

Sewerage system is planned for treating rainwater and wastewater. Wastewater is classified into industrial wastewater generated from production process and domestic wastewater.

(1) Planning concept

At first, it is considered whether use of the public sewerage and the urban sewer system is possible or not. Sequentially, sewerage collection method shall be determined and the collection method is classified into a combined system and a separate system. The combined system is to discharge rainwater and wastewater in the same sewer lines. The separate system is recommendable from viewpoints of environment conservation and wastewater treatment efficiency.

(2) Drainage catchment basins and drainage system

The drainage catchment basins are determined in the light of watersheds and a regional development plan including land reclamation works at upstream and downstream areas since the rainwater flows depending on the topographical conditions.

Drainage system is planned to discharge water by the drainage line with the shortest distance. Installation of pumping facilities shall be avoided on the drainage system as far as possible from a viewpoint of the economic efficiency of O&M.

(3) Wastewater plan

Wastewater flow for planning consists of domestic wastewater, industrial wastewater and groundwater infiltration including unexpected surface water intrusion. Three (3) types of wastewater flows are set to account for designing various sewerage facilities:

- DAWF (Daily Average Wastewater flow): Generally applied to designing sludge treatment process and basic data for tariff collections
- DMWF (Daily Maximum Wastewater flow): Generally applied to designing wastewater treatment process which can be retain the maximum inflow around year
- HMWF (Hourly Maximum Wastewater flow): Generally applied to designing sewer pipes and pumping station which can accept peak flow rate due to hourly fluctuation of wastewater inflow

The daily peak flow factor is equivalent to 1.20 and 1.50 of DAWF. The hourly peak flow factor is to be 1.30 to 1.80 of DMWF or calculated by or Babbitt formula. Groundwater infiltration including unexpected surface water intrusion is experientially assumed to be 10% to 20% of DAWF.

(4) Rainwater drainage plan

The estimation of the design rainwater flow for a particular project would basically depend upon the following factors given from hydrologic data and geological data:

a) Rainfall intensity, return period;

b) Runoff coefficient, time of concentration;

c) Size and shape of catchment area;

d) Steepness and length of the slope being drained; and

e) Condition of the surface and nature of the subsurface soils.

Considering the above factors, the design peak discharge flow can be calculated using the commonly used procedure, the Rational Formula Method.

According as the development of IP, the peak runoff discharge is estimated to be increase. Therefore, it is required to examine the river improvement status at the downstream as well as the influence on downstream of the river. In defect of to the river improvement, a rainwater reservoir such as a retention pond will be installed within the area of IP for flood control.

2.1.6 Power Supply

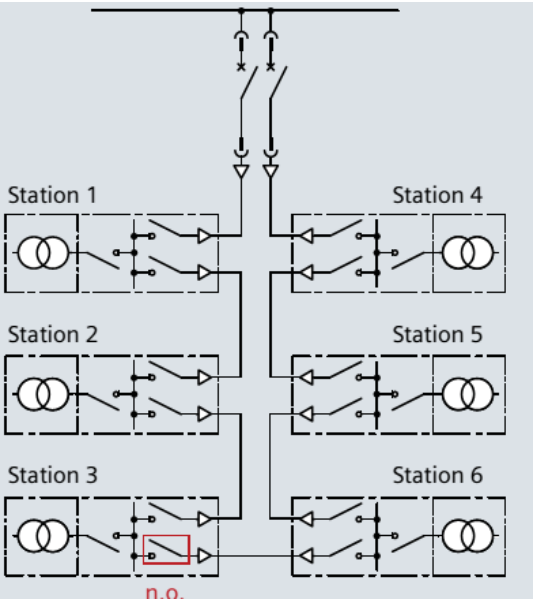
The necessary task shall be implemented step by step as follows:

(1) Establishment of basic data

- Review of the project situation.
- Listing of the standard which will be applied.
- Estimation of the total power demand based on i) international standards, ii) national standards, iii) reference standards, iv) review of existing industrial parks, and v) refer to industrial parks of similar size and sector in other countries.
- Collecting data of the existing power system and its expand plan of the surrounding area such as i) medium voltage network, ii) transmission line and substation network and its capacity, iii) national and regional electricity master plan, iv) current operation situation of existing electricity system, v) short term, medium term and long term plan by power companies.
- Site analysis.
- Operations planning.
- Preparation of a preliminary concept.
- Preparation of a concept on the functional scope.
- Environmental impact assessment.
- Summary of results.

(2) Preliminary planning

- Analysis of the basis.
- Coordination of objectives (boundary conditions, conflicting objectives).
- Preparation of a planning concept that also includes alternative solutions, for example regarding on selection of power source between high voltage (HV) substation and medium voltage (MV) lines, voltage level, network configurations, MV overhead line or MV underground cables.
- Integration of services rendered by other experts involved in the planning such as internal road planning.
- Drawing up of a functional scheme or block diagram for each plant, each area.
- Selection of power system protection and automation.
- Clarification and explanation of the fundamental interrelations, processes and conditions in the context of industrial park development and design, functions, technology, economics, energy management (for example regarding efficient power utilization, decide on who and how to operate and maintenance of the medium voltage grid).
- Preliminary negotiations with power companies and other experts involved in the planning as to whether an official approval can be obtained and clarification of scope of investment with the power companies.
- Rough cost estimation.
- Compilation of all preliminary planning results.



Source: EIPP (JICA Team)

Figure 2.1.5: Loop Configuration of MV Network

(3) Concept planning

- Working through the planning concept which was created. Subject-specific requirements and the specialized planning departments – which are integrated through Land Use Planning are now considered.
- Determination of all system and network components.
- Step by step preparation of a drawing/ report solution up to the final draft such as transmission line routes, single line diagram and plan of substation, single line and plan of MV network, location of MV/LV substation and its capacity, etc.
- Participation in negotiations with power companies and other experts involved in the planning as to whether an official approval can be obtained.
- Cost calculation and cost controlling by comparing the calculation with the initially prepared cost estimate.

(4) Approval planning

- Review the final concept planning.
- Approval planning by employer, other organizations.

We recommend that the implementation of power demand calculation should refer to existing industrial parks, similar IPs in other countries to avoid wastage of investment capital.

2.1.7 Telecommunication

(1) Survey on current situation

It is required to clarify the following contents through the survey on the current situation related to communication network.

- The communication environment and the current use situation of the target area where will locate the new IP.
- Cause telecommunications demand is forecasted and calculated in consideration of the future population, type of factory; moreover It follows the world trends of the telecommunications sector such as new technology. So, It is request to grasp the future population, forecast population, and detailed plot division.
- The situation of the existing communication network of target area and the volume of such communication provision.
- The communication expense of the target area.
- The plan to expand future communication base of the target area and the ability to provide communication
- Collecting data of the existing communication company network and its expand plan of the surrounding area.

Based on these above information, we can calculate the demand and gaps analysis.

(2) The communication concept provides

(i) Internet broadband

Prepare and arrange the essential data to develop the IP based on the results of the previous surveys and studies. The contents which need to be assumed are the industry categories, the area of factory by the industry category, the number of workers by each industry category, the number of office worker by each industry category and the time for development investment. In addition, in case the economic zone includes both

infrastructures such as houses and commercial areas, it is required to synthesize the data on the planned population, commercial areas and the number of employees in advance. At the same time, it is also necessary to synthesize the information and data on the capacity of internet broadband which can be supplied by the existing network.

Basically these information should be exchanged with the Internet Service Provider (ISP) at the time of pre-feasibility study of the industrial zone. As a result, the ISP will consider the capacity for the IP in its annual development plans.

Based on all of the above data, We have to calculate the International Communication Bandwidth Capacity and making scheme and layout plan of optical fiber network in industrial park. It is advisable that the number of flexible pipes/ cable trenches should be at least 100% redundant.

(ii) Telephone fixed line

As same as internet broadband (ADSL for example), we have to calculate the number of fixed lines required based on the number of companies, the type of company, the percentage of office workers. After calculation, drafting scheme and layout of telephone fixed line.

(iii) Mobile network and wireless Antenna (Cellular tower)

Basically, the development of mobile network infrastructure is the responsibility of the operator. However, we need to inform network operators about the planned area as the expected population.

As there is the participation of many communication service providers, whenever a company installs wireless antenna in the IP, it will result in the imbalance in the communication provision in locations in the IP. Consequently, the development corporation needs to survey the location for installing the wireless antenna so as to be able to provide the communication evenly for factories in the industrial park and provide the communication in a balanced state for factories by installing a wireless antenna tower there.

Moreover, it is required to make plan to provide a reasonable information provision volume in the whole IP and the industrial forms affected by electromagnetic waves such as the precise machine and equipment manufacturing industry and take into account the locations for installing the wireless antenna.

(3) Measures for stable provision

Similar to the installation of substation inside the IP for power supply, even in the communication, it is also possible to provide communication stably and appropriately for factories in the IP by installing a switching station inside the IP.

Compared to power, the communication has a small investment scale; however, for an IP, such as Software Park, where mainly attracts hi-tech industries, it is possible to generate high added value for the industrial park by maintaining the communication environment like this.

2.1.8 Solid Waste Storage Facility

Temporary storage facility and compaction devices for solid waste may be necessary within IP site with appropriate size which will depend on the type of industry. In case the local administration is incapable to prepare final disposal site, IPDC or IP Developer is obliged to construct the final disposal site which should be placed outside IP premises to keep adequate distance from the factories in IP.

Volume of solid waste generated from IP could be estimated in accordance to following unit volume.

When solid waste disposal is carried out, it is necessary to store and treat them separately for dangerous goods and non-dangerous goods.

Table 2.1.2: Example of Unit Generation Volume of Solid Waste in Kombolcha IP (figure form Feasibility Study)

Type	Unit
Industrial Waste	125kg/ha/day
Domestic Waste	0.2kg/person/day

Source: IPDC

1.1.1 Development Unit Demand

Estimation of the necessary infrastructure, such as water supply, wastewater, power supply and solid waste, could be referred to Japanese Statistics since the requirement of the factory is not far different between the country.

Table 2.1.3: Japanese Unit Demands for Infrastructure

Category of Industry	Water Demand *1 (m^3/day/ha)	Wastewater Yeild *2 (m^3/day/ha)	Power Demand *1 (kWh/day/ha)	Solid Waste Generation *3 (kg/day/ha)
Food	241	228	1,377	899
Beverages, tobacco and feed	300	271	930	797
Textile mill products	548	548	6,101	179
Garments and shirts	148		1,074	
Lumber and wood products, except Furniture	22	20	603	299
Furniture and fixtures	17	17	465	137
Pulp, paper and paper products	1,282	1,236	1,261	5,446
Printing and allied industries	33	32	2,287	298
Chemical and allied products	348	324	1,323	944
Petroleum and coal products	180	175	605	239
Plastic products	137	129	1,761	156
Rubber products	101	95	1,548	163
Leather tanning, leather products and fur skins	40	40	534	309
Ceramic, stone and clay products	78	59	1,085	778
Iron and steel	203	142	1,927	1,932
Non-ferrous metals and products	118	108	1,735	295
Metal products	48	48	1,002	230
General - purpose machinery	27	13	906	152
Production machinery	20	20	764	99
Business oriented machinery	35	31	804	98
Electronic parts, devices and electronic circuits	154	154	3,404	619
Electrical Machinery, equipment and supplies	36	36	1,061	110
Information and communication electronics equip	27	25	1,105	67
Transportation equipment	37	33	1,078	182
Miscellaneous manufacturing industries	35	26	829	319

*Source: *1 Japan Industrial Statics, 2014*
**2 Water Pollution Load Discharge Study Report, 2012 Ministry of Environment-Japan (MoE)*
**3 Survey on the Actual Situation of Industrial Waste Discharge and Disposal, 2013 MoE*

1.1.1 Park and Green Space Plan

Parks and green spaces are established in accordance with various purposes; to assure the natural environmental harmony between IP and the surrounding area, to maintain the good living environment in the vicinity, and to support the production environment (including the prevention of natural disasters) by supplying relax and rest to workers in IP, etc.

(1) Principle related to parks and green space

In a broad sense, park is major facility of the green facility. Accordingly, park has to be located in the center of IP in order to be easily accessed from all factory and service facilities in IP.

Green space is mainly forest land/hill land with the protective function, buffering function and landscaping function. Buffering function is thought as the most important, and buffer green space is placed in boundary area of IP.

In Japan, Factory Location Act enacted that industrial factory have to equip the on-site green space (in factory plot) in addition to the public green space. On-site green space should include more than 20% vegetation area and 5% relevant facility area such as fountain, athletic ground, etc. of the factory lot area.[1]

(2) Plan of parks, green spaces

In accordance with the rearranged development principles, location, scale, and facility contents of park and green space will be re-planned and distribution plan of park and green space in the land use plan should be finalized. Design of park and green space should be done by using the topographic drawing with the scale of 1/2,500.

In Japan, the park is designed to occupy more than 3% area of the area of industrial park. Moreover, recommended total area of park and Green space area is around 25% of total area of IP. Width of buffer green IP is defined to be 20m more on the basis of urban planning law. (in case of the project premises is 25 ha more).

Examples concerning park and green development in IP of Japan is shown in **Figure 2.1.6** and **Table 2.1.4**.

2.1.11 Other Facilities

Service facilities: Various kind of service facilities (see 3.8 Service Facilities) shall be constructed with approximately 7,500m^2 floor area in 1ha premises, which commonly called as Administration Building.

Bonded area protection fence: In case IP is designed as export processing zone (EPZ) where import and export tax is exempted for imported materials and exporting products. EPZ premises should be strictly controlled to prevent unauthorized leakage of materials and products across the zone boundaries, and fence facility with monitoring devices and patrol road alongside the fence should be installed for that purpose. Height of fence should be designed with 3.0m more.

Other facility: factory building, gate, boundary fence, parking, monument, Landscape and other facilities concerned should be planned.

2.1.12 Cost Estimation

Preliminary cost estimation should be done in this stage for implementation planning and project evaluation, which shall consist of; 1) construction cost, 2) operation and maintenance cost, 3) engineering cost, 4) land acquisition and compensation cost. Furthermore, 1) price escalation (both for foreign and local currencies), 2) physical contingency, 3) necessary taxes shall be included.

[1] However, area of industrial parks and green space developed by IP can be account as on-site green, therefore, factory can enlarge processing function area by reduction of on-site green space.

Japanese Example for Park & Green Development in IP

Source: Japan Regional Development Corporation

Figure 2.1.6: Green Development of Yonezawa Hachimanbara Core Industrial Park

Table 2.1.4: Example of Green Facility Distribution in Industrial Park/Estate Development in Japan

IP	Developer	Total area (ha)	Factory lot area		Park & green							
					Reserves green		Park		Buffer green		Total	
			(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)
A	Japan Regional Development Corporation	430.0	180.1	41.9%	110.0	25.6%	63.4	14.7%	13.2	3.1%	186.6	43.4%
B	ditto	86.8	42.3	48.7%			10.8	12.4%	25.3	29.1%	36.1	41.6%
C	ditto	112.1	56.5	50.4%			14.6	13.0%	12.5	11.2%	27.1	24.2%
D	ditto	161.0	83.0	51.6%			12.8	8.0%	48.2	29.9%	61.0	37.9%
E	ditto	81.0	59.1	73.0%			3.1	3.8%	6.5	8.0%	9.6	11.9%
F	ditto	240.0	122.2	50.9%	85.1	35.5%	5.0	2.1%	11.7	4.9%	101.8	42.4%
G	ditto	324.0	181.0	55.9%			6.5	2.0%	115.8	35.7%	122.3	37.7%
H	Provincial administration	165.5	107.0	64.7%			8.6	5.2%			8.6	5.2%
I	ditto	342.0	244.4	71.5%			31.9	9.3%	29.7	8.7%	61.6	18.0%
J	Provincial land development corporation	142.8	77.4	54.2%			8.7	6.1%			8.7	6.1%
K	Japan Housing Corporation	289.6	182.7	63.1%			7.5	2.6%			7.5	2.6%
L	Provincial administration	317.4	223.4	70.4%			7.6	2.4%			7.6	2.4%
M	Provincial land development corporation	97.3	81.1	83.4%			3.0	3.1%			3.0	3.1%

Source: Study for Factory Greenery Standard, Japan Industrial Location Canter

2.2 PRELIMINARY IMPLEMENTATION PLAN

2.2.1 Implementation Plan

Organizational Plan for Implementation

Organizations related to development/operation of IPs will be following 6 business entities.

1) Organization for project planning: is the one who prepare the plans of IPs. IPDC or IP Developer will be in charge.

2) IP Developer: is the organization in charge of the IP Development. IPDC or a private company will be in charge. In some IPs, sub-developers may exist under a master developer.

3) Offsite Infrastructure Developer: is the organization in charge the offsite infrastructure development outside IPs. Large scale infrastructures with much initial investment and have

public contribution are to be developed by offsite developers. In many cases, these infrastructures will be undertaken by the government's agencies, ministries or public companies. ERA (Ethiopian Road Authority) for the access road and EEU/EEP for electric connection facilities are major off-site organizations.

4) IP Operator: is the organization in charge of operation of IPs. It may be IPDC or a private company by subletting to the private operator for technical maintenance.

5) IP Enterprise: are the organization that invest and locate their factory in IPs. Basically, they are mainly private businesses. Although they are not directly related to IP development/operation, they have the most important role in IP development, therefore, they are provided in this list.

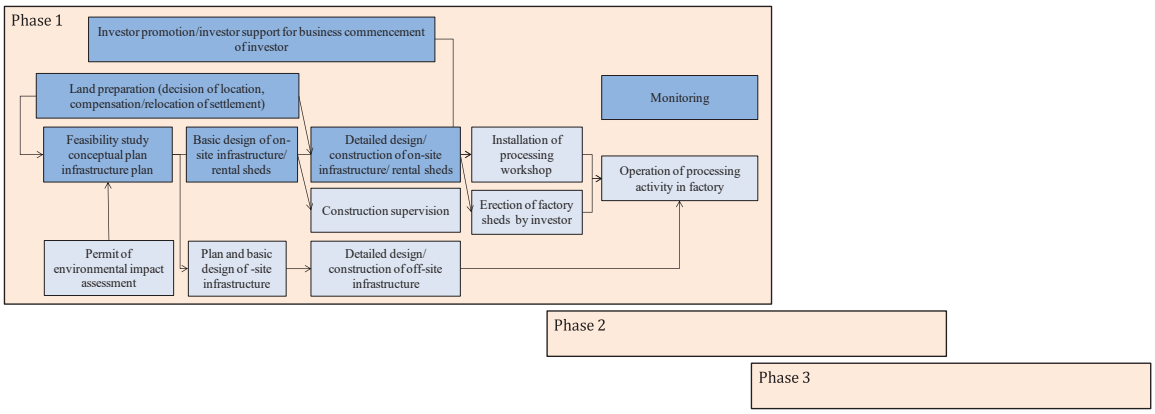
6) Commission: is the organization in charge of regulating IP development and IP management. Under special regulations of the laws, central government/local government will be in charge.

Roles of organizations for IP implementation is shown in **Table 2.2.1**.

Implementing Schedule

Implementing schedule of IP project should be formulated on the basis not only of IP construction schedule but also external infrastructure, tenants investment potential, etc. IPs of IPDC with large development size tend to developed by several phases.

Items to be considered in the implementing schedule plan are shown below.



Source: EIPP (JICA Team)

Figure 2.2.1: Items to be Considered in Implementing Schedule Plan Formulation

Table 2.2.1: Role of Organization for IP Development and Operation

Items		1) Project preparer	2)Onsite developer	3)Offsite developer	4)Operator	5)Tenant	6)Regulator
Planning	Planning (including investigation cost)	○	○				
Land	Land acquisition/compensation		○				
	Land construction		○			○	
	Green space construction		○				
	Construction of fences, gates		○			○	
Road	Construction of internal roads		○				
	Construction of external roads			○			
Tap water	Construction of water supply ponds		○	○			
	Construction of water filtration plants		○	○			
	Installation of water supply facilities		○	○			
Sewer	Construction of wastewater treatment plants		○	○			
	Installation of wastewater pipelines		○	○			
Electricity	Construction of wastewater treatment plants		○	○			
	Construction of transformer stations		○	○			
	Construction of power transmission facilities		○	○			
	Construction of power distribution equipment		○	○			
Telecommunication	Construction of telecommunication towers		○	○			
	Installation of telecommunication equipment		○	○			
Gas	Construction of gas supply infrastructure		○	○			
	Construction of gas pipelines		○	○			
Logistics	Seaports			○			
	Airports			○			
	Railways			○			
	Expressways			○			
	Other logistics facilities (for example ICD etc.)			○			
Factory	Land acquisition for factory	○				○	
	Land management for factory	○				○	
	Design of factories	○				○	
	Construction of factory					○	
	Construction of factory for lease	○	○				
	Operation of factory for lease	○			○		
	Land maintenance cost					○	
	Erection of factory potable water receiving equipment	○				○	
	Installation of wastewater equipment in factory	○				○	
	Installation of electric equipment in factory	○				○	
	Installation of telecommunication systems in factory	○				○	
	Installation of gas receiving systems in factory	○				○	
Operation	Sales promotion				○		
	Management and operation of infrastructure				○		
	Improvement of infrastructure system				○		
	Management and operation of tenants				○		
	Environmental monitoring				○		○
	Administration of tenants	○	○	○	○	○	○
Financial arrangements	Financial management (sales, lent income, operation fee, etc.)		○	○	○	○	
	Taxes management		○	○	○	○	

Source: EIPP (JICA Team)

2.2.2 Income and Expense Estimation

Income and expense concerning IP development/operation shall be estimated for the purpose of project evaluation. Items to be estimated is shown hereunder by organization related to development/operation of IPs.

(1) IP Developers

Items of income/expense of onsite developers are presented in the following table:

Table 2.2.2: Items of Income/Expense of IP Developers

Items of costs	Items of revenue
Land · Cost of land acquisition, compensation for resettlement and relocation · Cost of land construction · Cost of construction of regulating reservoir · Cost of construction of green spaces · Cost of construction of fences, gates Road · Cost of construction of internal roads Water Supply · Cost of construction of water supply ponds · Cost of construction of water filtration plants · Cost of installation of water supply facilities Sewerage · Cost of construction of wastewater treatment plants · Cost of installation of wastewater pipelines Power Supply · Cost of construction of electricity supply facilities · Cost of construction of transformer stations · Cost of construction of power transmission facilities · Cost of construction of power distribution equipment Telecommunication · Cost of construction of telecommunication towers · Cost of installation of telecommunication equipment Gas · Cost of construction of gas supply infrastructure · Cost of installation of gas pipelines Sheds · Cost of construction of sheds for lease Others · Loan interest · Taxes, etc.	· Land sale · Land lease · Sheds lease

Source: EIPP (JICA Team)

Onsite developers playing major role in IP development may receive revenue in exchange for development cost by sale or re-leasing of plots and sheds in IPs.

Sale unit price of IP land is divided into 4 types as follows, regardless of land sale or lease.

1) Price of cost basis: Sale unit price = the Project's total expense/area of sold land
2) Market price basis: Sale unit price = Market price similar to the adjacent industrial land
3) Eclecticism between cost price and market price: Sale unit price = balance of (Cost price + Market price)
4) Bidding price: In case strong demands of investors is expected, the sale/lease price can be determined by competitive bidding by investor.

For public development IP, the cost basis price will be used by covering cost of development, while private development IP tends to apply market price basis, which could be higher than the cost basis price.

＜Column: Price list of Cambodia Sihanoukville Port SEZ＞

In Sihanoukville Port SEZ (SPSEZ) adjacent to Sihanoukville Port in Cambodia, sale price and rent rate are determined by applying own discount ratio corresponding to the use area and number of contract years. The list of formal prices of SPSSZ for the year 2015 is provided in the following table. Since foreigners and foreign companies are not permitted to own land, the form of selling will be issuance of right of permanent land leasing (the number of contract years must be made first).

In case of land sale, the larger land area is acquired, the cheaper price in the initial phase the tenant can enjoy. Since the establishment of factory investor owes large investment cost for facilities and equipment, many tenants tend to have a long-term contract which allows low unit price of land.

On the other hand, the unit rent rate is becoming higher when the contract terms is shorter. In SPSEZ, the total amount of the land sale system and land lease system to be paid to IP developer from investor is designed to be same. Each tenant, after understanding the price structure and considering the initial investment cost, benefit of the property holding or the current discounted value of the payment, local inflation rate, etc. will choose lease system or sale system of land.

Table 2.2.3: Example of Land Price (2015)

(Sales Price in USD/m2)
(Lease Price in USD/m2/year)

		Years								
m2	S/L	50	45	40	35	30	25	20	15	10
≧100000	Sale	55.00	53.05	50.67	47.79	44.27	40.00	34.79	28.47	20.77
	Lease	1.10	1.18	1.27	1.37	1.48	1.60	1.74	1.90	2.08
95,000 - 100,000	Sale	56.00	54.01	51.60	48.66	45.08	40.72	35.43	28.98	21.14
	Lease	1.12	1.20	1.29	1.39	1.50	1.63	1.77	1.93	2.11
90,000 - 95,000	Sale	56.50	54.50	52.06	49.09	45.48	4 1.09	35.74	29.24	21.33
	Lease	1.13	1.21	1.30	1.40	1.52	1.64	1.79	1.95	2.13
85,000 - 90,000	Sale	57.00	54.98	52.52	49.52	45.88	41.45	36.06	29.50	21.52
	Lease	1.14	1.22	1.31	1.41	1.53	1.66	1.80	1.97	2.15
80,000 - 85,000	Sale	57.50	55.46	52.98	49.96	46.28	41 .81	36.38	29.76	21.71
	Lease	1.15	1.23	1.32	1.43	1.54	1.67	1 .82	1.91	2.17
75,000 - 80,000	Sale	58.00	55.94	53.44	50.39	46.69	42.18	36.69	30.02	21.90
	Lease	1.16	1.24	1.34	1.44	1.56	1.69	1.83	2.00	2.19
70,000 - 75,000	Sale	58.50	56.42	53.90	50.83	47.09	42.54	37.01	30.28	22.09
	Lease	1.17	1.25	1.35	1.45	1.57	1.70	1.85	2.02	2.21
65,000 - 70,000	Sale	59.00	56.91	54.36	51.26	47.49	42.91	37.33	30.54	22.28
	Lease	1.18	1.26	1.36	1.46	1.58	1.72	1.87	2.04	2.23
60,000 - 65,000	Sale	59.50	57.39	54.82	51.70	47.89	43.27	37.64	30.80	22.47
	Lease	1.19	1.28	1.37	1.48	1.60	1.73	1.88	2.05	2.25
55,000 - 60,000	Sale	60.00	57.87	55.28	52. 13	48.30	43.63	37.96	31.05	22.65
	Lease	1.20	1.29	1.38	1.49	1.61	1.75	1.90	2.07	2.27
50 ,000 - 55,000	Sale	60.50	58.35	55.74	52.56	48.70	44.00	38.27	31.31	22.84
	Lease	1.21	1.30	1.39	1.50	1.62	1.76	1.91	2.09	2.28
45,000 - 50,000	Sale	61.00	58.84	56.20	53.00	49.10	44.36	38.59	31.57	23.03
	Lease	1.22	1.31	1.41	1.51	1.64	1.77	1.93	2.10	2.30
40,000 - 45,000	Sale	61.50	59.32	56.66	53.43	49.50	44.72	38.91	31.83	23.22
	Lease	1.23	1.32	1.42	1.53	1.65	1.79	1.95	2.10	2.32
35,000 - 40,000	Sale	62.00	59.80	57. 12	53.87	49.91	45.09	39.22	32.09	23.41
	Lease	1.24	1.33	1.43	1.54	1.66	1.80	1.96	2.14	2.34
30,000 - 35,000	Sale	62.50	60.28	57.58	54.30	50.31	45.45	39.54	32.35	23.60
	Lease	1.25	1.34	1.44	1.55	1.68	1.82	1.98	2.16	2.36
25,000 - 30,000	Sale	63.00	60.76	58.05	54.74	50.71	45.81	39.86	32.61	23.79
	Lease	1.26	1.35	1.45	1.56	1.69	1.83	1.99	2.17	2.38
20,000 - 25,000	Sale	63.50	61.25	58.5 1	55.17	51.11	46. 18	40. 17	32.87	23.98
	Lease	1.27	1.36	1.46	1.58	1.70	1.85	2.01	2.19	2.40
15,000 - 20,000	Sale	64.00	61.73	58.97	55.6 1	51.52	46.54	40.49	33.12	24. 16
	Lease	1.28	1.37	1.47	1.59	1.72	1.86	2.02	2.21	2.42
10,000 - 15,000	Sale	64.50	62.21	59.43	56.04	51.92	46.91	40.80	33.38	24.35
	Lease	1.29	1.38	1.49	1.60	1.73	1.88	2.04	2.23	2.44
<10,000	Sale	65.00	62.69	59.89	56.47	52.32	47.27	41.12	33.64	24.54
	Lease	1.30	1.39	1.50	1.61	1.74	1.89	2.06	2.24	2.45

Source: SPSEZ sales data (these date may be changed since they are of 2015)

(2) Off-site infrastructure developer

While IP is developed by a IP Developer, off-site infrastructures often be developed by several different developers/authorities. Items of income/expense of off-site infrastructure developer are shown follow.

Table 2.2.4: Items of Income/Expense of Off-site Infrastructure Developer

Expense	Revenue
● Infrastructure planning fee ● Infrastructure development expenses ● Infrastructure operating expenses ● Others ・ Loan interest ・ Taxes ・ Other costs	● Revenue from infrastructure services ● Special Contract Revenue

Source: EIPP (JICA Team)

Offsite infrastructure outside IP such as electric power facilities, logistics facilities, etc. requires a lot of construction expense. Therefore, it is hardly possible to afford construction and operation expense only by the IP's tenant businesses. In many cases, off-site infrastructure services will be integrated with the secondary businesses for local communities and other companies in the surrounding area, and the developer /authority will receive long-term revenue for services.

(3) Operator

Items of income/expense of operator are provided in the following table:

Table 2.2.5: Items of Income/Expenditure of Operator

Expense	Revenue
● Cost related to regulation ・ Sales promotion expenses ・ Infrastructure management operation cost ・ Infrastructure facility maintenance fee ・ Tenant supporting service management cost ・ Environmental monitoring expenses ・ Administrative cost of, other costs	● Collection of management and operation fee ● (Land sale) ● (Land lease)

Source: EIPP (JICA Team)

In many IPs, except for money from land sale/lease, management and operation (O/M) fee is collected monthly from invested factory and service facility renter. These fee is called "Infrastructure services fee" , "O/M fee". This fee becomes operator's revenue for utilization as O/M and/or infrastructure repair. However, monthly O/M fee is sometimes inadequate for operation and management costs and many IPs is obliged to allocate a part of land sale and lease income to operation and management resources. Therefore, a developer becomes concurrently an operator in many cases.

Particularly, in the initial phase of operation when the number of investors is limited, O/M fee must be generated from other sources. In case the operator is not the developer, it is necessary to discuss carefully and share the responsibility O/M cost and repair cost among operator and organizations concerned.

2.2.3 Evaluation

Financial and economic analysis of the project are necessary to be conducted to evaluate the efficacy of the project implementation. Financial Internal Rate of Return (FIRR), as a financial analysis, is conducted for all kind of project, while Economic Internal Rate of Return (EIRR), as an economic evaluation, commonly conducted only for the public project which can create indirect benefit not limited to the project finance.

Economic analyses have been undertaken to assess the economic viability of the project. The analyses compare the benefits and costs of with and without project situations to estimate the EIRR and the Net Present Value (NPV). Customs duty and Value-Added Tax (VAT) are included in the project cost estimate, but is excluded in the economic analysis. Physical contingencies, operation and maintenance costs are included as they are part of the value of resources that will be used in the construction, but price contingencies are excluded as they are due the value of currency, and do not reflect the real changes in the volume of resources consumed. The analysis period shall be determined based on the project's life-cycle (or maximum rental period) which is commonly assumed as 50 to 70 years.

In the economic analysis of the projects, there are also other aspects of project feasibility which may require sensitivity analysis. These includes;

1) Demand analysis: to assess the sensitivity of the demand forecast to changes in population growth, per capita consumption, prices, etc.,

2) Least cost analysis: to verify whether the selected least-cost alternative remains the preferred option under adverse conditions,

3) Sustainability analysis: to assess possible threats to the sustainability of the project, and

4) Distributional analysis: to analyze whether the project will actually benefit the poor.

Financial analyses have been undertaken to assess the financial viability of the project with a similar approach for the economic analysis. For the financial analysis, the criterion rate of return is the Weighted Average Cost of Capital (WACC). The project's FIRR is calculated using the financial terms of the project costs and revenues. The analysis period and exchange rate used in the financial analysis are same as those used in the economic analysis.

Series of major manuals was published by Asian Development Bank (ADB); 1) Financial Management and Analysis of Projects 2005, 2) Guidelines for the Economic Analysis of Projects 1997, and 3) Economic Analysis of Sub-regional Projects 1999.

2.3 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

2.3.1 Necessity of Environmental and Social Considerations

IP Developer and IP Operator shall understand their duty to implement environmental management as provided in Environmental Policy (1997), Environmental Impact Assessment Proclamation (2002) and other relevant proclamations and regulations.

IP Developer and IP Operator shall make the strongest effort throughout their duty periods: namely, IP development planning and designing, construction, and management period, in order to prevent or mitigate occurrence of negative impacts on the natural and social conditions and disturbance of living life of neighboring communities.

IP Developer is responsible for conducting Environmental and Social Impact Assessment (ESIA) study by employing competent consultant registered to the Environmental Protection Authority (EPA), and submitting ESIA report to the pertinent governmental institution. The institution, after examination of the report, issues letter to the IP developer indicating that the ESIA reports have been considered and giving their go ahead for the project and the IP Developer submits the letters to the Commission before commencing construction.

Environmental and social considerations are one of the important factors of Corporate Social Responsibility or CSR. CSR is a business attitude and performance of corporations that contributes to sustainable development by delivering economic, social and environmental benefits for all stakeholders. Therefore, any IP Developer and project owner shall consider environmental and social considerations.

2.3.2 Procedure of Environmental and Social Considerations

(1) Strategic Environmental Assessment (SEA)

SEA is the environmental impact assessment of strategy, plan, or program levels. It integrates environmental and social considerations into decision making through decision making process. Though SEA is not legalized in Ethiopia at the time of preparation of this Guideline, IP Developer is expected to consider environmental and social impacts at the masterplan preparation. once SEA is legalized, IP Developer shall conduct SEA study when they make an IP master plan.

(2) ESIA Implementation process

IP Developer is required to follow the ESIA implementation process as shown in **Figure 2.3.1** and carries out following actions.

<u>Submission of application</u>: when the project implementation is decided, the developer submits an "Application of Project" to the competent authority.

Environmental and Social Impact Assessment (ESIA) evaluates a project's potential environmental and social risks and impacts in the areas of influence; examines project alternatives; identifies way of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental and social impacts and enhancing positive impacts.

Screening means deciding whether proposed projects are likely to have impacts that need to be assessed by conducting ESIA studies according to project description and site description.

Scoping means choosing alternatives for analysis, a range of significant and potentially significant impacts, and study methods.

ESIA Study is a confirmation of the measures taken by project owner or developer etc. to examine and analyze the proposed plan if it meets the requirements of the environmental laws and regulations in view of the project's characteristic features and the inherent nature of the affected area. It includes a plan of mitigating and managing adverse environmental and social impacts throughout project implementation.

Environmental Management Plan (EMP) consists of a set of mitigation, and institutional measures to be taken during construction and operation phases to eliminate adverse environmental and social impacts. The EMP identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental and social impacts to acceptable levels. Generally, EMP is included in the ESIA report.

Environmental Monitoring Plan (EMoP) is a plan generally consisting of environmental items anticipated to arise negative impacts, monitoring items, location of monitoring, frequency, implementing institution and responsible institution. Generally, EMoP is included in the ESIA report.

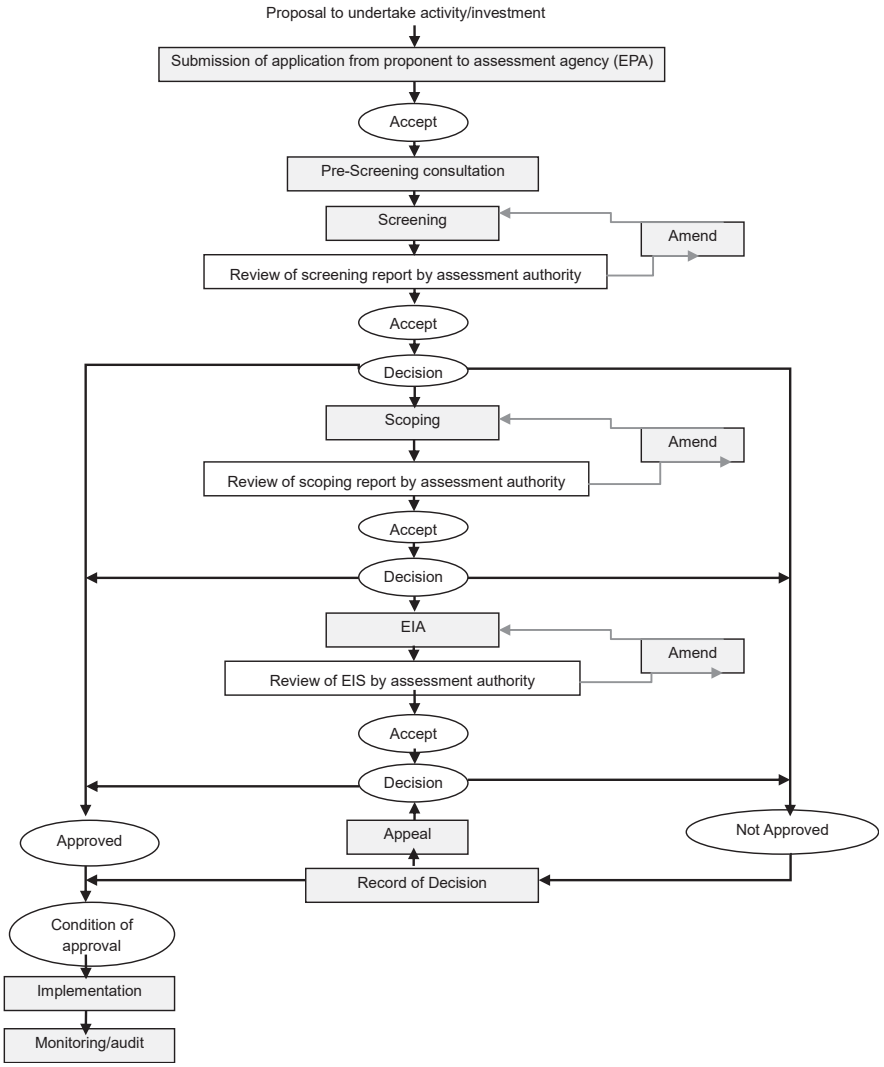
(3) Procedure of the Environmental Management

1) The IP Developer notices to the contractor the environmental issues to be considered during construction.

2) The IP Developer caries out the environmental monitoring following the EMP and gives necessary advises or instructions to the contractor when negative impacts are detected.

3) Ministry of Environment, Forestry and Climate Change (MEFCC) IP office shall manage environmental issues including environmental monitoring at the IP operation phase, but IPDC is expected to be the first responsible institution for environmental monitoring.

4) At the time of preparation of this Guideline, IP enterprise is not required to implement an ESIA study for its factory construction and/or operation in the sub-leased plot. ESIA approval for the entire IP area is applied to each factory. However, MEFCC has intention that each IP Enterprise carries out ESIA study for its own factory and does environmental monitoring because environmental problems often occur due to lack of or weak awareness of IP Enterprises on environmental issues.



Note: a. EIA means Environmental and Social Impact Assessment (ESIA)
b. After approval, competent authority issues
Source: Environmental Impact Assessment Procedural Guideline Series 1 (2003)

Figure 2.3.1: Implementation Process of ESIA

2.3.3 Issues for Environmental Assessment in the Industrial Sector

(1) Environmental and Social Items

In order to maximize the sustainability of development, it is necessary to tackle some fundamental social and environmental items. Environmental items to be assessed are summarized below but other items are also monitored if ESIA study assessed important.

Table 2.3.1: Environmental Items to be Assessed

Aspect	Item
Pollution	Air, Water, Soil, Solid Waste, Noise and Vibration, Ground Subsidence, Offensive Odors, Geographical Features, Bottom Sediment.
Natural aspect	Biota and Ecosystems, Water Usage, Global Warming.
Social aspect	Involuntary Resettlement, Local economies (such as employment, livelihood, etc.); Land use and utilization of local resources; Social institutions such as social infrastructure and local decision-making institutions; Social institutions such as social infrastructure and

Aspect	Item
	local decision-making institutions; Existing social infrastructures and services; Poor, indigenous, or ethnic people; Misdistribution of benefits and damages; Local conflicts of interest; Limitation of accessibility to information, meetings, etc. on a specific person or group; Gender; Children's right; Cultural heritage; Infectious diseases such as HIV/AIDS; Work condition including work safety.

Source: Environmental Assessment and Management Guidelines (EPA, 2000) and modified by EIPP (JICA Team)

(2) Environmental and Social Impacts

IP Developer shall consider the environmental items and issues at general facility designing, IP development phase and IP operation phases, in order to avoid and mitigate environmental and social impacts.

Chapter 5 of the "Environmental Impact Assessment Guideline Document (draft) (EPA, 2000)" explains issues to be assessed in the ESIA. Project owners (IP Developers) must receive ESIA approval for these issues before starting IP development and make strong effort to prevent or mitigate negative impact for sound IP development and operation. Following table summarizes issues of environmental and social impacts relating to the IP Developer and example of mitigation measures, to be applied both for construction and operation phases.

Table 2.3.2: Issues for Environmental Assessment in the Industrial Sector

No.	Issues	Sources/Causes	Impacts	Mitigation measure (example)
Pollution				
1	Air quality	Emission of dust Emission of gases Noise	Air pollution-damage. Discomfort to natural and human environment.	1. Effective and affordable emission system 2. Periodical monitoring 3. Awareness raising
2	Water quality	Discharge of solid/dissolved substances from construction site and factory shed, e.g. mineral waste, animal and vegetable waste, waste-containing fibers, hazardous waste.	Pollution of ground and surface water, silting, sedimentation, eutrophication.	1. Effective and affordable sewage system 2. Periodical monitoring and reaction 3. Awareness raising
3	Soil quality	Discharge of solid/dissolved substances, e.g. mineral waste, animal and vegetable waste, waste-containing fibers, hazardous waste.	Sanitation, pollution of soil.	1. Effective and affordable sewage system and solid waste management 2. Periodical monitoring 3. Awareness raising
4	Solid waste	Discharge of solid waste without control	Contamination of soil, surface water and ground water Air pollution	1. Control of solid waste management 2. Periodical monitoring 3. Awareness raising
5	Noise and vibration	Machinery use	Affecting human health Giving damage to precision machines	1. Use of low noise and low vibration machines 2. Periodical maintenance 3. Periodical monitoring
6.	Odor	Use of chemicals	Affecting human health	1. Use of low odder materials 2. Periodical monitoring
7	Subsidence	Land development Use of large amount of ground water	Causing dames to the building and structures constructed on the concerned ground	1. Understanding of the ground condition 2. Development plan of the least impact
Natural Environment				
8	Pressure on the natural resource base (effect on the overall ecosystem operation)	Extraction of raw materials Water consumption Energy consumption Influx of workers	Unsustainable utilization of natural resources, e.g. water, trees coal, soil.	1. Understanding of natural condition at site selection and planning stage 2. Selection of the site of the least negative impact.
9	Protected area		Giving damages to the valuable and/or rare natural resources	1. Understanding of location of protected area 2. Exclusion of the protected areas from candidate sites
10	Hydrology	Extraction of large amount of ground water Land development	Cutting off or bloc of the vein of ground water	1. Understanding of veins groundwater 2. Land development plan of least negative impact

No.	Issues	Sources/Causes	Impacts	Mitigation measure (example)
11	Topography and geology y	Land development	Possibility of land sliding, change of surface water flow	1. Land development plan of least negative impact
Social Environment				
12	Resettlement	Land acquisition for IP development	Loss of house and assets, production means	Consultation, compensation, (refer to 2.3.5)
13	Competition between land-uses: IP and other land use	Occupation of land, impacts of industry.	Negative economic impacts on other sectors, e.g. agriculture.	1.Understanding of social condition 2. Prediction of future economic impact 3. Public hearings
14	Heritage		Giving direct and indirect damages to the heritages	1. Understanding of location of (national) heritages 2. Exclusion of the heritages from candidate sites
15	Landscape		Giving direct and indirect damages to the local landscape	1. Understanding of location of valuable landscapes 2. Public hearings 3. IP development plan of the least impact
16	Ethnic Minorities and Indigenous Peoples		Giving direct and indirect damages to the living conditions (and traditional way of life in case)	1. Understanding of existing of ethnic minorities and indigenous peoples in and near to the project site 2. Understanding and following the related national policies 3. Public hearings 4. IP development plan of the least impact
17	Gender		Discrimination caused by gender	1. Understanding of the national and international gender related laws and conventions 2. Grievance system
18	Working condition		Illegal and anti-humanity condition - Child labour and forced labour - Non paid works	1. Monitoring by the relevant authorities 2. Instruction of improvement 3. Cancel of contract if necessary
19	Human health (chemical substances, activities using chemical materials, noise, mineral dust, organic dust, solvent)	Use and transportation of: - accidental materials and discharge - inflammable, toxic, explosive, chemical substances. Industrial activities Noise. Air pollution	Possibility of occurrence of injures and diseases Explosion and fire	1. Periodical monitoring of air and water 2. Periodical monitoring of keeping cleanness 3. Quick action to the negative monitoring results 4. Awareness raising

No.	Issues	Sources/Causes	Impacts	Mitigation measure (example)
		Occurrence of infectious and contagious disease		
20	Human safety	Mechanical equipment. Explosion, fire. Manufacture of chemicals.	Possibility of accidents, injuries, death.	1. Periodical monitoring of safety condition 2, Awareness raising

Source: Environmental Assessment and Management Guidelines (EPA, 2000) and modified by EIPP (JICA Team)

2.3.4 Land Acquisition and Involuntary Resettlement

(1) Avoidance or minimizing negative impact of land acquisition and resettlement

Land acquisition is the indispensable factor for IP development but it is anticipated that, in most cases, land acquisition causes involuntary resettlement and/or deprivation of means of livelihood such as farm land of local people.

Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected. People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported in compliance with Ethiopian Laws and Regulations: namely, Proclamation 455/ 2005 "Expropriation of landholdings for public purposes and payment of compensation proclamation" and Council of ministers Regulations 135/2007 "Payment of compensation for property situated on landholding expropriated for public purpose", in a timely manner.

A Woreda or an urban administration shall, upon payment in advance of compensation in accordance with the Proclamation No.455/2005, have the power to expropriate landholdings for public purpose where it believes that it should be used for a better development project to be carried out by public entities, private investors and so on.

(2) Procedure of land acquisition and resettlement

The IP Developer shall consult the Woreda of the relevant area when it decides a plan of IP development and the Woreda starts land acquisition procedure. Woreda together with the resettlement implementation committee shall follow the procedure of land acquisition and resettlement in compliance with abovementioned Proclamation No.455/2005 and the Regulation No.134/2007. Staff in charge shall explain and discuss with the affected people who are forced to involuntarily relocate and/or lose their means of livelihood, calculate compensation, negotiate, reach agreement, pay compensation, and give sufficient support to the affected people. The cost of land acquisition and compensation is paid for out of the budget of Region Government.

The IP Developer can commence development works only after the land is totally acquired by Woreda or city administration. Regional Government grants a lease-hold certificate to IPDC and IPDC starts development on the land by itself or transfers the land to private IP Developers.

(3) Land Acquisition and Resettlement Plan (LARAP)

For the projects that will result in large-scale involuntary resettlement, responsible institution (Woreda or local administration) shall prepare land acquisition and resettlement plan (LARAP[2]) and disclose them to the public. In the process of preparing a LARAP, responsible institution shall carry out socio-economic survey and hold consultations with affected people and their communities based on sufficient information in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to

[2] In some countries, it is called as Resettlement Action Plan (RAP)

the affected people and disclose these plans. Generally, the LARAP contains at least following items in the box. Besides, for further information, the elements of LARAP of the World Bank OP4.12 is attached at Attachment A.

General Contents of Land Acquisition and Resettlement Action Plan

1. Necessity of land acquisition and resettlement
2. Scope of land acquisition (scale, area of affected people and assets)
   Population, detail assets and land, income, socially vulnerable people
3. Concrete compensation and support plan
   Cut-off date, plan of improvement of way of life, new site, entitlement matrix
4. Appropriate and accessible grievance mechanisms
5. Implementation institution and implementation schedule
6. Cost and fund source
7. Monitoring system
8. Organization of consultation meetings and record of meetings

2.3.5 Ethnic Minorities and Indigenous Peoples

In case of the ethnic minorities and indigenous peoples live in the plan IP development site, the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. Project owners (IP Developers) shall (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects. For this, project owners shall implement

1) screening to understand: to understand whether indigenous peoples exist or not);
2) social assessment if indigenous peoples live: to evaluate the project's potential positive and adverse effects on the Indigenous Peoples, and to examine project alternatives where adverse effects may be significant;
3) Preparation of Indigenous Peoples Plan (IPP)

The IPP includes the following elements[3]:

1) A summary of the information on:
   (a) A review, on a scale appropriate to the project, of the legal and institutional framework applicable to Indigenous Peoples.
   (b) Baseline information on the demographic, social, cultural, and political characteristics of the affected Indigenous Peoples' communities, the land and territories that they have traditionally owned or customarily used or occupied, and the natural resources on which they depend.
2) A summary of the social assessment;
3) A summary of results of the free, prior, and informed consultation with the affected Indigenous Peoples' communities that was carried out during project preparation and that led to broad community support for the project;
4) A framework for ensuring free, prior, and informed consultation with the affected Indigenous Peoples' communities during project implementation;
5) An action plan of measures to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate, including, if necessary, measures to enhance the capacity of the project implementing agencies;
6) When potential adverse effects on Indigenous Peoples are identified, an appropriate action plan of measures to avoid, minimize, mitigate, or compensate for these adverse effects;
7) The cost estimates and financing plan for the IPP;

[3] Source: The World Bank OP4.10 Annex B

8) Accessible procedures appropriate to the project to address grievances by the affected Indigenous Peoples' communities arising from project implementation. When designing the grievance procedures, the borrower takes into account the availability of judicial recourse and customary dispute settlement mechanisms among the Indigenous Peoples; and,
9) Mechanisms and benchmarks appropriate to the project for monitoring, evaluating, and reporting on the implementation of the IPP. The monitoring and evaluation mechanisms should include arrangements for the free, prior, and informed consultation with the affected Indigenous Peoples' communities.

2.3.6 Environment Requirement During Construction and Operation Phases

Important environmental and social factors that the Developer shall manage are eue mentioned below both at construction and operation phases.

(1) Air Pollution Management

IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to comply with the air pollution parameters prescribed in "Guideline Ambient Environment Standards for Ethiopia", prepared by EPA with support of UNIDO.

Table 2.3.3: Air Quality Standards

No.	Pollutant	Value Microgram/m^3	No.	Pollutant	Value Microgram/m^3
1	Sulphur dioxide (10 minutes)	500	8	Carbon monoxide (8hours)	10,000
2	Sulphur dioxide (daily)	125	9	Ozone (8 hours)	120
3	Sulphur dioxide (annual)	50	10	Particulate matter less than 10 microns (annual)	50
4	Nitrogen dioxide (1 hour)	200	11	Particulate matter less than 10 microns (daily)	150
5	Nitrogen dioxide (annual)	40	12	Particulate matter less than 2.5 microns (annual)	15
6	Carbon monoxide (15 minutes)	100,000	13	Particulate matter less than 2.5 microns (daily)	65
7	Carbon monoxide (30 minutes)	60,000	14	Lead (annual)	0.5

Source: "Guideline Ambient Environment Standards for Ethiopia" EPA and UNIDO, 2003

(2) Wastewater Management

The Developer shall pay in the wastewater management the deepest attention to:

- chemical storage and chemical management for Wastewater Treatment Plant (WWTP);
- selection of appropriate CETP/STP technology of high cost performance
- cost recovery system of wastewater WWTP

The developer shall observe the permissible limit for wastewater entering into the WWTP. As recycling and reuse of wastewater is promoted in the IPs, Zero Liquid Discharge (ZLD) Plant is constructed in IPs. In this case, quality of wastewater entering to the plant requires effluent parameter. Example of effluent parameters in Hawassa IP is shown in Table 2.3.3. Note that parameter varies according to the IP and capacity of the ZLD plant.

Table 2.3.4: Effluent Parameters for Hawassa ZLD Plant

No.	Parameters	Unit	Textile	Garment	Mixed parameters
1	Capacity	KLD/day	2,500	5,500	8,000
2	TDS	ppm	5,000	1,200	2,387
3	COD	ppm	2,500	500	1,125
4	BOD	ppm	900	115	360
5	TSS	ppm	300	110	170
6	Color	pct.	2,000	75	675
7	Oil & grease	ppm	5	3	3.6
8	pH	pH	12.5	6.6	11.0

Source: Contract Agreement between IPDC and Arvind Envisol Private Limited

(3) Solid Waste Management

IP Developer shall manage both non-hazardous and hazardous solid waste in the IPs following the international principles and scheme for integrated solid waste management. Particularly, IP Developer shall pay special attention to the management of sludge, the final residual of the wastewater treatment.

(4) Noise Control

The IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to effectively control noise emission from any source within the IP area and to use sound-absorbing materials and machines or other suitable means, in compliance with the EMP.

For reference, Environmental Protection Authority (EPA) has set 75 decibels (dB) for industrial park as the limit during day time and 70 dB during night time.

(5) Vibration Control

The IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to effectively control vibration caused by any source within the IP area in complying with the EMP.

(6) Soil Contamination

The IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to prevent soil contamination inside and surrounding IP area, compliance with the EMP, by effective control of discharge of contaminated solid or dissolved substances, such as, mineral waste, animal and vegetable waste, waste containing fibers, and hazardous waste.

(7) Odor

The IP Developer shall supervise the contractor at the IP construction phase and IP Enterprises at the IP operation phase to prevent generation and spread of bad odor from the IP area in compliance the EMP.

(8) Human Health

The IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to consider the health of construction workers, visitors, residents of the neighboring premises and communities. Labor Proclamation No. 377/2003 (amended by Proc. No. 466/2005 and Proc. No. 494/2006) provides that every employee has the right to enjoy suitable measures of protection and safety and hygiene at work as the employer is required to take all necessary measures to safeguard the health and safety of workers.

(9) Human Safety

The IP Developer shall supervise the contractor at the IP construction phase and tenants at the IP operation phase to keep work safety in compliance with Labor Proclamation No. 377/2003 (amended by Proc. No. 466/2005 and Proc. No. 494/2006) by avoiding accidents, injury or death of not only workers, but also visitors and residents of the neighboring premises and communities.

In the construction phase, Contractor must recover or fill back the holes they dig for construction use, in order to avoid accidental fall of children and animals.

(10)Gender Equality

IP Developer considers gender equality at its IP development works and supervises the contractor at the IP construction phase and tenants at the IP operation phase to keep equality between both sexes in overall work conditions throughout the IP construction period.

2.3.7 Environment Management and Monitoring

Proclamation No. 886/2015 "Industrial Park Proclamation" provides that MEFCC shall establish an

office in the IP for the environmental management and it is expected the MEFCC dispatches competent environmental experts to the IPs where operation has started. At the time of preparation of this Guideline, however, no environmental experts are stationed at OSSs. MEDCC expects IPDC as the first responsible institution for environmental monitoring who does environmental monitoring in compliance with the EMP certified in the ESIA report and for environmental management who gives instruction to the pollutants.

A sample of monitoring format both fort construction and operation phases are attached at Attachment B.

2.4 INTEGRATION WITH REGIONAL/CITY DEVELOPMENT

2.4.1 Supporting Facility for Factory Workers

Necessity of Employment Stability

Usually living facility including housing unit is to be developed by workers themselves of factories throughout the world. Central and regional governments housing development scheme aims to provide better living facilities for middle class families, not for workers of factory. Accordingly workers of factory in IP are suffering by the uncomfortable living condition. This affects business activities of manufacturing enterprises, when workers are not stable due to the worst living condition.

This problem occurs adverse impact to the aim of IP development which aims to create job opportunity and better income and living conditions for workers, therefore some countermeasures to erect housing unit for workers has started within some IPs recently.

Improvement of labor skills and working volition on the basis of better living condition is expected to benefit the invested enterprises by upgrading the work efficiency of workers.

Method of Living Facility Development

(1) Location of living facility: proximity to IP is the most important for factory workers to save their commuting cost and time.

(2) Contents of living facility: Appropriate living quality is to be secured in accordance with the affordable rental price of workers. Precise income estimate of workers and detailed facility plan are necessary to make living facility development sustainable. Provision of various housing type is also important.

(3) Sharing with private sector: In case IP is located near largely populated city, housing provision from the private sector is prospected. This is a kind of economic impact by IP development project to the private sector in the community. Administration and technical staffs of factory can afford and prefer the private dwellings located in the center of the city and commute by own vehicles, therefore the preparation of their apartment in/around IP is unnecessary is some cases.

(4) Fund for living facility development: Subsidy to rental fee for poorest poor factory workers, especially youth workers, support to apartment (/land) owners to upgrade the living facilities, etc. are starting in line with IP/SEZ development in the world to renovate living facility condition for factory workers.

Current Situation in Ethiopia IP

(1) High labor turnover rate in Bole Lemi-1 and Hawassa IP

Factory workers have tendency to quit job in Bole Lemi-1 IP and Hawassa IP. One of the reasons of quitting jobs is problem of long distance commuting.

(2) Government's support for constructing worker's dormitory

IP enterprises are securing worker's dormitories near the industrial parks by a support from Ethiopian Government so that they could reduce the labor turnover rate.

There are currently two ways for IP enterprises to secure worker's dormitories.

- An IP enterprise rent a land for the dormitory construction from the Government by free of charge. Then, the IP enterprise builds the dormitory for their workers.
- The Government provides interest-free financing to private land owners near Hawassa IP to encourage construction of worker's dormitories. Then, the private land owner builds the dormitory to lease IP enterprises.

(3) Current situations of dormitory construction for Bole Lemi-1 and Hawassa IP

A manufacturing enterprise in Bole Lemi-1 IP rented a land near the IP by requesting to Prime Minister Office (PMO) through EIC and the enterprise is currently constructing own worker's dormitory.

An manufacturing enterprise in Hawassa IP has requested land rent to PMO through EIC and the enterprise is currently waiting for approval from PMO.

A private land owner near Hawassa IP constructed worker's dormitory by using interest-free financing from the Government. The dormitory was already rented to manufacturing enterprise(s).

Example-1

Development support for poorest poor factory workers living facility in Ho Chi Minh, Vietnam

Youth Workers Support Center of Ho Chi Minh City Administration (established in 2006) is carrying out living condition improvement scheme for the poorest poor factory workers. Number of targeted workers is approximately 1 million who work in factories located in IPs in HCMC.

Program of the center are 1) living care, 2) consultation for daily life, 3) skill training, 4) event support for leisure and short excursion, etc.

Support for living facilities is included in living care program as follows;

(1) Support to regional economic leaders such as ward leader to develop dormitory facility for poorest poor workers;

(2) 45 dormitories implemented for 7,300 youth workers, currently;

(3) Row houses with 20m^2 floor area per house for max. 4 people +facility furnished + a common use room for meeting are facilities (rental fee is app. US$25/month); and

(4) Subsidy to room rental fee is paid to the poorest poor youth worker (maximum three years).

(Rooms in both side of passage)

Row houses developed by Ward Chief (Common use room)

Example-2

Housing complex for factory workers in Nhon Trach IP, South Vietnam

Housing complex for factory workers was developed in the 2,200 ha premises of Nhon Trach IP (developed in 1997 – 2011) in Dong Nai Province, South Vietnam. Housing complex plan is 27 apartment buildings with 80 – 200 rooms in an apartment building (4,520 rooms in total) within 10.2ha complex site. Currently 7 buildings with 1,000 rooms are completed in 2015. Planned population was 2 people per room, however, actual living population was observed to be 5 persons per room. Nursery room, shopping market, sport facility, medical clinic are planned (partially opened).

System for development are;

(1) Nhon Trach IP developer, state owned enterprise, decided the housing complex development in line with national policy. Factory plot lands were converted to the housing complex land. Development work of the complex was sublet to a private company, one of subsidiary company;

(2) Land was free and governmental fund was given for facility and building construction (max. 50%); and

(3) Houses were divided into sale and rental purpose; 3 buildings for sale by US$11,000/house and 4 buildings for rent by US$70/house/month with 35m^2 floor area house.

Housing Complex of Nhon Trach IP
Source: Urban & Housing Development Joint Stock Company

Nhon Trach IP
(one room house, double room house)
(Bike parking on ground floor, exterior of apartment)

Example-3

Family apartment development for workers by NHA (National Housing Authority of Thailand)

Thai government planned the integrated living facility development when the national industrialization project in the Eastern Seaboard (ESB) area was commenced. Two housing projects in two core industrialization centers, Laem Chabang and Map Tha Phut, shown below were major projects.

- Laem Chabang Area: medium rise apartment with 5,000 houses (rooms) in 16 ha site was built in the vicinity of Laem Chabang IP. 500 houses were for rent and 4,500 for sale. Average floor area is 24 m^2/house. Apartments were built in 1994 and 100% occupied in 1995. Current rental fee is US$130/house in average.

NHA
Apartments in Map Tha Phut

NHA Apartments in Laem Chabang Area

Note: Presently a lot of private companies participated in the apartment business for Laem Chabang IP workers.

- Map Tha Phut Area: A new town with 64 ha site was planned in the north-west neighboring area of Map Tha Phut IP. Currently 8 apartment buildings (5 floors) with 1,600 houses, equivalent to 30% of planned number, were constructed and fully occupied.

2.4.2 Regional Infrastructure Plan

In case infrastructure development of the adjacent area of IP is requested by concerned regional authority/community, integrated development of the infrastructure should be planned by satisfying the both demands of IP and adjacent area.

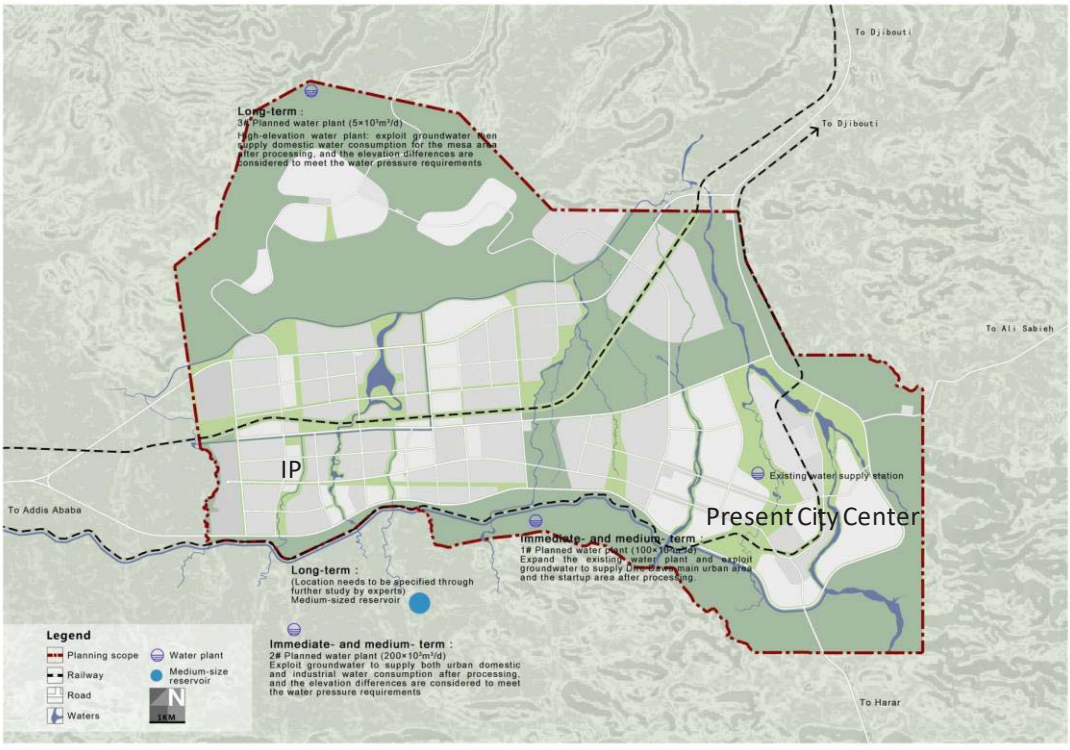
Generally, wider infrastructure service with larger quantity has effective cost performance, therefore infrastructure service in IP should be provided from the regional public system in terms of service

efficiency. Less initial investment cost and smaller running cost can be enjoyed by IP developer. Regional infrastructure supplier of power and water also prefers the integrated infrastructure service system for sustainable management of system by the easier collection of large and reliable users in IP.

Source: EIPP (JICA Team)

Figure 2.4.1: Image of Efficient Regional Infrastructure Service

Integrated infrastructure development can be proposed by SEZ (Special Economic Zone) method covering regional development plan as shown in Dire Dawa SEZ Plan. Water supply, road network, etc. were well planned in integrated manner covering regional area and IP site services. Water supply integrated plan of Dire Dawa SEZ is shown below.

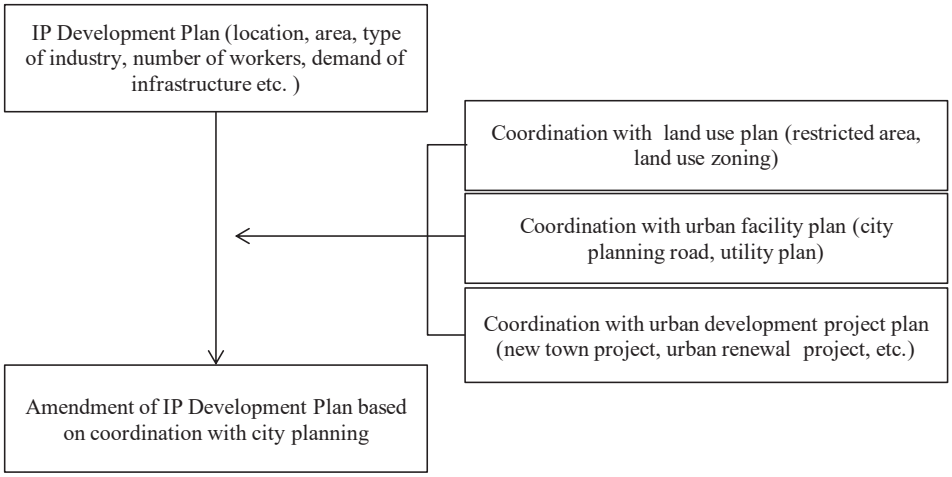


Source: Dire Dawa Special Economic Zone, Spatial Plan Official Report

Figure 2.4.2: Comprehensive Water Supply Planning of Dire Dawa SEZ

2.4.3 Harmonization with City Planning

Coordination of IP plan with the city planning should be attained for the smooth and effective development of IP. Work flow for coordination is shown below.



Source: EIPP (JICA Team)

Figure 2.4.3: Coordination Work with City Planning

1) Coordination with city land use plan

IP development land use should be harmonized with 1) land development control zoning, 2) land use zoning defined by city planning.

2) Coordination with urban facility

Coordination with plans of road, utility, park, education facility, medical care facility, rivers, public administration facilities, etc. defined by city planning should be taken in the planning of IP infrastructure, utility and service facility. Especially, coordination with city planning road is important to realize the easy transportation function to/from IP.

3) Coordination with other city development projects

In case developments of industrial zone, new town, logistic center, urban renewal project, etc. are defined by city planning, IP plan should be harmonized with them. Especially, relevancy and validity between IP and IZ should be assessed and clearly clarified.

2.4.4 Industrial Linkage

Industrial linkage in its broad meaning is defined as the contacts and flows of information and/or materials between two or more industrial sectors or between countries who invest (investors) and the countries who are invested (recipients).

(1) Reason for promotion of the industrial linkage

OECD's "Policy Framework for Investment/ Invest Promotion and Facilitation" explains two reasons for promoting industrial linkages.

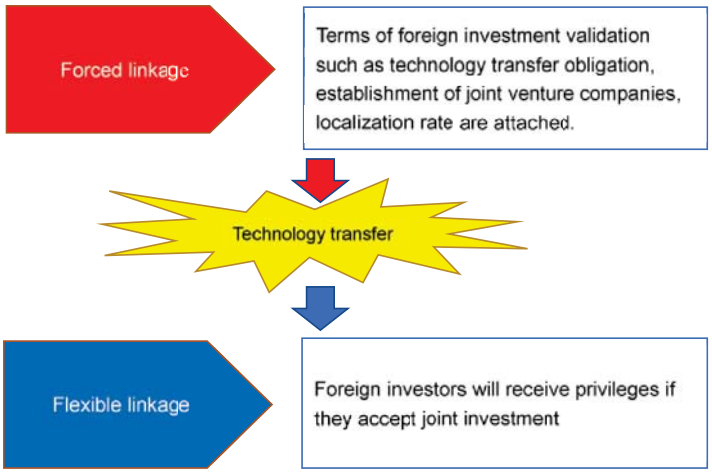
1) Countries who receive Foreign Direct Investment (FDI) expect that they can reinforce their competitive strength and comparative advantage of their domestic industries by getting new technology transferred from foreign investors through established industrial linkage.

2) FDI recipient countries expect to gain profit when foreign new technologies are spread out to their countries. The process is: foreign parent companies transfer their peculiar technologies, business management method, and marketing skills to their subsidiary companies in the countries where they invest; then, these technologies, methods, and skills will spread through the countries; and finally, domestic companies of recipient countries can enhance their capacity by learning and adopting them.

(2) Measure to strengthening industrial linkage

1) In the past, many developing countries tried to strengthen industrial linkage with foreign investors by compulsory means: it means, fixing local procurement rate applied to parts and materials, designation of local shareholder's ownership, obligatory establishment of joint ventures, and, in some cases, enforcement of direct technology transfer.

2) However, the policy makers of the FDI recipient countries started to promote industrial linkage in more voluntary-based measure instead of compulsory ones. They applied new and flexible promotion method that the government of FDI recipient countries grant preferential treatment to foreign investors who accept obligations relating to the industrial linkage as the governments impose



Source: EIPP (JICA Team)

Figure 2.4.4: Change of Policy on Linkage Enhancement

3) FDI recipient countries changed their promotion method because the compulsory linkage policy had not generated so effective results. For example, once a foreign investor gains markets protected by the relevant policy in exchange for achievement of given requirements, it did hardly intend to transfer the newest technologies to the recipient country. Therefore, domestic companies enjoyed sharing benefit from protected markets but had less intention to strengthen their competitiveness. Also, in the case that the foreign companies were forced to take part in the joint venture with domestic business, technical transfer rarely occurred.

(3) Good example of linkage promotion policy on and factors of success

Local Industry Upgrading Program (LIUP) (Singapore) started in 1990s is one of the successful linkage promotion programs/policies. In this program, the Economic Development Board (EDB) offered annual financial support of over USD 4,000/annum and other incentives to the foreign investment companies who supported local suppliers for two or three years. As a result, more than seven hundred linkages were established among enterprises and governmental institutions as of 1999.

Based on the experience of LIUP and other successful linkages, it can be concluded that the factors of success are as provided in the box below:

1.	Governments of recipient countries have fund to provide a large sum of fund to enhance the industrial linkage.
2.	Governmental institutions/agencies who are responsible for investment promotion have strong power to plan and implement the policy on linkage promotion.
3.	Recipient countries have a large-scale reserve of highly skilled workers.
4.	Recipient countries have a number of small-size and medium-size enterprises who are capable of being local suppliers to foreign companies.

Source: JICE Study Team, based on OECD's document

(4) International cooperation for the purpose of linkage building and linkage strengthening

1) UNIDO Subcontracts and Partnership Exchange Centre (SPXs[4]) operates mainly as a center of technological information, linkage promotion and much-making for subcontracting, original equipment manufacturer (OEM) and strengthening relation among prime contracts, suppliers and sub-contractors. With UNIDO's support, over 60 SPXs have been established in more than 30 countries.

2) Asia-Africa Investment Technology Promotion Center (AAITPC[5]) was established in response to the decision of Tokyo International Conference on African Development (TICAD) III in 2003 in order to promote investment from Asia to Africa. UNIDO implements the promotion under the financial support of Japan.

[4]https://www.unido.org/fileadmin/user_media_upgrade/Worldwide/SPXs/SPX_Resources/Establishing_a_Subcontracting_and_Partnership_Exchange_Draft_022013.pdf

[5] https://www.unido.org/fileadmin/import/48196_FINAL_EVAL_REPORT_20060131_AAITPC.pdf

PART 3 DESIGN AND CONSTRUCTION

3. DESIGN

3.1 DESIGN CONTENTS

Main task for design is shown as following:

1) Review the preliminary plan

   Based on current updated conditions, preliminary plan shall be reviewed.

2) Detailed infrastructure work design

   Conduct the detailed design work as shown in the following:

   1. Road: determine the type of paving, thickness, structure
   2. Design Calculations: analysis, capacity, structure
   3. Water supply, drainage, sewerage, power supply, telecom works
   4. Slope protection: identify slope protection location and determine the methods
   5. Building and Service Facility
   6. Landscape and Parking
   7. Output of drawings
   8. Project cost estimation

   The finished product in the basic design is as follows:

Table 3.1.1: Example of Finished Product List

Name of drawing		Rate	Main content	Remark
1	Land use plan	1/500	Factory lot, parks, green spaces, roads, places to adjust, etc.	
2	Road network plan	1/100	Classification of road, Alignment, Right of Way, elevation, slope, curve factor (Horizontal), Site distances etc.	
3	Road longitudinal sections	1/1,000:1/200	Slope, distance, expected elevation, current elevation, curve factor (Vertical) earthwork profiles etc.	
4	Road typical section	1/50 - 1/100	Composition of road cross section such as carriageway, shoulders or curbs, drainage features etc.	
5	Underground infrastructure typical section	1/50 - 1/100	Latitudinal structure, location of underground work.	
6	Road structure drawings	1/50 - 1/100	Detail of road related component structure, road furniture and markings.	Typical structure
7	Intersection plan	1/100	Intersection design with Selection of Junction Type, visibility, comprehension, maneuverability.	Main intersection
8	Land grading plan	1/100	Design elevation, factory lot area etc.	
9	Land cut & fill plan	1/100	Cut & fill area, volume of cut & fill.	
10	Soil allocation plan	1/1,000	Soil allocation, transport distance, route etc.	
11	Longitudinal section of site	1/1,000:1/200	Existing ground, design ground (after land grading).	
12	Land grading - Slope Protection Structure	1/100	Structure of slopes and retaining walls.	Typical structure
13	Water supply plan	1/200	Location of water supply facility, pipe network plan, elevation, quantity, etc.	
14	Water supply facility structure	1/100	Structure of water supply facility.	Typical structure
15	Water reservoir plan	1/50 - 1/100	Detail of water distribution plan.	
16	Rainwater catchment area plan	1/500	Catchment area and main drainage flow direction.	
17	Rainwater drainage system	1/100	Drainage pipe network, drainage facility arrangement etc.	
18	Drainage system longitudinal sections	1/1,000:1/200	Design elevation, Drainage pipe location etc.	
19	Drainage facility detailed design	1/50 - 1/100	Structure details.	Typical structure
20	Sewerage discharge zone	1/500	Sewerage discharge flow system	
21	Sewerage system plan	1/100	Sewerage pipeline network, arrangement of treatment plant	"
22	Sewerage system longitudinal section	1/1,000:1/200	Design elevation, sewerage pipe location etc.	"
23	Sewerage facility structure design	1/50 - 1/100	Structure detail	Typical structure
24	Retention pond plan	1/100	Elevation, capacity, inlet, outlet etc.	
25	Power/Telecom network plan	1/500	Power/Telecom supply network and related facility arrangement	
26	Power/telecom facility structure	1/50 - 1/100	Power/Telecom structure detail	
27	Park and green space plan	1/100	Park location, green space location, park related facility, area.	
28	Community facility plan	1/100	location, area etc.	
29	Other report, sketch, perspective, model, image			

Source: EIPP (JICA Team)

3.2 ROAD SYSTEM

The road design aims to review the road plan (such as right of way, alignment etc.) which decided in previous stage, and select the most suitable road alignment and design for implementation.

The main design drawing needs to be prepared as follows:

Table 3.2.1: Example on Diagram of Road Basic Design Section

Drawing	Scale	Content of structure
Road network plan	1/100	Road classification, right of way, planned elevation, slope and curve factors etc.
Road longitudinal sections	1/1,000:1/200	Slope, expected elevation, current elevation, distance, survey point, etc.
Road typical section	1/50 - 1/100	type of sidewalk, thickness pavement
Underground infrastructure typical section	1/50 - 1/100	location of underground structure
Road facility drawings	1/50 - 1/100	Road facility structure
Cross section plan	1/100	Cross section shape, related facility

Source: EIPP (JICA Team)

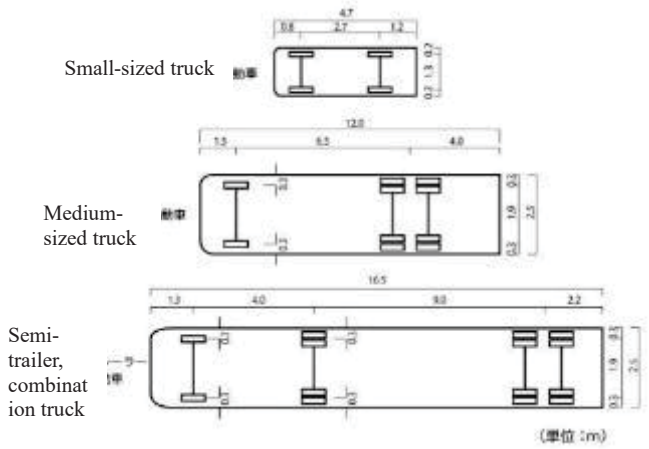
3.2.1 Determination of Design Parameters

The parameters for vehicles shall follow the related national design standard, below it shows the sample design parameters for vehicles.

Table 3.2.2: Specification of Designed Vehicle (for reference)

	Length	Width	Height	Overhang ahead	Wheelbase	Overhang behind	Minimum turning radius
Small-sized truck	4.7	1.7	2	0.8	2.7	1.2	6
Medium-sized truck	12	2.5	3.8	1.5	6.5	4	12
Semi-trailer, combination truck	16.5	2.5	3.8	1.3	Front: 4 Back: 9	2.2	12
Overhang ahead: The distance from the front of the truck body to the center of the axle of the front wheel. *Wheelbase: The distance from the center of the axle of the front wheel to the center of the axle of the back wheel.* *Overhang behind The distance from the center of the axle of the back wheel to the back of the truck body.*							

Source: EIPP (JICA Team)



Source: EIPP (JICA Team)

Figure 3.2.1: Specification of designed vehicle (for reference)

3.2.2 Cross Section and Alignment Design

Cross section design shall follow the national road design regulation regarding to the factors, such as the sample shown in the following table.

Table 3.2.3: List of Cross Section Elements (for reference)

Item	Category Urban		Remark	Category Urban Center	
	Grade 1	Grade 2		Grade 1	Grade 2
Number of lanes	>= 4(2)	>= 2	Number of lanes	>= 4(2)	>= 2
Width of lane (m)	3.25(3.5)	3.0	3.0	4.0 (3.0)	The element presented in () is the necessary case
Width of median (m)	>= 1.0	>= 1.0	>= 1.0	—	
Width of shoulder (m)	0.25	0.25	0.25	—	
Width of median side shoulder	0.5	0.5	0.5	—	
Width of facility strip in the center (m)	>= 0	>= 0	>= 0		
Width of road shoulder (m)	>= 0.5	0.5	>= 0.5	>= 0.5	
Width of parking lane (m)	2.5(1.5)	2.5(1.5)	2.5(1.5)	—	
Width of roads for bicycles and pedestrians (m)	>= 2.0 (>= 1.5)	>= 2.0 (>= 1.5)	>= 2.0 (>= 1.5)	>= 2.0 (>= 1.5)	

Source: EIPP (JICA Team)

Note: In () is the inevitable case value due to topographical conditions and other special reasons.

Besides, basically, the vertical linear is designed in accordance with the Road Structure Ordinance standard, below are cited basic values of the linear constituents of the road under urban/city road category as reference.

Table 3.2.4: List of Alignment Design Elements (for reference)

Designed Speed (km/h)				60	50	40	30	20	Note
Plane linear	Curve radius (m)	Expected value		200	150	100	65	30	
		Minimum value		150	100	60	30	15	
		Special value		120	80	50	-	-	
	Minimum curve length (m)	θ<7°		700/θ	600/θ	500/θ	350/θ	280/θ	However, in case θ<2°, θ=2°
		θ≧7°		100	80	70	50	40	
	Loosed curve (m)	Curve length		50	40	35	25	20	
		Necessary length 3S		50	42	30	25	17	
		Minimum parameter	ρ=0.60	90	70	50	35	20	
			ρ=0.75	80	60	40	30	15	
	Shortened loosening distance (m)	Normal value		1,000	700	500	-	-	
		Round value		500 (520)	350 (360)	250	130	60 (58)	In () is the design value
	Viewing distance (m)			75	55	40	30	20	
	One-direction slope radius (m)	Horizontal gradient	1.5%	1,500	1,000	600	350	150	
			2.0%	2,000	1,300	800	500	200	
	Curve radius for one-way slope (m)	One-way slope	6%	< 330	< 240	< 160	< 80	< 40	
			5%	< 420	< 310	< 210	< 110	< 50	
			4%	< 560	< 410	< 280	< 150	< 70	
			3%	< 800	< 590	< 400	< 220	< 100	
			2%	< 2,000	< 1,300	< 800	< 500	< 200	
Vertical line	Longitudinal slope (%)	Maximum value		5	6	7	8	9	
		Special value		7	8	9	10	11	
	Vertical curve (m)	Convex	Minimum	1,400	800	450	250	100	
			Expected	2,000	1,200	700	400	200	
		Side	Minimum	1,000	700	450	250	100	
			Expected	1,500	1,000	700	400	200	
		Curve length (m)		50	40	35	25	20	
	Synthesis gradient (%)	Normal value		10.5	11.5	11.5	11.5	11.5	
		Special value		-	-	-	12.5	12.5	
		Snow accumulated cold area		8	8	8	8	8	
	Rubbing rate of steep slope (%)	Expected value		1/125	1/115	1/100	1/75	1/50	

Source: EIPP (JICA Team)

3.2.3 Road Intersection Design

In order to provide smooth traffic in intersection area, road intersection design shall be based on the traffic volume and plan geographic conditions.

1) Corner cut

Design the corner cut at the crossroad so that vehicles can travel through safely and smoothly in accordance with the road standard, designed vehicles and traffic mode.

Corner cut is used in case the corn cut located on a straight line and

(i) Length of corner cut

The width of the pedestrian bridge is the standard value, in case the crossroad angle is nearly 90°, the following values will be taken as the standards. However, in case the crossroad angle is smaller than or greater than 90° and there is other special reason, we will determine for each specific crossroad.

Table 3.2.5: Road Design Standard (for reference)

Designed Speed		20	30	40	50	60	Note
Visible distance	Visible distance of signal (m)	≧40 (42)	≧70 (68)	≧100 (99)	≧130 (133)	≧170 (171)	In () is the calculated value
	Visible distance of temporary stop control (m)	≧20 (19)	≧30 (35)	≧55 (54)	≧75 (77)	≧105 (104)	
Straight line of section attached to the intersection	Curve radius of signal control line (m)	≧15	≧30	≧60 (50)	≧100 (80)	≧150 (120)	In () is the special value
	Curve radius of temporary stop control line (m)	≧15	≧15	≧30	≧40	≧60	Maximum one-way slope 6%
	Limit length of longitudinal slope (m)	≧6	≧6	≧15	≧35	≧40	Longitudinal slope ‹=2.5%
Supplementary lane	Taper standard value of straight line distance	1/10	1/15	1/20	1/25	1/30	
	Length of deceleration lane (m)	—	—	≧15	≧20	≧30	
	Length of vehicle lane (m)	—	—	≧20	≧20	≧20	
	Runoff section length (m)	—	—	≧30	≧35	≧40	

Source: EIPP (JICA Team)

Table 3.2.6: Corner Cut Length (for reference)

Category	Grade 1	Grade 2	Grade 3	Grade 4
Grade 1	12m	10m	3m	1m
Grade 2	10m	10m	3m	3m
Grade 3	3m	3m	5m	3m
Grade 4	1m	3m	3m	3m

Source: EIPP (JICA Team) Grade refers to the hierarchy of the planned urban/city road (excluding expressway) categorized by design speed (Grade1: 60km/h, Grade 2: 40-60km/h, Grade 3: 30-50km/h, Grade 4: 20-40 km/h)

(ii) Radius of corner curve

The radius of corner curve in case of treating the corner in accordance with the curve will take the following values as the standard. However, in case there is a special reason, we will determine for each specific crossroad.

Table 3.2.7: Radius of corner curve (for reference)

Category	Grade 1	Grade 2	Grade 3	Grade 4
Grade 1	15m	12m	6m	3m
Grade 2	12m	12m	6m	3m
Grade 3	6m	6m	8m	6m
Grade 4	3m	6m	6m	6m

Source: EIPP (JICA Team) Grade refers to the hierarchy of the planned urban/city road (excluding expressway) categorized by design speed (Grade1: 60km/h, Grade 2: 40-60km/h, Grade 3: 30-50km/h, Grade 4: 20-40 km/h)

2) Other road elements

The design of other road elements such as sidewalk, width of lanes shall also follow related regulation such as Ethiopia Roads Authority.

3.3 LAND GRADING

The land grading design is based on land use plan and exiting topographic conditions, by balancing the soil cut and fill volume, to plan the leveling for the planned area, also the concept for drainage plan will be considered.

The topographic map used in master plan is 1: 2,500, and in the design is 1: 100.

The construction plan is determined by reviewing the basic contents such as the entrance, the city road plan as well as the scope of primary plan and location of the adjustment. Moreover, the balance of side slope and slope of cutting in the construction, or the area that can handle significant change needs to be reflected in the land use plan.

Normally, at the construction planning stage, the idea and plan of land use is determined, then on that basis, we will consider roads, sewerage, and natural disaster prevention, to make the construction plan. However, the relation between the construction and land use plan is deeply relevant in terms of quantity, the balance of side slope and slope of cutting in the construction and the green space (construction slope). When we make a construction plan, the expected land use plan is based on the most appropriate construction project to be derived from land use and construction land (project cost), then receive the proposal for making a construction plan.

(1) Review land grading plan and basic conditions

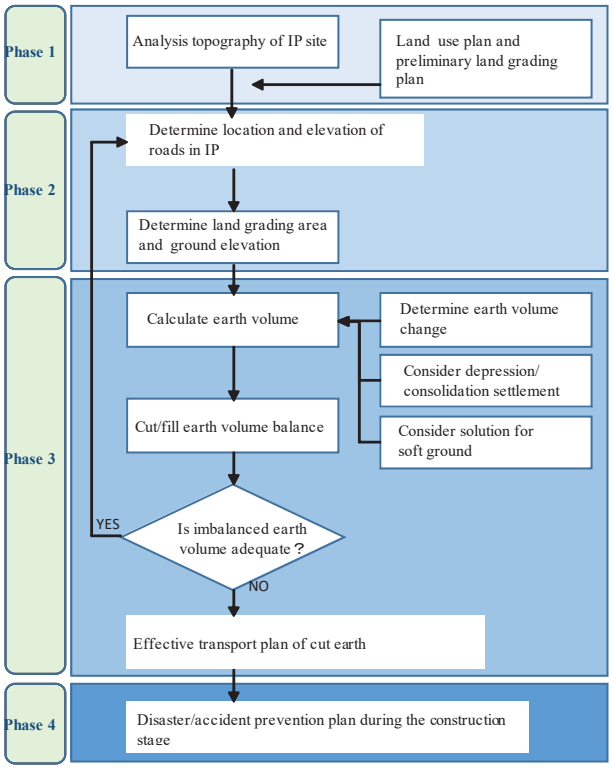
The construction plan overlaps the existing terrain drawing on the land use plan drawing, while capturing the high and low elevation difference between current situation and the plan, confirming the distribution of cut/fill, creating a three-dimensional framework of the platform, and being the close link between the plan and the implementation design. The operation is divided into the 4 following phases.

Table 3.3.1: Tasks of Land Grading Plan

Phase	Task
Phase 1	Arrange the terrain conditions around the land improvement area. Take the existing highland areas such as existing roads and residential land, agricultural land, forest land, rivers, and waterways as standard conditions for feedback in the development area. When a standard condition change arises, confirm that change and its impacts on the outside of the area.
Phase 2	Based on land use design drawing, map out the main road route of rainwater and sewerage, thereby setting the expected elevation of the arterial road. Based on the expected elevation of the arterial road, determine the expected elevation of the surrounding land.
Phase 3	Calculate the cull/fill of the hilly and mountainous areas to consider the balance of the earth volume in the whole area. In case of a serious shortage of earth, require more feedbacks in phase 2 and review the expected elevation. At the same time with balance of soil, make an effective land distribution plan. Moreover, we will fill up the water paddy field and fields, particularly

Phase	Task
	the landfill material which is purchased earth, the amount of required material is huge, thus, we shall consider the project profitability carefully.
Phase 4	According to the planning scheme mentioned above, make a plan of natural disaster prevention during the construction and temporary plan.

Source: EIPP (JICA Team)



Source: EIPP (JICA Team)

Figure 3.3.1: Order of Operations to make a Construction Plan

1) Survey

The measurement for land improvement is an operation involving the change of land characteristics, which can be roughly divided into three groups: 1) frame measurement, 2) current status measurement, and 3) determination measurement.

Table 3.3.2: Measure to Improve the Land

Category	Summary	
Frame measurement	Standard mark measurement	Expect to preserve the elevation by allocating points equally in the improvement area, intended for use as standard points for subsequent operations such as terrain measurement, area boundary measurement, street block determination measurement and street area determination measurement.
	Water level measurement	It is the installation to create the elevation in the construction work, based on which to measure the height of the benchmark, this is also a certain condition of the elevation and grid survey measurement in the terrain measurement.
Current situation measurement	The measurement is conducted to capture the detailed topographic profile of the improved area. Illustrate the convex and concave locations and the expected gradient of the land and prepare a drawing of the current status.	
Measurement for determination	The basic design is conducted on the created design through the frame and measurement of the current status to display those elements in the locality. Determine the location of the length of the edge and the boundary of the land	

Category	Summary
	to display those elements in the locality; and determine the location, the shape and the area of the land.

Source: EIPP (JICA Team)

2) Geological survey

The land survey in the improved land area varies by the purposes of the survey and the project development phase; and there are various survey forms and contents.

a. Land survey for cut part

This survey involves the material of the earthwork, cut slope and the common borrow pit implemented in the highlands, hills and mountains. When making the survey plan, the attention should be paid to the following issues: grasping the distribution of soil layers, groundwater and stream water treatment, slope stability, soil bearing capacity, degree of difficulty in drilling, etc.

The survey depth in principle is 2 - 5m below the expected cross-section; however, the desired number of premise will be made to deep soil layers to grasp the situation of the entire subsoil layer.

In the concerning locations for the slope stabilization, the depth of survey will be implemented to the soil layer where there is no risk of collapse. The sand-land survey 1 - 3 with the focus on the foot of slope and top of slope is implemented to grasp the situation of underground water.

b. Land survey for fill part

The land survey for the fill part is intended to evaluate if the measure for the stability and subsidence of the fill is necessary or not, in the case the measure is assessed as necessary, we consider the method of construction and receive documents for the design and construction.

The content and technique of the land survey vary by the construction plan phase, the design, the maintenance management, and the acquisition of all required information about the land a survey - which is very difficult. Therefore, it is necessary to conduct the survey several times based on the situation, and obtain the information of high precision without any omission at any time.

3.4 WATER SUPPLY SYSTEM

Normally, the design of the water supply system is conducted in the following order: 1) arrangement of the confirmed design conditions, 2) water supply network plan and analysis, and 3) design.

(1) Design conditions

The design conditions are to define the given conditions of the structures which are indicated based on the topographic survey, geological survey and environmental survey. The design conditions consist of structure types, quality of soil, construction materials, design loads, situation of construction site, etc.

The development conditions of IP in the basic plan are specified with regard to the following items;

Demand estimation

i) Target industry

ii) Factory lot area by type of industry

iii) Employed population

iv) Operation time of target industry

Basic concept for water supply plan

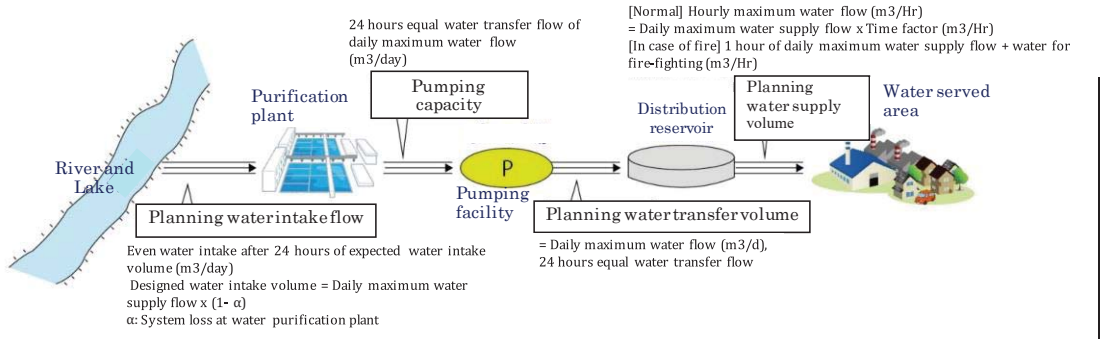
The following water supply sources are expected for the water supply system of IP.

i) In case of utilization of the public water supply system, it is required to verify the location of the existing water facilities and the supply capacity for IP.

ii) In case of water resources development by IP, it is required to examine the type of available water resources, location of water resources and the possible water intake amount.

For stable water supply to IP, the above-mentioned two sources shall be considered to cope with the projected water demand flexibly. Moreover, combine type also possible, for instance during initial period (less demand) was utilize public water supply, then shift to own water supply system after the demand reached enough capacity to be operated by IP.

The water supply from a raw water intake to a distribution through a conveyance and transmission pipelines is planned according to the flow diagram indicated below;



Source: EIPP (JICA Team)

Figure 3.4.1: Planned Water Supply Flow Diagram

The water supply

The water supply system is typically structured by water supply facilities as shown in **Figure 3.4.2**. The facility location and layout planning is required to consider the following basic concepts in order not only to upgrade the function of each facility but also enhance the stability of the water supply system.

i) To use the topography of the sit as effectively as possible.

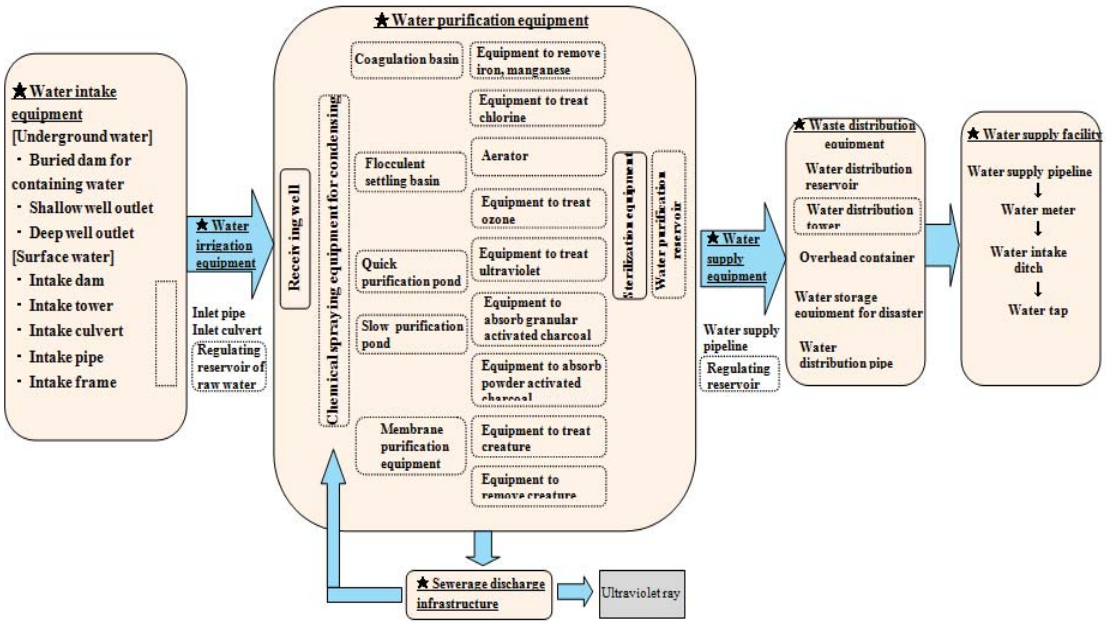
ii) To plan the water supply system not only to conform with type and size of the future IP including population trend and target industry but also to avoid hindrance of improvement, upgrading and expansion of the facilities.

iii) To prevent water suspension and reduction even in an emergency.

iv) To secure stable water source with a good quality for the future.

v) To conduct construction of facilities and O&M safely and easily, and to take account of rationality and economy.

vi) From a regional standpoint, to plan rationally the layout of the facilities in order to enable to mutual use of public waterworks and IP water service business.



Source: Based on Guidelines for designing of Water Supply Facilities 2012 (Japan Water Works Association)

Figure 3.4.2: General Framework of Water Supply System

Hydrogeology study (water resources development)

Study groundwater, according to the following survey and analysis of procedure are necessary.

i) Basic information survey
Basic information which is necessary for groundwater potential estimation will be collected from previous studies, references and published data related to the survey area. Information expected to be collected are considered as follows.

a. Hydrogeological and water quality data

b. Hydrological and meteorological data and others.

Based on the collected information, the natural environment and geological situation will be confirmed by visual inspection during geological reconnaissance. The information collected through this survey will be used for physical prospecting preparation, hydrogeological analysis and borehole drilling plan

ii) Borehole drilling and pumping test
Investigate of groundwater level and water quality conduct the following.

a. Borehole drilling

Borehole will be drilled according to the specification described in the contract signed with construction contractor. The borehole core will be preserved properly and used for stratigraphy.

b. Pumping test

Pumping test, including a) preliminary test, b) step drawdown test, c) constant rate test and d) recovery test will be carried out in each borehole to evaluate aquifer potential

iii) Groundwater level observation and monitoring
Once all boreholes have been completed, simultaneous groundwater level observation will be carried out in those new boreholes and nearby existing wells if possible.

As important hydrogeological information and essential calibration data for numerical simulation, long-term groundwater level change will be recorded by self-registering water

level gauge which will be installed in each new borehole and other existing wells if possible

iv) Hydrogeological analysis
The information obtained through survey will be used for hydrogeological analysis, the purpose of which is to supply necessary information for building water budget model and numerical simulation. Water budget model and numerical simulation

a. Water budget model

Based on the information obtained through field survey, water budget model of survey area creates. Groundwater monitoring data will be used for validity verification of the model.

b. Groundwater numerical simulation

Collected hydrogeological information will be used for model condition setting, and groundwater monitoring data will be used for model calibration

v) Groundwater resource assessment
Based on the results of water budget model and groundwater numerical simulation, conceptual groundwater flow model will be developed and groundwater potential will be assessed.

(2) Water supply network plan and analysis

Water supply network plan

To determine the pipe diameter and necessary structures, such as booster pump and valves, water supply network plan shall be conducted with following consideration;

i) Pipeline route, which is the loop system is recommended from security and sanitary point of view,

ii) Major facilities, such as treatment plant and reservoir, include those location and capacity, and

iii) Water supply points by each zone/plot, include location and supply capacity.

Network analysis

Prepared plan shall be evaluate and verify by specialized software. Several freeware are available, and "EPANET" is the most major software utilized around the world. Based on the following output, the network plan shall be modified and finalized.

i) Water pressure at each supply point,

ii) Water velocity (flow speed) on each pipe, and

iii) Error or insufficient pipeline diameter.

(3) Design

The procedure of the design is presented below;

Raw water conveyance facilities

When designing the raw water conveyance facilities, the following factors shall be taken into consideration;

i) To select an appropriate line,

ii) To secure durability and security (e.g. earthquake resistance and water theft) of facilities,

iii) To prevent water pollution in the raw water conveyance line,

iv) To secure the easiness and the economic efficiency of O&M, and

v) To improve the pressure/energy efficiency.

Most appropriate route shall be selected in consideration of elevation deference, rout distance, topography and difficulty of construction from results of the topographical survey and geological survey conducted in plural routs. Especially, the surveys shall be conducted carefully in a case of crossing road, river and railway.

The raw water conveying method is classified into gravity flow type, pump pressurization type and a combination of these types by the elevation deference, the topography and geographical features. The gravity flow type is adopted in case of securing an effective head and being flat geographical features along the route.

When the conditions above are not satisfied, the pump pressurization type shall be selected.

Water purification plant

The basic design procedure of the water purification plant is presented in the following diagram.

Source: Guidelines for designing of Water Supply Facilities 2012 (Japan Water Works Association)

Figure 3.4.3: Design Procedure of Water Purification Plant

Water quality certification

laboratory installed at the water supply inspects water quality. The number of inspections are three times a day, in the morning, afternoon, and night. For the inspection method, microorganisms and turbidimetry are inspected against raw water (water flowing into the water treatment plant) and supply water (water distributed from the water treatment plant). The water quality is based on the parameters set in each water treatment plant.

Treated water transmission pipelines (water mains)

For planning the treated water transmission pipeline as shown in **Figure 3.4.4**, plural routes between the start point and end point are prepared as alternatives on a map with the scale of about 1/2,500-1/5,000. At that time, the route situation including underground/ground structures and neighboring environment is identified from site reconnaissance. The basic design is carried out considering the following remarks;

i) To confirm the site occupation of the existing structures through consultations with the administrators relevant to structures and buried structures,

ii) To select an appropriate rout with workability and economic efficiency,

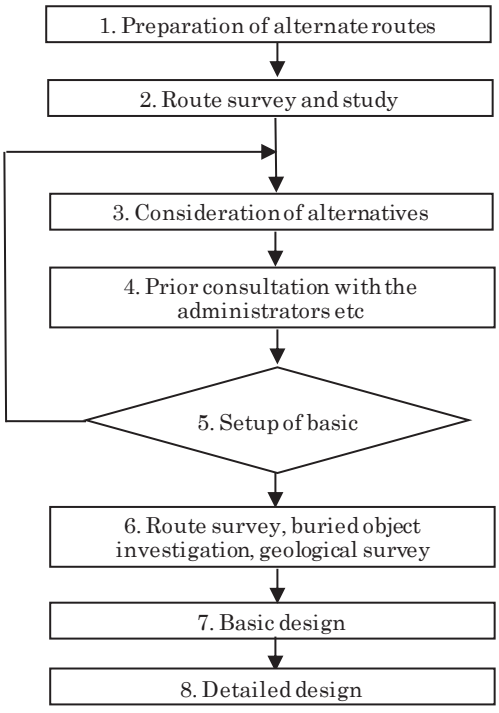
iii) To select pipe class and pipe thickness,

iv) To determine the site occupation of pipe installation,

v) To determine locations of valves such as sluice valve and air valve,

vi) To select the earth retaining method and dewatering, and

vii) To specify shutdown areas of water supply in case of connecting with the existing pipe.



Source: Guidelines for designing of Water Supply Facilities 2012 (Japan Water Works Association)

Figure 3.4.4: Design Procedure of Treated Water Transmission Pipelines (water mains)

Water distribution facilities and fire-fighting water

When designing the water distribution facilities, the attention should be paid to the following items:

i) The effective capacity of the service reservoir is to be a standard volume of a deference time (14 hours) obtained by subtracting the factory operation time (10 hours) in IP from one day.

ii) The water volume that should be supplemented for fire-fighting water is prescribed in the following table:

Table 3.4.1: Water for Firefighting to be added to the Service Reservoir Capacity (by population)

Population in IP (10,000 people)	Water volume used for fire-fighting (m^3)
Under 1	100

Population in IP (10,000 people)	Water volume used for fire-fighting (m^3)
2	200
3	300
4	350
5	400

Source: Guidelines for designing of Water Supply Facilities (Japan Water Works Association)

iii) The water distribution pipe network should be designed to have the maximum rationality in terms of quantity, quality and economics in accordance with the optimal pipe network design.

iv) In principle, in the water supply pipeline design, the water volume used for fire-fighting is 4m3 per minute (population <= 20,000 in the IP), and the number of fire hydrants used concurrently is 4 hydrants.

v) As the water pressure in the pipeline, the maximum hydrostatic pressure should not exceed the maximum standard hydrostatic pressure of the pipe type used. Besides, the minimum dynamic water pressure is to be 1.5kg/cm^3 as the standard and the maximum dynamic water pressure is expected to be 4.0kg/cm^3.

Water service fittings

In the water service fittings plan, the following design factors shall be determined;

i) To determine the design water consumption,

ii) To confirm the possibility to diverge from the water mains with a branch pipe joint and the minimum dynamic water pressure of its joint,

iii) To determine the water service system and a diameter of a water service pipe for tenant connections,

iv) To select a service pipe and fittings with appropriate structure and quality considering water pressure, type of soil, climate and direct sunlight, and

v) Based on the above design factors, to determine the construction and installation methods for the water service fittings.

Pipeline materials

Selection of the material shall be considered the technical terms (e.g. diameter, length, market availability), cost and life cycle. To combine used of different materials, the availability and cost of the connection valve shall be considered. Major pipeline materials are listed below.

i) PVC (Poly-Vinyl Chloride)

PVC pipes are non-corrosive, extremely light and thus easy to handle and transport. However, they are prone to physical damage if exposed over-ground and become brittle when exposed to ultraviolet light. In addition to the problems associated with the expansion and contraction of PVC, the material will soften and deform if exposed to temperatures over 65 °C. Therefore, it is most commonly used for irrigation piping, home, and building supply piping, which is normally used for cold water only.

PVC connections are made by using a primer that softens the PVC and then applying PVC glue that melts the joints and pipe together.

ii) HDPE (High Density Poly-Ethylene)

HDPE was used since the early 1960s. It is suitable for both potable water and wastewater services, which is can only be used for cold water supply.

It is the most commonly used instated of PVC due to; 1) durable, 2) corrosion resistant, 3) good flow characteristics, 4) lightweight and flexible, 5) easy to install, 6) has a good bending radius, 7) inexpensive, and 8) requires few fittings.

HDPE connection are made by specialized heating equipment to melting and connect pipe to pipe directly without fittings. Specialized skill also required for the workers.

iii) Iron or Galvanized Steel

Iron or galvanized steel pipe has been galvanized with a zinc coating. This galvanized coating keeps the water from corroding the pipe. Iron or galvanized steel is the traditional piping material in the plumbing industry for the conveyance of water and wastewater. Although still used throughout the world, its popularity is declining. The use of iron pipe as a conveyer for drinking water is problematic when water flow become slow due to the rust from internal corrosion. Iron piping may also give an unpalatable taste and smell to the water conveyed under corrosive conditions. For this reason, it is no longer commonly used and has been largely replaced with ductile iron or HDPE pipe.

Because of the amount of work that goes into cutting, threading, and installing galvanized pipe, it is used for limited repairs components. Pipe is joined using threaded galvanized iron fittings.

iv) Cast Iron

Cast iron pipes are quite stable and well suited for high water pressure. However, cast iron pipes are heavy, which makes unsuitable for inaccessible places due to transportation problems. In addition, due to their weight they generally come in short lengths increasing costs for layout and jointing. Use for main soil stack waste lines, vent pipes and high temperature water.

This pipe is strong and long-lasting but hard to cut often requiring a special cutting tool, called a cast-Iron pipe cutter. Fitting cast-iron pipes and fittings together is done using special methods, including lead and oakum in soil pipe joints, hub bed fittings, or hub less couplings using pressure bands, and other methods. Cast iron is rarely used in new construction, in favor of plastic PVC pipe.

v) Ductile Iron Pipe

Ductile Iron pipe is a cement lined material used for water services larger than 50mm in diameter. Cement lines Ductile Iron pipe is far superior and longer lasting material than cast iron, or extra heavy cast iron. Typically used for water transmission and main distribution pipes with large diameter and high pressure. Once installed, ductile iron pipe lasts for many decades. Within all the materials used, ductile iron is one of durable water main pipe material, or tubing material in harsh environment. However, the cost also one of the most expensive pipe system.

Ductile iron pipe is unique in that it is put together using either push-on joints, or mechanical joint retainer glands with set screws. That means it is typically not threaded like typical pipe, nor flared like copper tubing.

Installation costs make up a major part of the total cost of a project. The following factors should be considered concerning installation costs and the choice of pipe:

i) Pipe and fittings cost: availability in the local market and/or distance from the manufacture.

ii) Weight of the pipe: A pipe that is lightweight can be handled easier and faster.

iii) Ease of assembling: Push-on joints can be assembled much faster than bolted joints.

iv) Pipe strength: If one type of pipe requires special bedding to withstand external pressures while another pipe does not, the choice can impact installation costs significantly.

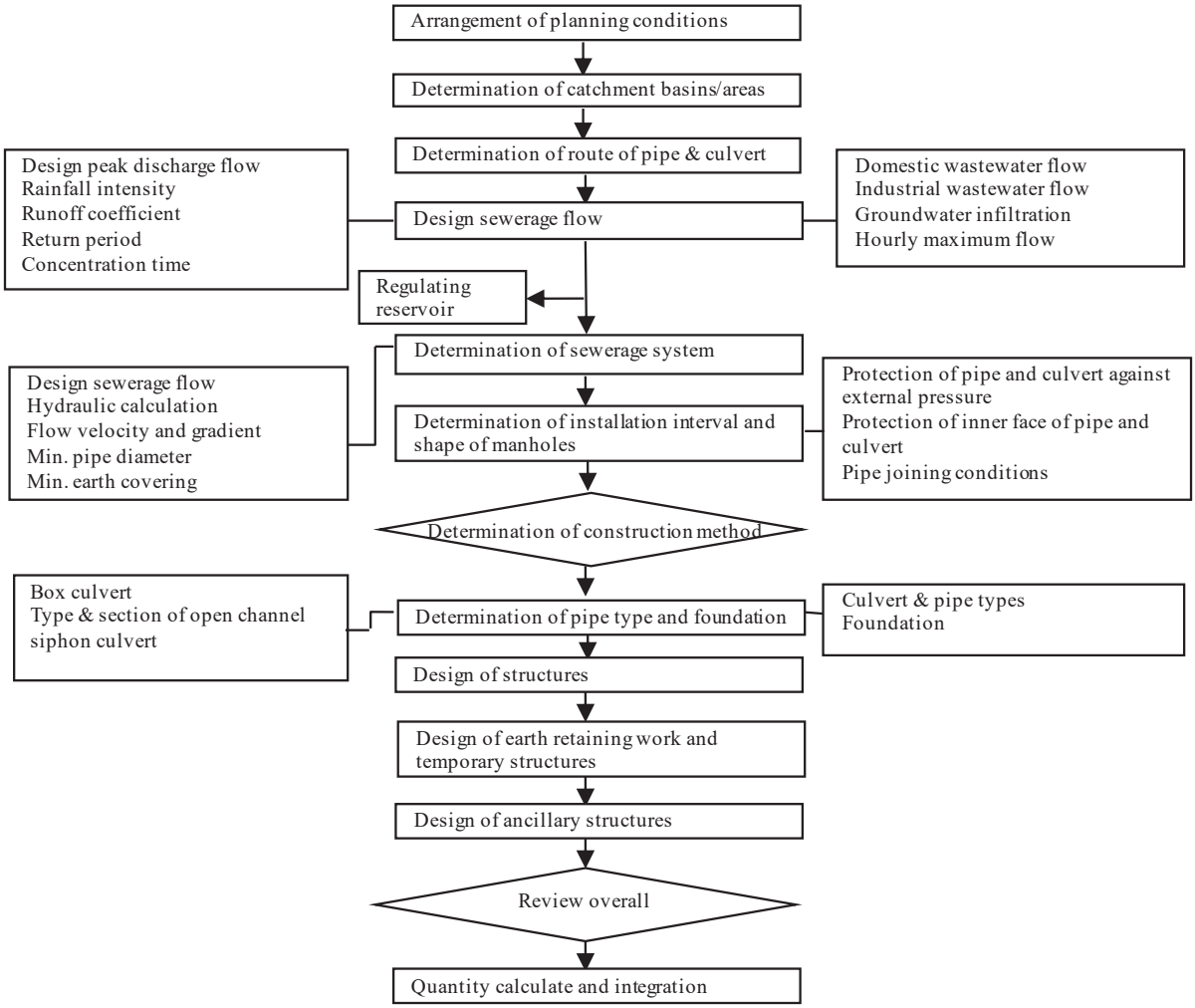
In addition, health aspects also shall be considered. A leaking distribution system increases the likelihood of safe water leaving the source or treatment facility becoming contaminated before

reaching the end-user. Moreover, leaking can result in considerable water loss on the way to the end-user. The transmission and/or distribution system must be designed, managed and maintained to guarantee a minimal level of leakage. The internal pipe pressure constantly must be greater than the external hydrostatic pressure. This will ensure the delivery of the water reducing loss from leaks and minimizing excess growth of pathogenic microorganisms.

3.5 SEWERAGE DISCHARGE SYSTEM

Sewerage is consists of rainwater and wastewater discharges. To advance the plan and design of the wastewater discharge system, the following planning and design factors shall be determined based on results of the extensive investigation according to the work flow as presented in **Figure 3.5.1**;

1) To analyze the geographic features and rainfall characteristic,
2) To determine drainage (rainwater fall) catchment basins and catchment areas,
3) To estimate the planned water supply demand and the planned sewerage generation,
4) To calculate the design peak discharge flow and design wastewater flow,
5) To analyze the existing and/or future water level and flow at the discharge point such as rivers and canals, and
6) To consider the necessity of pumping drainage an outlet of the discharge point.



Source: EIPP (JICA Team)

Figure 3.5.1: Plan and Design Workflow of Sewerage System

(1) Determination of sewerage collection method

In the sewerage collection method, there are separated system and combined system. Due to the focus on the water pollution prevention in the water area for the public body of water, in principle, it is recommended to select the separated system. However, to meet the conditions of the discharge points, in case of enabling proper countermeasures, it is possible to select the combined system.

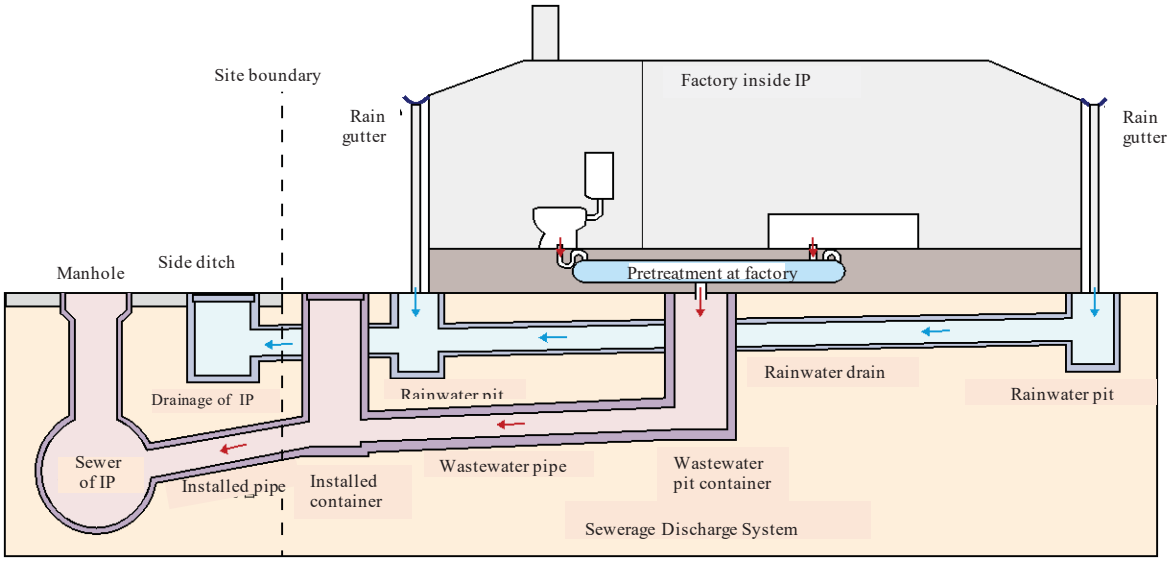
The selection of the sewerage collection method shall be determined carefully in view of not merely economic conditions, but also environmental conditions of water pollution and the administrative response policies of the relevant authorities.

The typical characteristics of separate system and combined system are as follows:

Table 3.5.1: Typical Characteristics of Sewerage Collection Method

Method	Advantage	Disadvantage
Separated System	As the rainwater and wastewater are discharged separately, it is possible to prevent the water pollution in the public body of water such as rivers and lakes.	▪ To need larger area for installation of pipes and be difficult in construction due to the situation of buried structures. ▪ Compared to the combined system, the gradient of pipeline tends to steepen. ▪ If rainwater inflows to sewerage system from manhole cover, the flow increases in the system.
Combined System	Due to be able to deal with inundation measures and adoption of flush toilet by a single discharge pipeline, compared to the separated system, the construction cost is cheaper and the construction is easy in work.	▪ In case of heavy rain, sewerage more than designate amount may be discharged directly into public body of water such as rivers without treatment. ▪ At the time of fine weather, as it is hard to secure the appropriate flow velocity of sewerage, sediment may be remained in the system.

Source: EIPP (JICA Team)



Source: EIPP (JICA Team)

Figure 3.5.2: Example of a Separated Sewerage System

(2) Designing rainwater drainage plan

1) Calculation of design rainwater flow

The design rainwater flow is determined in consideration of the following factors given from hydrologic data and geological data:

i) Design peak discharge flow

In principle, the calculation of the design peak discharge flow is based on the rational formula. However, in case of verifying data based on the sufficient results, it is possible to be calculated by the empirical formula.

The rational formula is;

$$\mathbf{Q = \frac{1}{360} C \times I \times A}$$

Q: Peak runoff discharge flow (m^3/s)

C: Runoff coefficient, dimensionless

I: Average rainfall intensity during concentration time (t) (mm/hour)

A: Drainage area (ha)

ii) Rainfall intensity formula

Rainfall intensity is the rate at which rain falls, typically expressed in millimeters per hour. In view of the probabilistic nature of weather, the intensity of rainfall is presented in the context of its frequency and duration. There are several rainfall formulas according to the regional characteristics such as the probabilistic nature of weather and rain fall pattern. Therefore, the rainfall intensity formula is developed based on the analysis of the pervious rainfall data or the formula applied by the government agencies is utilized.

iii) Runoff coefficient

Runoff coefficient is defined as the ratio of the peak runoff rate to the rainfall intensity. The selection depends on many parameters such as topography, land use, infiltration rates and watershed configuration. Runoff coefficient is determined by type of surface in the area as shown below.

Table 3.5.2: Standard Value of Basic Runoff Coefficient at Type of Surface

Type of surface	Runoff coefficient	Type of surface	Runoff coefficient
Roof	0.85-0.95	Vacant land	0.10-0.30
Road	0.80-0.90	Park with many lawns and trees	0.05-0.35
Other impermeable faces	0.75-0.85	Gentle-slope mountain area	0.20-0.40
Water surface	1.00	Steep-slope mountain area	0.40-0.60

Source: Guideline and commentary for water drainage infrastructure design "Japan Sewerage Works Association"

iv) Return period

Drainage works are usually designed to convey a rainwater flow having a specified return period or recurrence interval. It is an estimate of the interval of time between events such as flood of certain intensity or size and a statistical measurement denoting the average recurrence interval over an extended period of time.

The drainage system including the retention pond is planned by the peak discharge for a given return period. The process of selecting the return period involves decisions regarding acceptable risk associated with rainwater and cost for the drainage system. In areas with heavy rainfall, the probability of 50 years equivalent to the lifespan of the factory building is adopted. For reference, the following return periods are applied usually for planning of the drainage system;

- Regional area: 2 years
- Urban area: 5 years
- Canal and Retention Pond: 10 years and more

v) Concentration time

There are a number of methods that can be used to estimate time of concentration (Tc), some of which are intended to calculate the flow velocity within individual segments of the flow path like shallow concentrated flow, open channel flow, etc. The time of concentration can be calculated as the sum of travel times within the various consecutive flow segments.

$$Tc = T_1 + T_2$$

Tc	:	*time of concentration, minutes*
T_1	:	*inflow travel time (7 minutes in the main)*
T_2	:	*travel time for segment (pipe/box and rectangular channel), minutes*
	:	*L/60V*
		L : flow length for segment, meters
		V : velocity for segment, meter/sec.

2) Drainage facilities plan and design

i) Classification of drainage facilities

To be able to drain off the design peak discharge flow without obstruction, the section of the pipe and open culvert shall be determined. The drainage facilities are divided widely in the following types;

a) Circular pipe

b) Open channel (U-shaped ditch)

c) Box culvert

The rainwater drainage system shall be planned in principal by a gravity flow. therefore, the layout plan is formulated according to the topographical features.

ii) Calculation of design flow

The design flow for the rainwater drainage facilities is calculated by Manning's formula as presented below;

Manning's formula:

$$Q = A \times V$$

$$V = \frac{1}{\eta} \times R^{\frac{2}{3}} \times 1^{\frac{1}{2}}$$

Q: Drainage flow (m^3/second) *A: Average flow cross-sectional area of culvert/pipe (m^2)*
V: Mean flow velocity (m/second) *η: coefficient of roughness, dimensionless*
R: Hydraulic radius (m) = A/P *P: wetted perimeter (m)*
I: hydraulic gradient of pipe, channel or conduit (m/m)

iii) Flow velocity and gradient

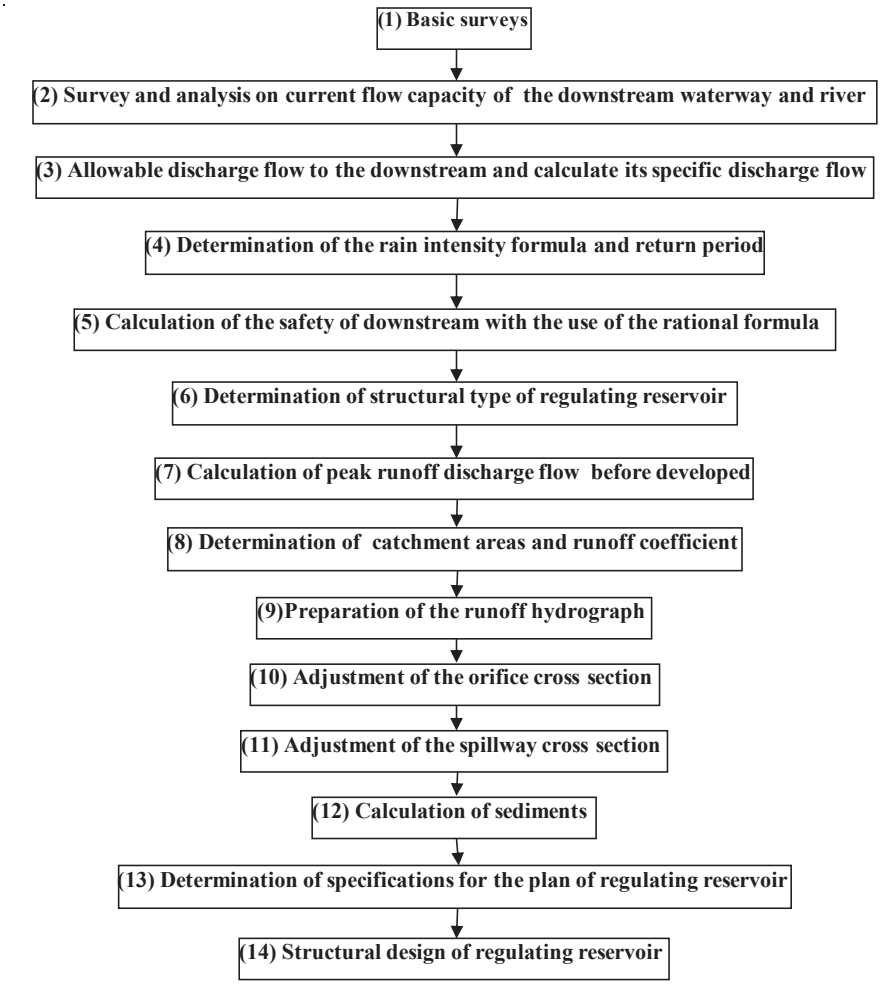
In the rainwater drainage facilities, the design velocity ranges from 0.80–3.00 meter per second. It is required to secure a constant minimum flow velocity with 0.8 m/sec since the specific gravity of sediment may be increased by inflow of soil and sand compared to the wastewater system. The gradient of the facility was optimized based on the maximum velocity allowed and the actual flow cross-section of the pipe adopted.

iv) Freeboard

When determining the cross section of the drainage pipe and ditches, a freeboard shall be counted in the design. The freeboard of the open channel shall be kept more than 20% in principle. The calculation of the freeboard requires close attention since the freeboard may be defined by the water depth depending on conditions of the planning area.

3) Regulating reservoir

To prevent flood due to exceeding the flow capacity of the discharge points such as rivers, in principle, a regulating reservoir or retarding basin must be constructed in Industrial Park. The flood control method of the regulating reservoir is basically to be the natural discharge flow type. The plan and design are implemented in accordance with the following order:



In the plan and design of the regulating reservoir, the following points should be taken into account:

a) The regulating reservoir is arranged in order to easily discharge rainwater into rivers.

b) A maintenance road is constructed at the periphery of the regulating reservoir.

c) The slope of the regulating reservoir needs to assure the stability and the revetment is protected with a stone pitching if necessary (the normal gradient of the levee is 1:2.0, but it is required to be adjusted in accordance with the environment in the planned location).

d) The inlet facilities avoid to be installed at the soft ground and fill-up ground and the revetment shall be protected.

e) The structure of the inlet is designed to prevent driftwoods and refuse disposals from flowing directly into the inlet.

f) The discharge pipe is able to bear the external pressure and uneven settlement and its structure is able to prevent leaks from inside of the pipe and infiltration from outside of the pipe.

Source: EIPP (JICA Team)

Figure 3.5.4: Regulating Reservoir in Vietnam Long Douk Industrial Park

Column: Increased demand for flood control

In recent years, due to heavy flooding occurring in Thailand, many industrial zones have suffered serious damages, resulting in the stagnation of activities, so investing enterprises tended to increase the demand for the water drainage capacity within IP and control flood. From these points, the equipping of basic drainage infrastructure through the sufficient setup of return period will be a useful activity for both sales and purchase activities.

Source: EIPP (JICA Team)

Figure 3.5.5: Photos of Damages due to the Floods Disaster in Thailand

Column: Solution for expanding land in drainage line

In regions like Indonesia and Africa, the area allocated with expanding land including clay minerals such as montmorillonite exist on a large scale. The expanding land has the expanding property due to containing water, so it not only makes the slope easy to deform and collapse due to flood in the rainy season, but also cause damages to drainage structures due to the increase in the land pressure. Therefore, there should be measures such as hole layout to separate water from the drainage line or construct structures that can withstand the pressure of the soil.

Source: EIPP (JICA Team)

Figure 3.5.6: Damaged Drain Ditch cause by Expanded Soil in Indonesia

(3) Wastewater system plan and design

1) Calculation of the design wastewater flow

The wastewater flow is classified into domestic wastewater, industrial wastewater and groundwater infiltration including unexpected surface water intrusion. The calculation of the wastewater flow is conducted in accordance with the following design factors:

i) Domestic wastewater flow

The domestic daily maximum wastewater flow is to be the domestic daily maximum water supply flow in the water supply plan.

ii) Industrial wastewater flow

The industrial daily maximum wastewater flow is to be the industrial daily maximum water supply flow in the water supply plan.

iii) Groundwater infiltration including unexpected surface water intrusion

Groundwater infiltration including unexpected surface water intrusion is experientially assumed to be 10% to 20% of the daily average wastewater flow.

iv) Hourly maximum wastewater flow

For hourly maximum wastewater flow, the standard domestic hourly maximum wastewater flow is equivalent to be 1.31 times of flows for one hour of the domestic daily maximum wastewater flow and the standard industrial hourly maximum wastewater flow is to be 1.01 times of flows for one hour of the industrial daily maximum wastewater flow.

v) Planning wastewater discharge time

The planning wastewater discharge time is to be 10 hours as the standard corresponding to the operating time of factory in IP.

2) Wastewater treatment and discharge type

In selecting the wastewater treatment methods, the discharge types and the planning wastewater discharge time, the following cases are considered:

i) Treatment pattern

- Public or regional (municipal) wastewater/sewerage treatment plant
- Individual treatment plant at each IP Enterprise
- Centralized treatment plant within the area of IP
- Combination between individual and centralized treatment plant

IP developed by IPDC was determined to introduce centralized treatment plant system.

ii) Discharge type

- Gravity flow
- Gravity flow after the flow control
- Pressured wastewater flow (with a regulating tank)

iii) Other factors

Flow control due to the pollution load at the discharge point by installing the sampling pit between the factory boundary and common area, to determine the IP Enterprise's discharge water quality before flowing to the common sewer pipe.

The wastewater sewerage system shall be planned considering the fundamental plan of IP and topographical conditions and cost analysis obtained through basic surveys and more under the consideration of not only respective case but also the combination of cases.

Although an alignment of sewers is affected by the geographic features, it is necessary to carry away wastewater at the shortest distance as soon as possible. Therefore, the pumping drainage is avoided considering height deference of topographic features, location of river and economic efficiency. In case of adoption of the pumping drainage, it is required to minimize a futile drop loss caused by buried pipeline.

3) Facilities plan and design

i) Calculation of design wastewater flow

As mentioned above, the domestic hourly maximum wastewater flow is to be 1.3 times of flows for one hour of the domestic daily maximum wastewater flow and the industrial hourly maximum wastewater flow is to be 1.0 times of flows for one hour of the industrial daily maximum wastewater flow.

ii) Calculation of the design flow

The design flow for the rainwater drainage facilities is calculated by Manning's formula as presented below;

Manning's formula:

$$\mathbf{Q = A \times V}$$

$$\mathbf{V = \frac{1}{\eta} \times R^{\frac{2}{3}} \times 1^{\frac{1}{2}}}$$

Q: Discharge flow (m^3/second) *A: Average flow cross-sectional area of culvert/pipe (m^2)*
V: Mean flow velocity (m/second) *η: coefficient of roughness, dimensionless*
R: Hydraulic radius (m) = A/P *P: wetted perimeter (m)*
I: hydraulic gradient of pipe, channel or conduit (m/m)

iii) Flow velocity and gradient

In the wastewater discharge facilities, the design flow velocity ranges from 0.6–3.0 meter per second. It is required to secure a constant minimum flow velocity with 0.6 m/sec in order that filth is not precipitated regardless of wastewater flow.

In case that maximum flow velocity is exceeded more than 3.0 m/sec due to a steep gradient of a sewer line, the gradient of the sewer line is designed to make gentle by providing steps at the proper intervals on the sewer line. Then the gradient of the sewer line is lowered toward the downstream. The gradient of the sewer line shall be designed appropriately to facilitate the execution of works and reduce a cost.

iv) Minimum pipe diameter

The minimum pipe diameter of the wastewater pipe is in general to be 200 mm due to consideration of the workability for installing the wastewater discharge facilities and conducting the operation and maintenance.

v) Minimum earth covering

The minimum earth covering of the sewers is usually to be 1.2m for the roadway and 1.0m for the sidewalk since the sewers are not able to be installed shallowly concerning the position of installation pipe, conditions of buried structures and live-load.

vi) Installation interval of manholes

Manholes shall be installed at positions for changing the direction of the sewer lines, pipe diameter and gradient, and at positions with difference in level and pipe joints/associates.

In addition, the manholes are also installed at the sewer straight lines with a certain interval due to a pipe diameter as shown in **Table 3.5.3**.

Table 3.5.3: Maximum Distance of Manhole for each Pipe Diameter

Pipe diameter (mm)	<=300	<=600	<=1,000	<=1,500	>=1,650
Maximum distance (m)	50	75	400	150	200

Source: Design standards for core industrial park

In developing countries, it is presented to construct the manholes with reinforced concrete and formworks at the site. The uses of knockdown precast concrete manhole improve the workability of construction. However, the construction of the wastewater sewerage system shall be paid due consideration since the joint works are not easy due to the standard differences between manhole and the pipe.

Source: Kcon Co., Ltd.

Figure 3.5.7: Example of Precast Manholes

4) Design of wastewater treatment plant

The wastewater treatment plant consists of a lot of facilities; wastewater treatment facility, sludge treatment facility, transportation & classification facilities for them, pumping station, facility for provision, storage, processing of materials and energy such as electric power and gas, administration building with operation and maintenance facility, etc.

Regarding the wastewater treatment plant, the following plans and designs are required;

i) Determination of wastewater treatment method

ii) Facilities layout plan

iii) Facilities design

iv) Expanded facilities design

For the centralized wastewater treatment plant within the area of IP, the conventional activated sludge process is mostly employed under condition of providing a pretreatment facility by each tenant. It is noted that the centralized wastewater treatment plant is able to cope with only biological wastewater and chemical wastewater is to be treated with the pretreatment facility provided at each tenant. In case that the centralized wastewater treatment plant provides chemical treatment function, its construction and O&M costs are supposed to be enormous for IPDC since processing wastewater contains various chemical matters and qualities depend on type of industry.

Table 3.5.4 presents the industrial wastewater characteristics and typical treatment methods categorized by type of industry.

Table 3.5.4: Wastewater Characteristics and Treatment Methods Categorized by Industry

	Industry	BOD PPM	COD PPM	SS PPM	PH	Typical Treatment
1.	Food					
	Processing	1,000 - 2,700	430 - 2,700	450 - 800	1 - 14	A.S
	Dairy Products	250	170	200	65 - 11	A.S
	Seasoning	340 - 2,300	109 - 11,900	76 - 4,250	6 - 8	A.S
	Milling	1,900	1,600	2,400	6 - 8	OF + A.S
	Soft Drink	340	330	370	9 - 12	A.S
	Alcoholic Drink	490 -1,700	127 - 1,400	88 - 776	8 - 11	A.S
	Frozen	410	170	200	-	A.S
	Confectionery	860	780	610	6 - 8	OF + A.S
	Feed/Fertilizer	1,200	480	25	-	A.S
	Cooking Oil	4,400	3,100	2,600	1 - 7	OF + A.S
	Others	450 - 2,400	450 - 1,200	450 - 1,200	6 - 8	A.S
2.	Spinning	20 - 300	30 - 610	15 - 630	3, 5 - 9	A.S
	Tex tile	60	30	100	6 - 8	A.S
	Garment	10	10	30	6 - 8	A.S
	Dyeing	200 - 300	160 - 450	80 - 200	3 - 11	C.D
3.	Chemical					
	Organic Chemical	300 - 600	460 - 870	100 - 150	1 - 13	N.T + A.S/C.S
	Plastic/Rubber	10	20	50	-	N.T + A.S
	Petro - Chemical	20 - 200	20 - 200	20 - 100	1 - 13	OF + A.S / G.S
	Others	500	500	30	-	A.S / C.D
4.	Wood/Furniture	10	10	30 - 40	-	A.S
5.	Glass/Ceramic	3 - 10	1 - 13	30 - 20,000	7 - 9	C.S / F.M
6.	Cement/Concrete	8 - 30	7 - 17	200 - 1,400	9 - 14	N.T
7.	Metal product	20 - 360	20 - 360	20 - 560	2 - 8	N.T / C.S
8.	Plate	-		30 - 150	1 - 6	N.T / C.D
9.	Pulp/Paper	300	250	180	7 - 9	A.S / C.S
10.	Machinery	10	30	100	-	OF + A.S / C.D
11.	Automobile	50	90	100	-	OF + A.S / C.D
12.	Electronics	10	30	100	-	OF + A.S / C.D
13.	Miscellaneous	5	10	40	6 - 8	A.S

Source: Gridline of Industrial Wastewater Treatment Method in Japan

A.S : Activated Sludge Method
C.S : Coagulated Sedimentation
O.F : Oil Floating
F.M : Filter Method
N.T : Neutralization Treat
C.D : Chemical Treat

3.6 POWER SUPPLY AND TELECOMMUNICATION SYSTEM

3.6.1 Power Supply System

(1) Arrange and confirm the plan conditions

It is required to clarify the following contents through the survey on the current situation related to power supply sector:

- The current situation of power supply and the power demand of the target country (at normal and peak times)
- The power generation and types of power generation establishments of the target country (hydraulic power is the basic power source, other sources of energy such as thermal power plants, geothermal power, wind power, solar thermal, and other renewable energy, etc.).
- The current situation of the existing generation, high voltage transmission grid, and distribution network of the target area.
- The major substation of the surrounding area at target area and its capacity.
- Power tariff in the target area.
- Current situation of fuel supply of the target area.
- Expansion plan for electric power systems of the target area and the power availability.

(2) Plan to arrange the power supply

Electrical power is transmitted through either “overhead line” and “underground line”.

i) Overhead line

The overhead line is a structure used in electric power transmission and distribution to transmit electrical energy along large distances; It consists of number conductors (commonly multiples of three) suspended by towers or poles. It can be installed in all locations such as mountain area, seaport area, especially town areas. Besides, it is possible to flexibly arrange branch lines in accordance with the situation of the land plot and the building. Regarding both the easiness in the maintenance management and cost, this method is widely used.

ii) Underground line (also known as Underground cable)

Normally, the underground line is the structure of supplying power by burying power cable under the sidewalks or the method of burying power cable in the same trench with the communication system. The underground cables have several advantages over the overhead lines; they have smaller voltage drops, low chances of developing faults, and safety.

However, there are some problems in the maintenance management as follows: i) there is inconvenience at surrounding area where outdoor cabinets are installed on the surface, and ii) the capital cost and maintenance cost of underground cable is higher than overhead line.

Besides, it is also required to preparing some switchgear panels in correspondence with the scale/quantity of power demand within the IP.

(3) Measures for stable power supply

When supplying power, it is necessary to consider the temporary power cut-off due to the construction, maintenance; it is expected that it is possible to transmit and distribute the power by loop distribution system in the IP so as to supply power regularly even in such situation.

Moreover, it is possible to concentratedly manage the power supply to establishments and supply power stably through the main-substation in the IP. This is also an incentive when attracting enterprises.

Nonetheless, when the development corporation undertakes the installation cost of the substation, it is required to adjust the maintenance burden to the public party so as to be able to pull the respective distribution line with the necessary power supply in the IP.

3.6.2 Telecommunication System

(1) Survey on current situation

It is required to clarify the following contents through the survey on the current situation related to communication equipment.

- The communication environment and the current use situation of the target country
- The situation of the existing communication network of target area and the capacity of such communication provision
- The communication expense of the target area
- The current situation of the communication provision
- Expansion plan for communication network of the target area and the ability to provide communication

(2) Communication maintenance plan

1) Wired (communication cable)

The respective expense is required to maintain the communication system; therefore, it is expected to carry out the maintenance plan for minimum necessary parameters for such IP.

Regarding the maintenance management, compared to other supply sector (such as water, power, etc.), the communication cable can be implemented quite simply; therefore, related to

the manhole, it will help cut down the maintenance expense by considering the handhole equipment rather than manhole equipment.

Besides, it is possible to incur uneven subsidence of the land due to the floating strength of the underground water or pressure of vehicles, so the attention must be paid to the number of equipment and the underground location of PVC pipes of the communication cable.

2) Wireless (antenna)

As there is the participation of many communication service providers, whenever a company installs wireless antenna in the IP, it will result in the imbalance in the communication provision in locations in the IP. Consequently, the development corporation needs to survey the location for installing the wireless antenna to be able to provide the communication evenly for factories in the IP and provide the communication in a balanced state for factories by installing a wireless antenna tower there.

Moreover, it is required to make plan to provide a reasonable information provision volume in the whole IPs and the industrial forms affected by electromagnetic waves such as the precise machine and equipment manufacturing industry and consider the locations for installing the wireless antenna.

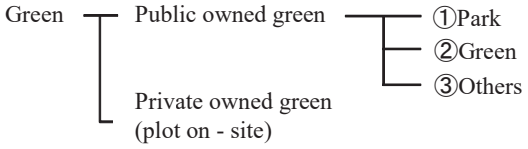
(3) Measures for stable provision

Similar to the installation of substation inside the IP for power supply, even in the communication, it is also possible to provide communication stably and appropriately for factories in the IP by installing a switch station inside the IP.

3.7 PARKS AND GREEN SPACES

3.7.1 Definition of Park and Green

Park and green facility relating to IP can be categorized as shown below on the basis of land ownership.



Source: EIPP (JICA Team)

Figure 3.7.1: Definition of Park and Green

Public owned green is studied in this chapter, while private owned green is not target for the plan.

It should be noted that park and green of public owned green developed in Industrial Estate are to be designated under city planning facility.

(1) Park

Parks, where facilities are developed in flat land with landscape decoration, will be utilized by mainly workers in IP. Therefore, parks can be located in the center of IP because of equal access from every factories of IP.

(2) Green

Green will be developed for the purpose of buffer and landscape effects by utilization of preserved green. Green area will be mainly developed in the boundary area of IP premises to attain buffer effects between industrial land use and surrounding residential land use.

(3) Others

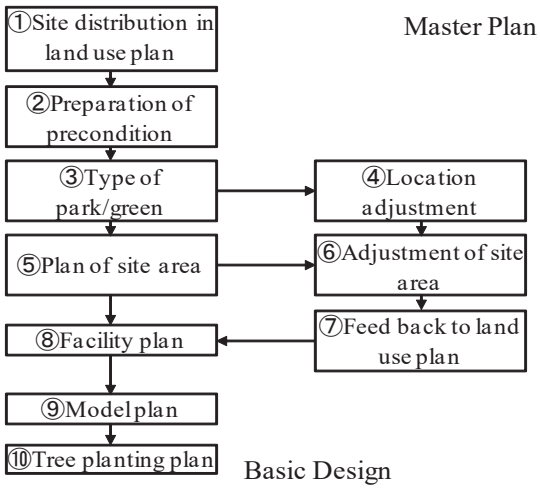
Others are public green such as roadside slope, river bank, etc. developed for landscape and engineering purpose.

3.7.2 Designing Procedure

Work items of park and green designing are stated below and workflow is shown in **Figure 3.7.2**.

(1) Site distribution in land use plan
(2) Preparation of precondition
(3) Type of park/green
(4) Adjustment of location
(5) Plan of park/green site area
(6) Adjustment of site area
(7) Feedback to land use plan
(8) Facility plan
(9) Model plan
(10) Tree planting plan

Work items of (1) – (8) are to be formulated in Master Plan stage and work items (9) - (10) will be made in Design stage.



Source: EIPP (JICA Team)

Figure 3.7.2: Workflow of Park/Green Planning and Designing

1) Site distribution in land use plan

Site distribution plan with site area idea of park and green is already made in land use plan of Master Plan. Amendment will be done if necessary in this work stage.

2) Preparation of precondition

Park/green will be planned to serve not only for workers in IP but also regional population in cooperation with relevant municipal government. Therefore, following items should be collected and analyzed for the planning.

a. Condition of existing park/green around IP
b. Condition of planned park/green around IP
c. Factory distribution plan of IP

d. Possible access route to park/green

3) Type of Park/Green

Type of park/green will be decided in consideration with local conditions in and around IP identified in the work item 2 above. Common type parks such as district park, integrated park, athletic park and special parks, can be developed within IP.

Following items should be planned to decide type of park/green.

- Beneficiaries
- Service covering area
- Idea of park facility

Plantation reservation, buffer green and landscape are candidate of green facility.

4) Adjustment

Location and plot dimension of park/green planned in land use plan will be examined in consideration with items above in cooperation with relevant government authority.

5) Site area of park/green

Development area of park/green will be decided on the basis of type, location and site dimension plan.

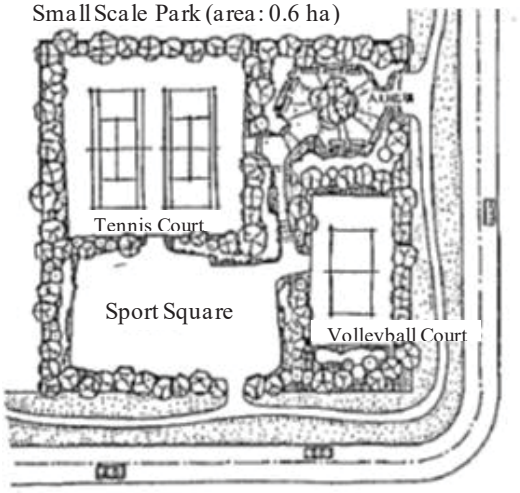
6) Facility plan

Facilities of park/green will be designed in line with type of park/green decided in work item 3 above. Considering of requirement of beneficiaries of IP, athletic and resting facilities will be main target to be facilitated. Landscaping facility is also important to decorate IP with fine view and enrichment.

Candidate athletic facility in IP;

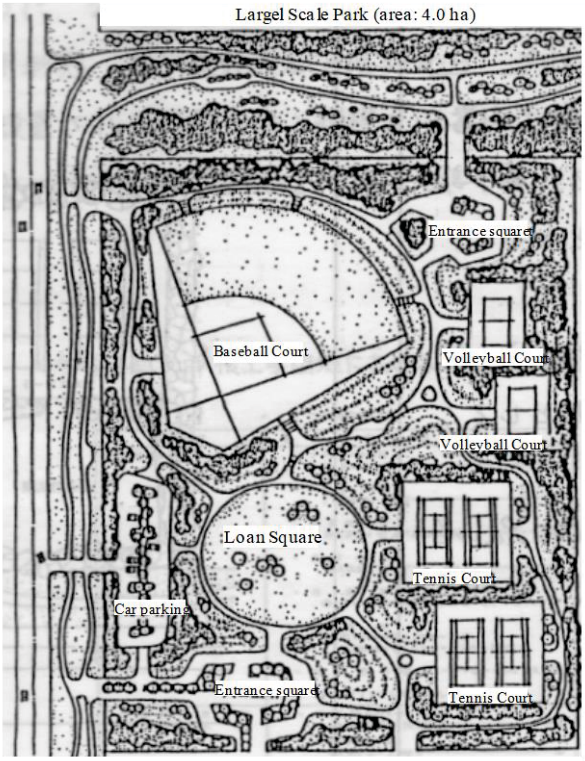
-Tennis court	-baseball court
-cricket court	-volleyball court
-football court	-gymnasium
-table tennis facility	-badminton court
-basket court	-swimming pool, etc.

In Design stage, location, area, facility, beneficiaries, etc. of park/green will be finalized by reviewing the outcomes of master plan. Results will be comprehensively figured out in the model plan of park/green.



Source: Park and Green Planning/Design Study of Core Industrial Park, Regional Development Corporation

Figure 3.7.3: Example of Model Plan of Small Scale Park



Source: Park and Green Planning/Design Study of Core Industrial Park, Regional Development Corporation

Figure 3.7.4: Example of Model Plan of Large Scale Park

3.7.3 Tree Planting Plan

Following issues will be studied in the planting study in consideration with reuse of existing vegetation and overall greening plan of IP.

a. Policy of planting
b. Selection of planting species
c. Density of plant
d. Soil for plant

In consideration of maintenance, selection criteria for greenery are in the following order

a. Preservation or transplantation of existing trees
b. Trees growing in the area
c. Trees easy for maintenance from among a type of evergreen
d. Tree with low maintenance cost

3.8 FACTORY BUILDING AND ACCESSORIES OF BUILDING

In this chapter consider the design of the rental factory, in case the IPDC designs the rental factory.

Each building must be designed to satisfy the law concerning buildings and the master plans of each industrial park. Building and accessories of building must comply with building regulation of Building Area Ratio (BAR), Floor Area Ratio (FAR), Height, Building applications, Structure and Firefighting regulation etc.

In order to advance the design, confirm and approve the design contents based on the drawings of the following contents

a Specification Document

Specification Document, External Finishing Document, Internal Finishing Document, Exterior Finishing Document etc.

b Architectural Drawing

Site Plan, Floor Plan, Roof Plan, Elevations, Sections, Detail Plan, Planting plan Area Table etc.

c Mechanical Drawing

Plumbing Equipment Drawing, Ventilation Equipment Drawing, Firefighting Equipment etc.

d Electrical Drawing

Electrical Wiring Diagram, Electrical Outlet Plan, Lighting and Light Fixtures Plan, Firefighting Equipment etc.

e Construction Drawing and Structural Calculation Documents,

Floor Plan, Framing Elevation, Column List, Beams List, wall List, etc.

(1) Building

The location of the building in site, it is built at a location sufficiently retracted from the road boundary and the neighboring boundary. Building color of the roof, façade etc. shall adjust to the surrounding landscape.

(2) Accessories of Building

Gate and boundary fence consider whether to install for each industrial park, taking safety into consideration. The width and position etc. of the gate and entrances and exits should be such that the entry and exit of the car will be made smoothly and that it will not interfere with road traffic.
Since The advertisement bulletin board also has influence on the surrounding landscape, it is necessary to consider the color and the size etc. For advertising signboards, it is desirable that up to 2 installation for 1 company, and description is only the name of company, trademark and business contents.

3.9 SERVICE FACILITY

3.9.1 Definition of Service Facility

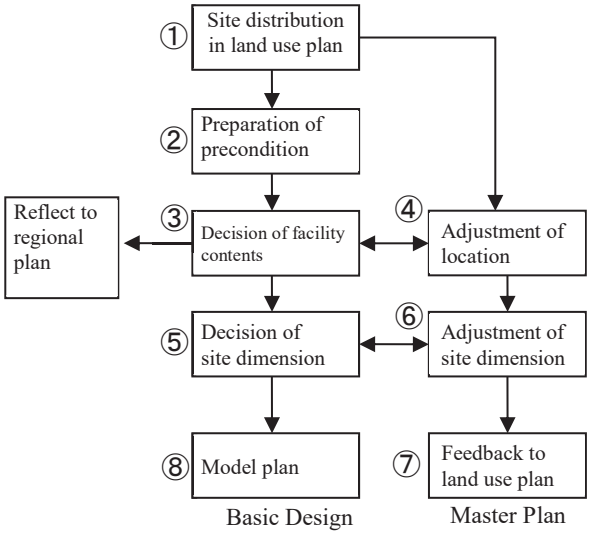
Service facility described in this chapter covers only facilities developed for common utilization by factory workers in IP as well as local people. Facilities privately developed by each factory for employees and their families are not included in service facility.

Service facilities are categorized in three purposes; 1) business and administration purpose, 2) industrial activity relating purpose, 3) recreational purpose. In this chapter, 4) business and administration purpose facility are explained, while 2) and 3) are described in utility plan and park/green plan respectively.

3.9.2 Planning Procedure

Work items of service facility planning are cited below and work flow is shown in **Figure 3.9.1**.

Work items of (1) – (7) are to be formulated in Master Plan stage and work item (8) model planning with architectural study will be made in the Design stage.



Source: EIPP (JICA Team)

Figure 3.9.1: Workflow of Service Facility Planning and Designing

(1) Site distribution in land use plan

Site distribution plan of Service facility is already made in land use plan of the Master Plan. Amendment will be done if necessary in this work stage.

(2) Preparation of precondition

Service facility developed in IP will serve not only workers in IP but also local people residing around IP. Precondition for service facility planning shall be collected and analyzed in accordance with following items.

f Distribution condition of service facility in regional area

g Framework of utilization (regional population and number of employees in IP)

h Attribution of employee in IP

i Access method from neighboring region to IP

(3) Decision of facility contents

Kinds of service facility will be decided by considering the attribution of employees working in IP, and category of industry expected to be established in IP. If attribution of employee and category/scale of industry are ordinary type, following service facilities are candidates to be developed.

- Conference facility: administration office, reception/meeting facility
- Cultural facility: rest/conversation rooms, club activity facility, music room
- Amusement facility: amusement room
- Public service facility: IPDC/management office, post office, police station, firefighting station, custom office, municipality office: these can be integrated as a OSS (one stop service).
- Convenience service facility: kiosk, restaurant, coffee shop, library, health club, banquet hall
- Other facility: training room, auditorium, fuel station, clinic, dining service, nursery, lodging facility

(4) Decision of facility dimension

Standard of the dimension of common use facilities is shown in **Table 3.9.1**.

Table 3.9.1: Standard Floor Area of Service Facility

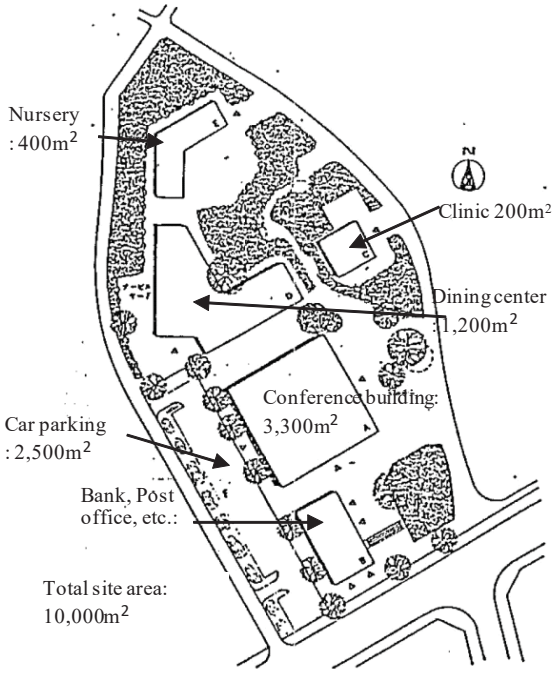
Service facility		Floor Area (m^2)
IP center building (4,000m^2)	Administration office	60
	Conference	120
	Reception facility	100
	Rental office	300
	Exhibition	1,000
	Leisure room	300
	Restaurant	120
	Meeting room	300
	Kiosk	50
	Workshop	200
Livelihood relations (2,500m^2)	Shopping center	500
	Clinic	300
	Catering service	600
	Kids nursing	300
	Bank branch	100
	Post office	50
Public service	Police station	80
	Firefighting station	250
Others	Fuel station	240

Source: Handbook for Industrial Park Development, Japan Industrial Location Center

(5) Model Plan

Model plan of common use facilities will be formulated in the design stage work.

Access plan from neighboring region to IP, pedestrian flow plan, and landscape plan are necessary in the model plan. Preparation of the perspective sketch of Service facility and building structure are recommendable to be formulated.



Source: Planning/Design Standard of Core Industrial Park, Regional Development Corporation

Figure 3.9.2: Model Plan of Industrial Park Center
Hachinohe Core Industrial Park

3.10 LANDSCAPE

Elements of landscape that must be considered in the industrial park is the natural environment (vegetation and animals) and urban elements (buildings, structures, signs etc.) such as mentioned above the parks, green spaces, factory buildings and service facilities. For sustainable development, it need to design a landscape plan that consider social, economic and environmental. Ethiopia has a large national land area, there is a big difference in elevation between areas, and it is necessary to consider sustainable development that makes use of ecosystems and landscapes according to the area.

Everything that makes up the industrial park is harmony and should also be harmonized with the surrounding landscape. Therefore, when designing the landscape, it is necessary to set the landscape concept that suit each industrial park.

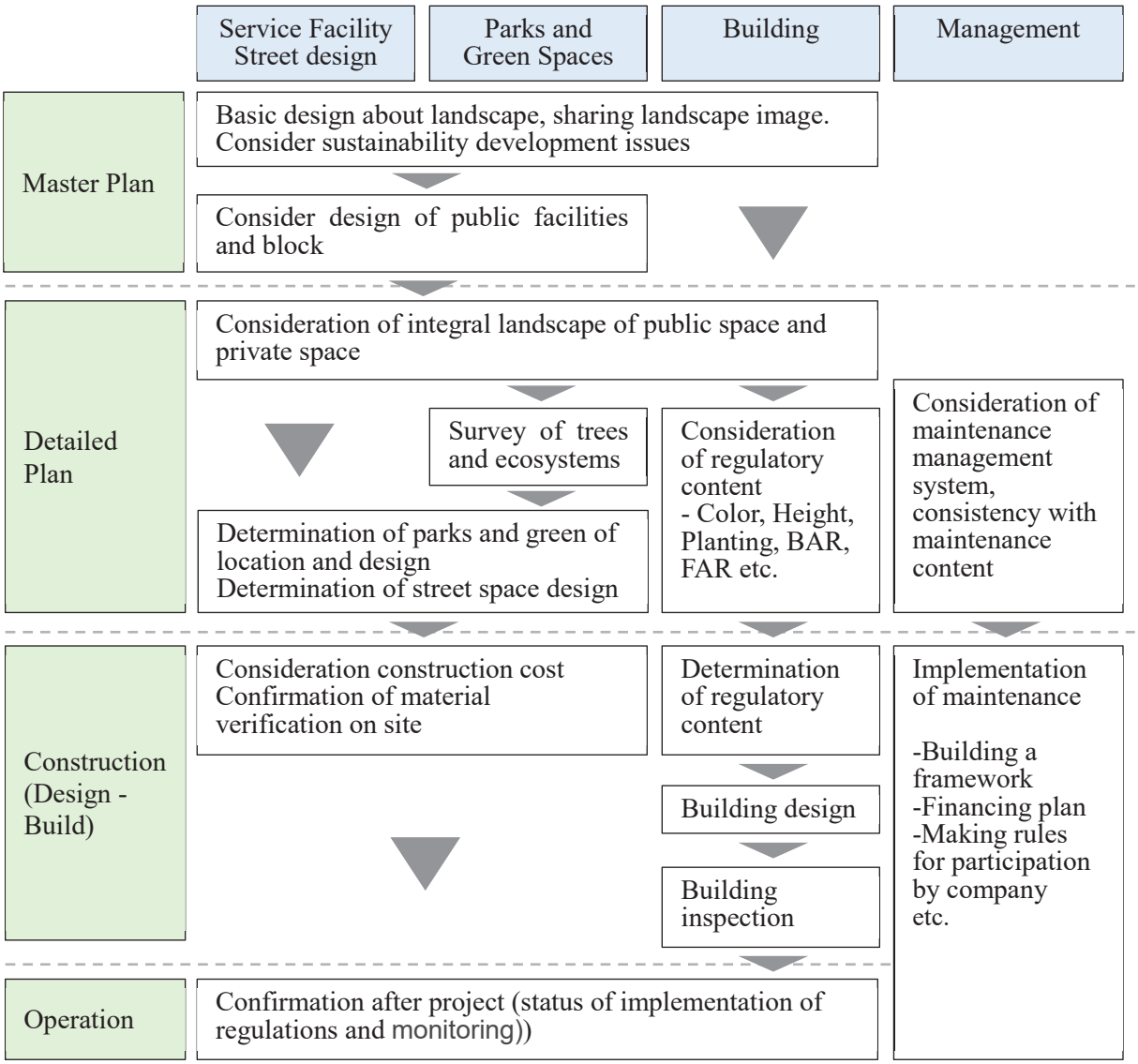
(1) Design process

It is necessary to grasp the existing landscape elements and to comprehensively consider the newly created space and those existing landscape elements.

In addition, maintenance and management are indispensable for a good landscape. It is necessary to expand the approach to the landscape which had been limited to the planning and designing phase until the construction phase and the management phase. For this, it is needed for landscape designing to consider not only construction plan of new public facilities and plot structure, but also the scheme of sustainable operation, maintenance and management after completion of the project for these facilities and plots from such viewpoints as funds, easiness of operation, maintenance and management, realization of universal design, characteristics of materials, and appropriateness of construction cost.

Furthermore, in order to develop sustainable landscape, it is necessary to create a structure and rules that allow each tenant to participate in maintenance and management

The design process is shown in the **figure 3.10.1**

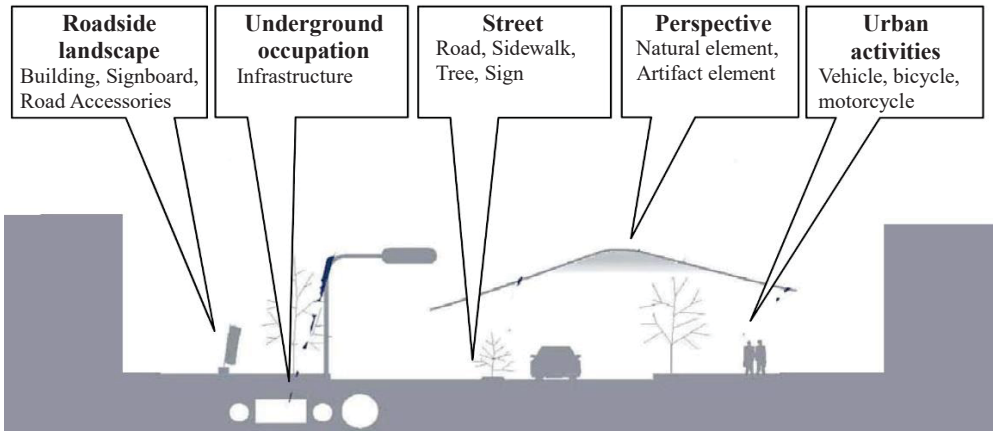


Source: EIPP (JICA Team)

Figure 3.10.1: Workflow of Landscape

(2) Street Space design

As a street space design, it is necessary to consider elements making up a street such as tree, lighting, sidewalk, sign, perspective and pavement. **Figure 3.10.2** shows the elements that make up the street space



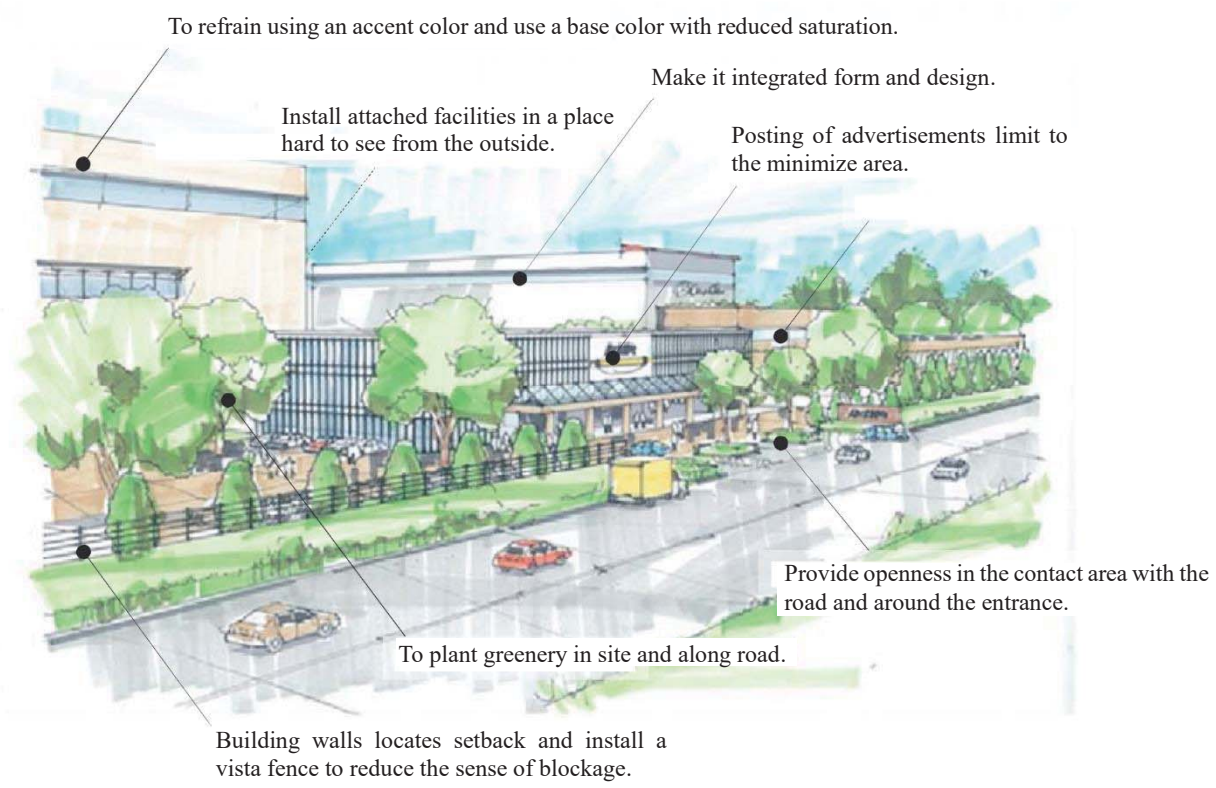
source: EIPP (JICA Team) **Figure 3.10.2: Elements of Street Space design**

Example of Landscape Concept in Japan

Landscape formation policy

In industrial areas, it strives to maintain greening and create more green space. As a place to work every day, it is based on forming an industrial landscape with a lot of greenery and familiarity.

- The feeling of blockage and pressure to the surroundings reduce by locating factories and facilities in the position where the building wall position has setback and the building is segmented.
- The buildings in the site are harmonized the building form and design between each building so overall landscape Integrate.
- To plant green actively in site, as well as provide a feeling of openness in the vicinity of entrance and contact area with the road.
- For advertisements, it refrains from setting up the rooftop and minimize the posting area, consider comfort and traffic safety in the surrounding environment.



Source: Landscape planning in Sano city, 2011,

Figure 3.10.3: Typical Landscape Concept in Japan
Landscape planning in Sano city Tochigi Prefecture Japan

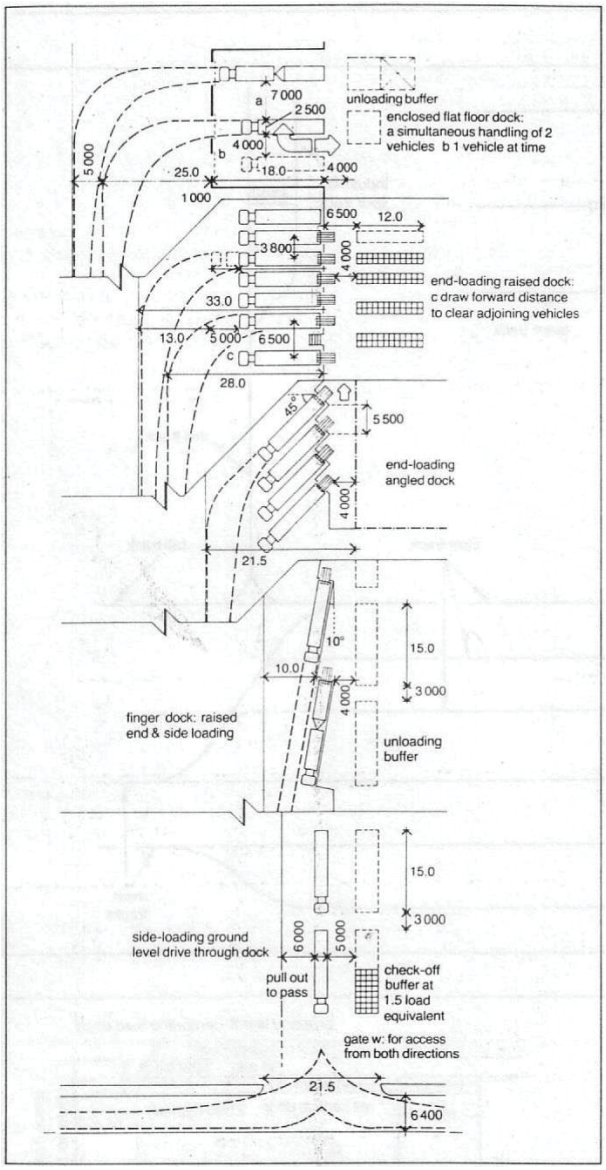
3.11 PARKING

How to calculate the number of parking lots to be set up in the industrial park and standards for parking lot design refer to "Neufert Architects' Data". For the size of the vehicle, refer to 3.2.1 Determination of Design Parameters.

Table 3.11.1: How to Calculate the Number of Parking lot

spaces/floor ar	inner city	suburbs & rural
distribution	m^2	m^2
heavy goods vehicles	1/1 000	1/500
light commercial vehicles	1/1 000	1/500
cars	1/400	1/1 000
light industry		
heavy goods vehicles	1/4 000	1/2 000
light commercial vehicles	1/1 000	1/500
cars	1/200	1/50
off space		
light commercial vehicles	1/1 000	1/500
cars	1/150	1/30

Source: Neufert Architects' Data,



Source: Neufert Architects' Data,

Figure 3.11.1: Typical Required Space for Parking

4. CONTRACT MANAGEMENT AND CONSTRUCTION SUPERVISION

The client and the general contractor (or 3 parties including the consultant) shall secure quality, a process of construction and an economic efficiency assuming safety of the construction works and execute the construction under the mutual cooperation.

In a process of a series of construction management until a plan, an investigation, a design, construction, inspection in a project, the client oneself has conducted a plan, an investigation and a design in the past. In recent years, the contractor and the consultant often carry out such tasks instead of the client.

Construction process	Planning	Survey	Design	Cost estimate	Order	Contract signing	Construction	Inspection
Past	Client			Contractor				Client
Present	Consultant			Client		Contractor		Consultant
	Contractor							

Source: EIPP (JICA Team)

Figure 4.1.1: Conceptual Diagram of Construction Management

4.1 CONSTRUCTION CONTRACT

The construction works are normally placed an order by the construction contract each itemized construction section. The contract contents are stipulated by the contract document, design drawings, and specifications. The construction works is conducted based on the contract between the client and the contractor. Contract methods are categorized as below:

1) Open competitive bids, shortlisted bids, single source bids.

2) Lump sum contract, Division contract, Itemized contract

3) Original contractor contract, Subcontractor contract

Though some construction contractors who are designated in view of construction competence shall proceed to bid, the investment owner shall estimate the total construction cost in advance, then if the lowest bidding price is less than the budget price, the contract shall be formed.

In the case of construction requiring construction accuracy and advanced technology, it is recommended to select a contractor by a Two stage bid process, considering "Technical Evaluation" and "Financial Evaluation". The method first selects a contractor that can satisfy "Technical Evaluation". Next evaluates "Financial Evaluation" for contractor who satisfied "Technical Evaluation". Finally, it is a method of selecting a contractor with a high total evaluation.

Besides, the service contract, timeline and responsible is classified as follows, based on the scope of the contract:

Table 4.1.1: Classification of Service Contract

Type	Overview
Construction contract (DBB)	The client including the consultant conducts a projecting, planning and designing, while the contractor is only in charge of construction works.
Design and build contract (DB)	The contractor is in charge of designing, constructing and fully responsible for the performance.
Design and build and Operation	The contractor is in charge of designing, constructing, Operation (including necessary test) and fully responsible for the performance.

Source: EIPP (JICA Team)

Type		Timeline				
Construction contract (DBB)	Task	Master Plan	Feasibility Study	Detailed Design	CONSTRUCTION	Inspection
	Responsible	Consultant	Consultant	Consultant	Contractor	Client
Design and build contract (DB)	Task	Master Plan	Detailed Plan	CONSTRUCTION (Design - Build)		Inspection
	Responsible	Consultant	Contractor	Contractor		Client
Design and build and Operation	Task	Master Plan	Detailed Plan	CONSTRUCTION (Design – Build)		Inspection
	Responsible	Consultant	Contractor	Contractor		Client

Source: EIPP (JICA Team)

Figure 4.1.2: Timeline and Responsible by Construction Contract

4.2 CONSTRUCTION MANAGEMENT ORGANIZATION

4.2.1 Organization System

The construction management works are required take conducted by head office (supervision division) and Site office. The main tasks of the Head office and the Site office are presented below:

Table 4.2.1: Functions of Head Office and Site Office

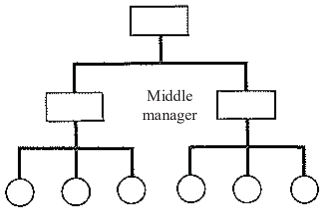
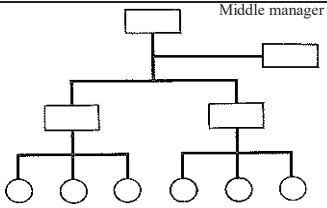
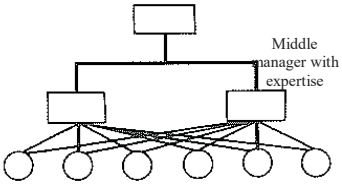
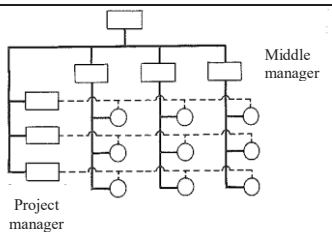
	Task Content
Head Office	1) Manage to support, assist and direct at the site. 2) Extra tasks shall be considered if needed, and discussed to resolve claim, and demanded with equipment that would be a bottleneck in the process. 3) Procure equipment and materials, conduct management and operation activities in a cost-effective way by lump sum.
Site Office	1) Proceed to apply for required permission for works construction. Depending on the works' conditions, the client shall be responsible for part of this task. 2) Conduct the construction upon the client's requirements. 3) Create documents on productivity for the client, and then send to the client and the Head office, report works progress. 4) Keep close contact with the client or designer; request for support in reading and understanding the design drawings as well as other conditions. 5) Based on the latest information to adjust, modify the drawings used on site, and notify in full to sub-contractor. 6) Store and organize neatly works images, such as works completion inspection document, design change, works profile.

	Task Content
	7) Prepare contract document with sub-contractor upon the estimates, then request for contract with the Head office. 8) Inspect competence document from the sub-contractor, conduct payment procedures for the Head office. 9) Conduct monitoring, adjustment and inspection of work of sub-contractor to meet the purposes and expectation regarding original price, process, quality and safety of the works. If there are any issues occurred, request for support from the Head office. 10) Generate reports on works progress, labor, design change request, or other important or periodical reports.

Source: EIPP (JICA Team)

Based on the functions of the Head office and the Site, it is required to set up the management of the works appropriately so that the works operation execution can be smooth. Below are 4 types of organization models for works management are presented below:

Table 4.2.2: Organization Types

Organization Structure	Structure	Characteristic	Remarks in Management
1) Line organization		This is the type where directions system is centralized and consistent. Since the content regarding responsibilities and authorizations is clear, it is easy to thoroughly comply with the organization's principles and law regulations.	Easy to lack in the contact and cooperation with other organizations of the same level. For large organizations, there is a risk of exceeding the manager's authorization level.
2) Line and staff organization		This is the model adding staff to be in charge, and manage part of the expertise tasks of the manager, through which the management competence is enhanced.	Expertise staff does not have the authorization to lead. It is required to manage on a regular basis so that staff does not become too weak or too strong.
3) Functional organization		This is opposite to line organization's vertical method; this model is formed by focusing on allocating competence horizontally. This model helps to promote experts' strengths, transfer information or respond effectively in real time without having to pass through the leader.	The Middle manager needs to adjust so that there is no inconsistent direction or order.
4) Matrix organization		This is the type where necessary resources are assigned in the control system of the organization, and make such staff get involved in the business as a team member under the project manager's direction. This could lead to many projects can be conducted at the same time and utilize the company's organization competence.	Directions and orders of project manager and the organization' control system must be consistent.

Source: Civil Engineering Handbook of Japan

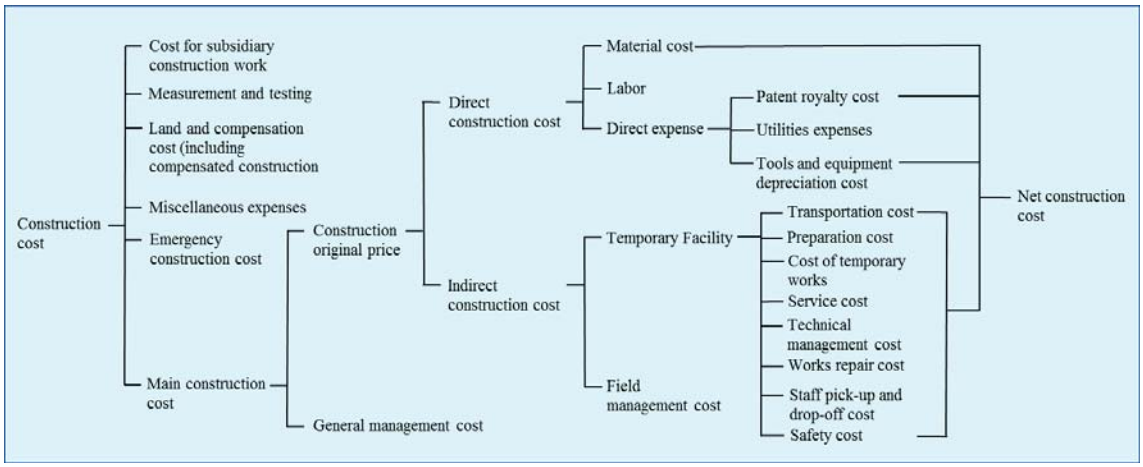
4.2.2 Project Manager

Project Manager (PM) is the general manager held fully responsible for the construction of the works, and brings safely to completion of building structures to meet all requirements regarding quality, construction period and cost; and ensuring the enterprise's benefits.PM needs to have "technical knowledge" to see the entire works in charge, and capability to organize, direct and execute on site, as well as "management competence" to achieve expected goal.

4.3 COST ESTIMATION

This is the task to calculate cost each type of construction works and a direct cost of construction by summing those costs up, and then estimate the budget price to add expenses pursuant to the estimation standard. In case public organizations have the estimation standard, the budget price shall be estimated based on the estimation standard. The work volume used for the estimation based on the quantity calculation sheets at the detailed design stage.

The structure of construction cost is illustrated in the **Figure 4.3.1**.



Source: Civil Engineering Handbook of Japan

Figure 4.3.1: Structure of Construction Cost

4.4 CONSTRUCTION MANAGEMENT AND SCHEDULE MANAGEMENT

The planning content and management contents to be determined prior to the construction works are displayed in the table below.

Table 4.4.1: Planning and Management Content

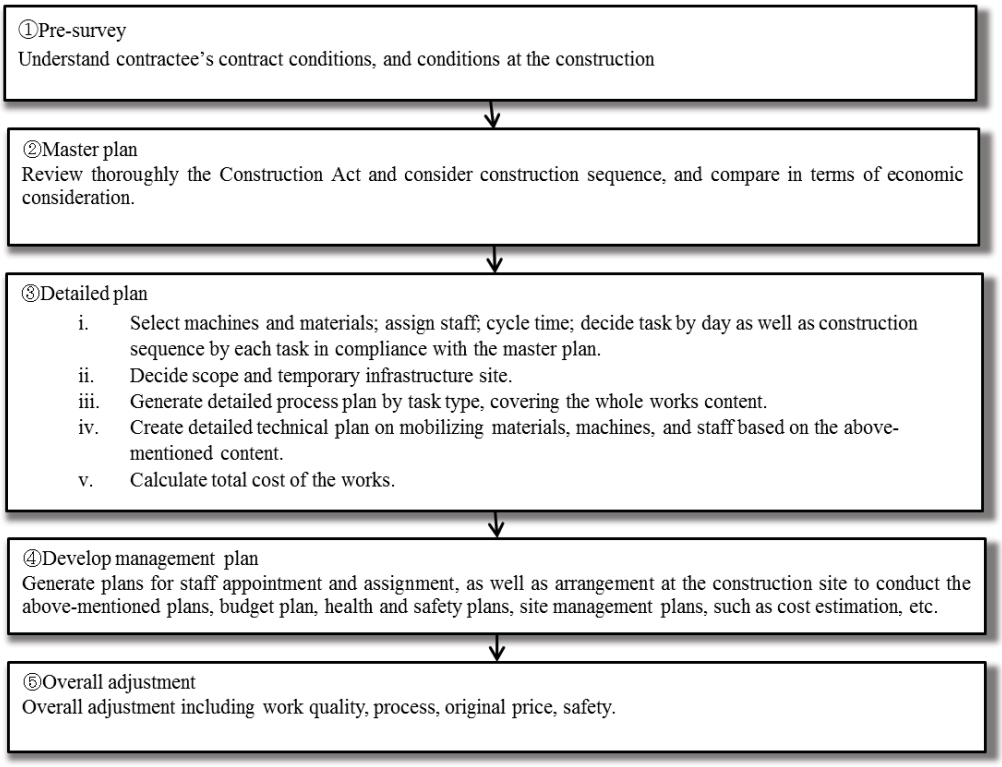
Planning content	Management content
Construction organization, procedures	Operating organization, relevant companies (sub-contractor), various licenses / approvals
Construction plan (Labor, equipment etc.)	Construction method, negotiation with the area (Number, scope, quality, in/out time, temporary infrastructure.
Quality	Finished work quality, specified value, etc.
Processes	Daily schedule, work method, milestone, etc.
Cost	Total cost estimates, construction cost estimates, etc.
Safety and environmental management methods	Accidents, pollution, housing survey prior to construction, etc.
Administration office, accounting	Payment, billing, etc.
Others	Administration tasks, information feedback, documents, reports, etc.

Source: EIPP (JICA Team)

4.5 CONSTRUCTION SCHEDULE MANAGEMENT

Construction planning is a task not only ensuring the construction quality, construction period and economic efficiency; but also deciding detailed methods to shift to construction, with the

purpose of ensuring work and design quality as the client's requirements. Construction planning content and sequence are described as follows:



Source: Civil Engineering Handbook of Japan

Figure 4.5.1: Construction Planning Sequence

4.6 COST MANAGEMENT

Cost management involves the concept of cost control and management, with the purpose of ensuring and enhancing safety while constructing and construction quality and time, and economic efficiency of the works. Cost management must be considered during construction planning phase. Concepts of cost control and management are described in the figure below:

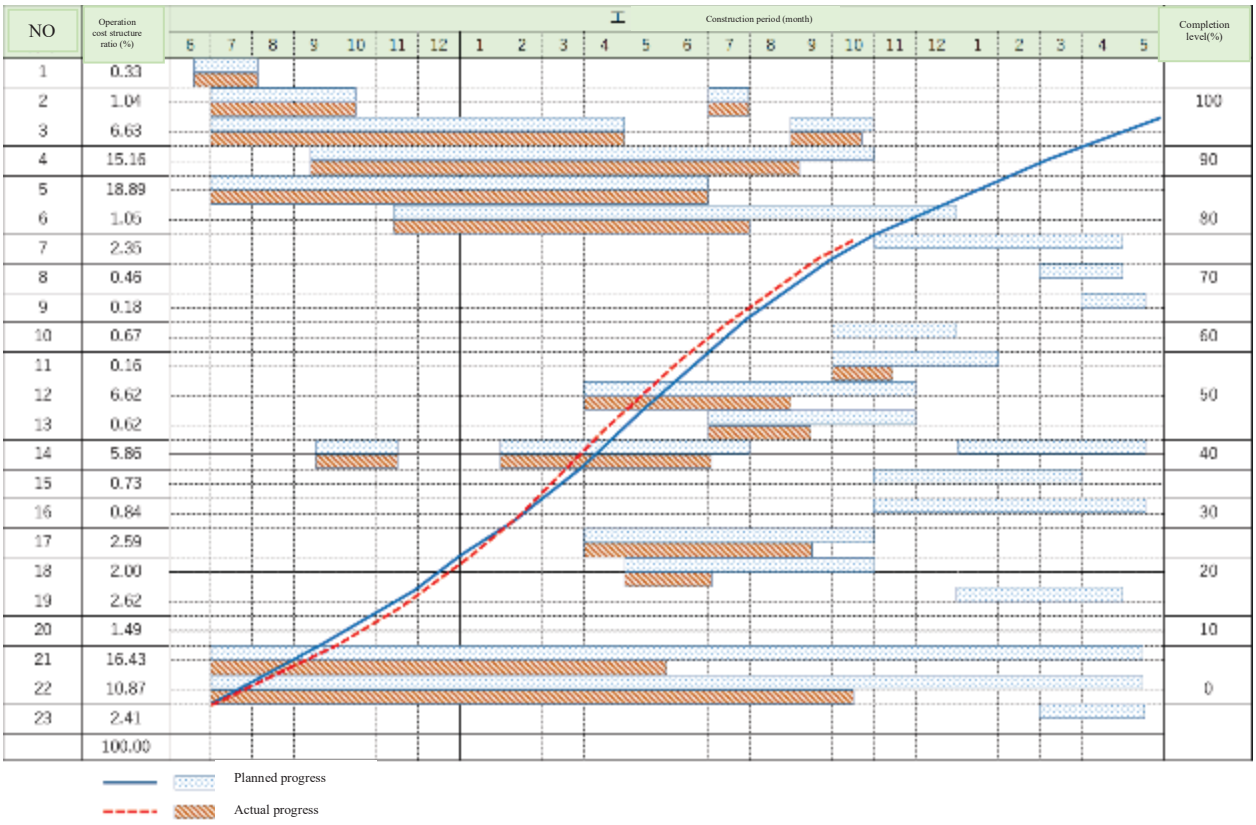
Source: Civil Engineering Handbook of Japan

Figure 4.6.1: Cost Management Flow

4.7 CONSTRUCTION SCHEDULE MANAGEMENT

4.7.1 Understanding of Progress Status

For construction process management, it is vital to understand the works progress on a regular basis, early detect the difference between planning and actual construction, as well as have countermeasures appropriately. To understand the works progress, normally a work schedule is used to display the construction progress, pace and sequence. The figure below is an example, showing "Work schedule by horizontal chart" and "Process curve". Work schedule by horizontal chart can capture the time required for each task and the relationship among tasks. The process curve illustrates the overall progress of the works, the completion percentage in general.



Source: Civil Engineering Handbook of Japan

Figure 4.7.1: Construction Schedule and Process Curve (sample)

4.7.2 Work Improvement

In case the assumed construction context at planning is different from the actual one (construction delay, change on delivery time, etc.), to improve productivity, it is required to modify by increasing workload or adding extra materials and equipment. During the work improvement process, if weak points to be improved and overcome are detected, it is vital to have periodical reports, works construction sequence progress, or hold meetings to review and consider solutions. When developing the improvement planning scheme, it is essential to study on how to minimize cost as well as ensure safety and product quality. The proposed improvement planning shall be added into the new construction planning, through which the process shall be managed.

4.8 HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT METHODS

(1) Health and safety management

The person in charge of construction is required to put effort on preventing the root causes of disaster on a regular basis; meanwhile, it is essential to ensure the health and safety of employees, and consider how to prevent the impact of disaster to the community.

Below are some examples on the context of root causes leading to industrial accidents during the construction of IP.

i) Impact of hydrometeorology such as heavy rain, impact of geological change
ii) Wrong steps or risks when the scope of work is too large, as well as requiring numerous machines and equipment (the use of heavy or electrical devices, etc.)
iii) Lack of skilled workers, or incomplete awareness on safety of inexperienced staff (failure in training)
iv) Lack of preliminary survey
v) Inappropriate construction planning and management, etc.

The works manager is required to understand fully these above-mentioned contexts, conduct health and safety management appropriately once noting such points, considered as basic measures to do.

i) Ensure safety of work devices
ii) Overcome shortcomings of working materials, equipment, machines, tools
iii) Conduct safety patrol on a regular basis and collect feedback fully
iv) Train on safety for staff
v) Execute the operation and manage effectively
vi) Enhance activities to ensure health and safety

(2) Environmental and social measures

Measures to prevent pollution during the construction that impacts to natural environment and the society need to be studied thoroughly. Otherwise, this will generate major obstacle during the construction progress, as well as cause delay to construction time, increase cost for adding other measures, or lead to critical social problems, etc. Environmental issues are categorized into issues occurred during and after the construction. The Contractor need to discuss and collect opinions beforehand with local people around the SEZ based on documents such as environment impact analysis, etc.

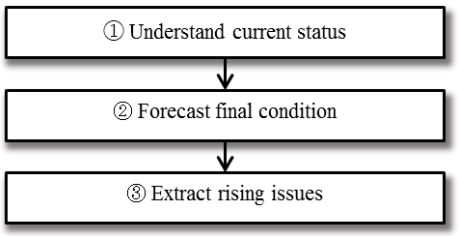
The following are examples on root causes of environmental issues occurred during the construction of IP:

i) Air pollution due to construction equipment or dust during the construction time
ii) Water pollution caused by the flow of soil and cement
iii) Soil contamination
iv) Pollution of noise, vibration, and offensive odors
v) Land subsidence, landslide
vi) Waste water treatment (impacting residential area or surrounding agricultural land)
vii) Waste treatment
viii) The change in living environment or migration

During the preliminary survey phase, it is required to assume potential environmental and social issues, then based on that, study countermeasures. In the construction planning phase, prevention plans for such issues shall be generated.

4.9 SOLUTION FOR ISSUES

To grasp issues to occur during the construction period, it is required to carefully conduct the day-to-day construction management , and deal appropriately with the detected issues through analyzing sources of the issues. The issue extraction flow is shown as below:



Source: Civil Engineering Handbook of Japan

Figure 4.9.1: Issue Extraction Flow

In case the result value of the balance of accounts or the progress of work is worse during the construction period, the following causes are assumed:

Table 4.9.1: Items to Consider

Consideration factors	Remarks
Change of social condition to cause the extra costs or the delay of the construction period	▪ Tax reform ▪ Currency reduction ▪ Strike
Change of natural conditions to cause the extra costs or the delay of the construction period	▪ Geological and soil conditions at site ▪ Outbreak of the natural disaster
Appropriateness of instructions on changes in the construction works	▪ Guidance Contents of instructions ▪ Instruction time ▪ Assessment contents, etc.
Appropriateness of issue, instruction and approval of the drawings	▪ Drawing contents ▪ Issue time of the drawings
Appropriateness of the payment amount, assessment method, deadline	

Source: Civil Engineering Handbook of Japan

The countermeasure shall be worked out and taken properly upon consulting with Client, consultant and Contractor to settle the issue arising from the above-mentioned factors. The cost of countermeasure is normally covered by contingency founds consisting of price escalation and physical contingency.

ATTACHMENT

Attachment A Environmental Monitoring Sheet (sample)

A. Construction Phase

Name of the construction site /_____/

Date of monitoring /_____/ Date of reporting /_____/

Person in charge of monitoring /_____/

Person in charge of reporting /_____/

1. Response/Actions to comments and guidance from Government Authorities and the Public

Monitoring item	Monitoring Results during the Reporting Period
Number and contents of formal comments made by the public, if any	
Number and contents of responses from the Government agencies, if any	

2.Pollution control

Item	Unit	Measured Value (mean)	Measured Value (max)	Ethiopian standards	Standards for contract	Referred international standards	Measurement points	Frequency
(1) Air Quality								
Temperature	℃							Once/ three months
humidity	%							
wind velocity	m/s							
SO2	μg/m³							
NO2	μg/m³							
CO2	μg/m³							
PM10	μg/m³							
Pb	μg/m³							
(2) Waste Water Quality								
Color	Hazen							Once/ three months
Odor	-							
pH	-							
Turbidity	NTU							
Total Dissolved solids	mg/l							
Total Hardness as CaCO3	mg/l							
(3) Solid Waste								
Kind of waste	Type							Once/ month
Amount	Ton/ day							
Record of collection	Frequency							
(4) Soil Contamination								
Oil & Grease	mg/l							
(5) Noise and Vibration								
Noise (dB)	db							Once/three months

3. Social Environment

Item	Monitoring Results	Measures to be taken
(6) Resettlement		
Progress of land title transfer		
(7) Working Conditions		
Daily recording		
Construction accidents		
Traffic accidents		
Others		

B. Operation phase

Name of the construction site /_____/

Date of monitoring /_____ / Date of reporting /_____/

Person in charge of monitoring /_____/

Person in charge of reporting /_____/

1. Response/Actions to comments and guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during the Reporting Period
Number and contents of formal comments made by the public, if any	
Number and contents of responses from the Government agencies, if any	

2. Pollution control

Item	Unit	Measured Value (mean)	Measured Value (max)	Ethiopian standards	Standards for contract	Referred international standards	Measurement points	Frequency
(1) Ambient Air Quality								
Temperature	℃							
humidity	%							
wind velocity	m/s							
SO2	μg/m³							
NO2	μg/m³							
CO	μg/m³							
(2) Indoor Air Quality								
SO2	μg/m³							
NO2	μg/m³							
CO	μg/m³							
Pb	μg/m³							
(3) Diesel Generator Stack Emission Monitoring								
SOx	mg/Nm3							
NOx	mg/Nm3							
CO	mg/Nm3							

Refer to "Influent Parameters as each CETP" and "Quality Standard of Wastewater Discharged from Factories/Offices and Entering to Sewage System"

(4) Waste Water								
	-							
	-							
	mg/l							
(5) Solid Wastes								
Kind of waste	By type							
Amount	t/day							
Cleanness of collection points	-							
Record of collection	Frequency							

3. Social Environment

Item	Monitoring results	Measures to be taken
(6) Working Conditions		
Daily recording		
Health condition of EKI staff and workers		
Labor accidents		
Traffic accidents		
Others		

Source: Prepared by EIPP Team

Attachment B Contents of the Resettlement Plan (the World Bank OP 4.12 Annex A)

1. The scope and level of detail of the resettlement plan vary with the magnitude and complexity of resettlement. The plan is based on up-to-date and reliable information about (a) the proposed resettlement and its impacts on the displaced persons and other adversely affected groups, and (b) the legal issues involved in resettlement. The resettlement plan covers the elements below, as relevant. When any element is not relevant to project circumstances, it should be noted in the resettlement plan.

2. Description of the project. General description of the project and identification of the project area.

3. Potential impacts. Identification of

(a) the project component or activities that give rise to resettlement;

(b) the zone of impact of such component or activities;

(c) the alternatives considered to avoid or minimize resettlement; and

(d) the mechanisms established to minimize resettlement, to the extent possible, during project implementation.

4. Objectives. The main objectives of the resettlement program.

5. Socioeconomic studies. The findings of socioeconomic studies to be conducted in the early stages of project preparation and with the involvement of potentially displaced people, including

(a) the results of a census survey covering

(i) current occupants of the affected area to establish a basis for the design of the resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance;

(ii) standard characteristics of displaced households, including a description of production systems, labor, and household organization; and baseline information on livelihoods (including, as relevant, production levels and income derived from both formal and informal economic activities) and standards of living (including health status) of the displaced population;

(iii) the magnitude of the expected loss--total or partial--of assets, and the extent of displacement, physical or economic;

(iv) information on vulnerable groups or persons as provided for in OP 4.12, para. 8, for whom special provisions may have to be made; and

(v) provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement.

(b) Other studies describing the following

(i) land tenure and transfer systems, including an inventory of common property natural resources from which people derive their livelihoods and sustenance, non-title-based usufruct systems (including fishing, grazing, or use of forest areas) governed by local recognized land allocation mechanisms, and any issues raised by different tenure systems in the project area;

(ii) the patterns of social interaction in the affected communities, including social networks and social support systems, and how they will be affected by the project;

(iii) public infrastructure and social services that will be affected; and

(iv) social and cultural characteristics of displaced communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs)) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.

7. Legal framework. The findings of an analysis of the legal framework, covering

(a) the scope of the power of eminent domain and the nature of compensation associated with it, in terms of both the valuation methodology and the timing of payment;

(b) the applicable legal and administrative procedures, including a description of the remedies available to alternative dispute resolution mechanisms that may be relevant to resettlement under the project;

(c) relevant law (including customary and traditional law) governing land tenure, valuation of assets and losses, compensation, and natural resource usage rights; customary personal law related to displacement; and environmental laws and social welfare legislation;

(d) laws and regulations relating to the agencies responsible for implementing resettlement activities;

(e) gaps, if any, between local laws covering eminent domain and resettlement and the Bank's resettlement policy, and the mechanisms to bridge such gaps; and

(f) any legal steps necessary to ensure the effective implementation of resettlement activities under the project, including, as appropriate, a process for recognizing claims to legal rights to land--including claims that derive from customary law and traditional usage (see OP 4.12, para.15 b).

8. Institutional Framework. The findings of an analysis of the institutional framework covering

(a) the identification of agencies responsible for resettlement activities and NGOs that may have a role in project implementation;

(b) an assessment of the institutional capacity of such agencies and NGOs; and

(c) any steps that are proposed to enhance the institutional capacity of agencies and NGOs responsible for resettlement implementation.

9. Eligibility. Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

10. Valuation of and compensation for losses. The methodology to be used in valuing losses to determine their replacement cost; and a description of the proposed types and levels of compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets.1

11. Resettlement measures. A description of the packages of compensation and other resettlement measures that will assist each category of eligible displaced persons to achieve the objectives of the policy (see OP 4.12, para. 6). In addition to being technically and economically feasible, the resettlement packages should be compatible with the cultural preferences of the displaced persons, and prepared in consultation with them.

12. Site selection, site preparation, and relocation. Alternative relocation sites considered and explanation of those selected, covering

(a) institutional and technical arrangements for identifying and preparing relocation sites, whether rural or urban, for which a combination of productive potential, locational advantages, and other factors is at least

comparable to the advantages of the old sites, with an estimate of the time needed to acquire and transfer land and ancillary resources;

(b) any measures necessary to prevent land speculation or influx of ineligible persons at the selected sites;

(c) procedures for physical relocation under the project, including timetables for site preparation and transfer; and

(d) legal arrangements for regularizing tenure and transferring titles to resettlers.

13. Housing, infrastructure, and social services. Plans to provide (or to finance resettlers' provision of) housing, infrastructure (e.g., water supply, feeder roads), and social services (e.g., schools, health services);2plans to ensure comparable services to host populations; any necessary site development, engineering, and architectural designs for these facilities.

14. Environmental protection and management. A description of the boundaries of the relocation area; and an assessment of the environmental impacts of the proposed resettlement3and measures to mitigate and manage these impacts (coordinated as appropriate with the environmental assessment of the main investment requiring the resettlement).

15. Community participation. Involvement of resettlers and host communities,4

(a) a description of the strategy for consultation with and participation of resettlers and hosts in the design and implementation of the resettlement activities;
(b) a summary of the views expressed and how these views were taken into account in preparing the resettlement plan;
(c) a review of the resettlement alternatives presented and the choices made by displaced persons regarding options available to them, including choices related to forms of compensation and resettlement assistance, to relocating as individuals families or as parts of preexisting communities or kinship groups, to sustaining existing patterns of group organization, and to retaining access to cultural property (e.g. places of worship, pilgrimage centers, cemeteries);5and
(d) institutionalized arrangements by which displaced people can communicate their concerns to project authorities throughout planning and implementation, and measures to ensure that such vulnerable groups as indigenous people, ethnic minorities, the landless, and women are adequately represented.

16. Integration with host populations. Measures to mitigate the impact of resettlement on any host communities, including

(a) consultations with host communities and local governments;
(b) arrangements for prompt tendering of any payment due the hosts for land or other assets provided to resettlers;
(c) arrangements for addressing any conflict that may arise between resettlers and host communities; and
(d) any measures necessary to augment services (e.g., education, water, health, and production services) in host communities to make them at least comparable to services available to resettlers.

17. Grievance procedures. Affordable and accessible procedures for third-party settlement of disputes arising from resettlement; such grievance mechanisms should take into account the availability of judicial recourse and community and traditional dispute settlement mechanisms.

18. Organizational responsibilities. The organizational framework for implementing resettlement, including identification of agencies responsible for delivery of resettlement measures and provision of services; arrangements to ensure appropriate coordination between agencies and jurisdictions involved in implementation; and any measures (including technical assistance) needed to strengthen the implementing

agencies' capacity to design and carry out resettlement activities; provisions for the transfer to local authorities or resettlers themselves of responsibility for managing facilities and services provided under the project and for transferring other such responsibilities from the resettlement implementing agencies, when appropriate.

19. Implementation schedule. An implementation schedule covering all resettlement activities from preparation through implementation, including target dates for the achievement of expected benefits to resettlers and hosts and terminating the various forms of assistance. The schedule should indicate how the resettlement activities are linked to the implementation of the overall project.

20. Costs and budget. Tables showing itemized cost estimates for all resettlement activities, including allowances for inflation, population growth, and other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for resettlement, if any, in areas outside the jurisdiction of the implementing agencies.6

21. Monitoring and evaluation. Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.

Source: The World Bank OP 4.12 Annex A

IPDC
Industrial Parks Development Corporation
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EIPP

IPDC-EIPP JICA Team

September 2018

別添資料 10

クレーム対応に係るワークフロー及び各種フォーム

Work Flow for Complaint Handling

IPDC BLIP Branch Manager	Step-1: Receiving investor's complaints through (1) Weekly meeting with investor's manager and the investors' association (2) Directly from investor (3) Regular visit by customer service expert (4) Investors' association
	Step-2: Registering the complaint and requesting actions for resolution (1) Register on the "Form-1: Complaint Handling Control Sheet". (2) Request for actions to the responsible agency by "Form-2: Request for Complaint Handling" and/or phone according to degree of urgency of the complaint
Responsible agencies for complaint handling	Step-3: Investigatiing the causes of complaint
	Step-4: Resolving the complaint causes
	Step-5: Report results or interim-results of complaint handling to IPDC BLIP Branch Manager writing in the lower parts of "Form-2"
IPDC BLIP Branch Manager	Step-6: Record results or interim-results of complaint handling on "Form-1: Complaint Handling Control Sheet" .
	Step-7: Send the report on complaint handling to the representative of relevant investor by "Form-3: Report to Investor".
	Step-8: Receive accetance and/or comments from the Investor written in the lower part of Form-3.
	Step-9: Regularly report to IPDC Home Office by Form-4.

Form-1: Control Sheet for Complaint Handling

Category	Water	Degree of Urgency	Urgent (within 24 hours)

IPDC BLIP Branch Manager Controller of Complaint Handling	Name	Mr.H
	Phone	000-070
	Email	000-007@ethiopia.com

Receiving Complaint

Title of Complaint		The accident of main water pipe ruputure
Receiving Date & Time	Date (DD/MM/YY)	11/12/2018
	Time (h:mm A/P)	09:35:00 AM
Complainant Information	Company Name	**H**
	Representative	Mr.H
	Phone No.	000-070
	Email Address	000-007@ethiopia.com
	Complainant	Mr.ABCD
	Phone No.	********
	Email Address	*******@gmail.com
Complaint Content	When	Around 9:30
	Where	On the street in fromnt of BLIP main gate
	Who	complaint
	What	water was blowing out of a water pipe
	Why	it seems that the bolt was broken
	How	t**********

Request for Resolving the Complaint

Date (Issue of Request Letter)		11/12/2018
Advance contact time by phone		09:36:00 AM
Responsible Agency	Agency Name	Water Authority under Addis Ababa City Administration
	Person in Charge	Mr.R
	Phone No.	000-170
	Email Address	000-017@ethiopia.com

Report from the Responsible Agency

Receipt Date of Report		11/12/2018
Cause of the problem		Damaged flange bolt***
Action	Date (DD/MM/YY)	11/12/2018
	Time (h:mm A/P)	09:45:00 AM
	Actions taken	*********
Completion of resolving the complaint	Date (DD/MM/YY)	11/12/2018
	Time (h:mm A/P)	09:50:00 AM
Interim-results of resolution (If it takes longer than the time of	Reasons for delay	
	Measures taken to resolve the	
	Expected date of resolution	

Report to the Tenant and Acceptance and/or Comments from the Tenant

Issue of Reporting Letter to the tenant (DD/MM/YY)	12/12/2018
Receipt of acceptance from the tenant (DD/MM/YY)	00/01/1900
Comments from the tenant	

Regular Report to Aftercare & IP Management Directorate Director of IPDC HO

Issue of the latest Updated Report to IPDC HO	15/12/2018
Supplementary explanation from IPDC Branch Manager	*******

Form-2: Request for Complaint Handling

Date	11/12/2018	
To	Mr.R	Water Authority under Addis Ababa City Adminis
	000-017@ethiopia.com	000-170
From	Mr.H	IPDC BLIP Branch Manager Controller of Complaint Handling
	000-007@ethiopia.com	000-070
Subject	Request for resolving The accident of main water pipe ruputure	

The following complaints / problems occured as I told you by phone today. I appreciate it if you would resolve the complanits / problems, according to the urgency requested below.

After the resolving it, please fill the lower field of this sheet and send back to me.
I appreciate your cooperation.

Complaints and problems

Degree of Urgency		Urgent (within 24 hours)
Receiving Date & Time	Date	11/12/2018
	Time	9:35:00 AM
Problem Occurrence	When	Around 9:30
	Where	On the street in fromnt of BLIP main gate
	Who	complaint
	What	water was blowing out of a water pipe
	Why	it seems that the bolt was broken
	How	t**********

Below from here are the entry fields of the Agency for complanint handling

Written and sent by		
Phone		
Email		
Date of sending back (DD/MM/YY)		
Cause of Complaint		
Actions taken by the Agency	Date (DD/MM/YY)	
	Time (h:mm A/P)	
	Actions	
Completion of resolving the complaint	Date	
	Time	
	Reason for delay	
	Measures taken	
	Expected completion (DD/MM/YY)	

Note: Use Gregorian calendar and international time for the date and time.

Form-3: Report to Investor

Date	11/12/2018	
To	Mr.H	H
	000-007@ethiopia.com	000-070
CC	Mr.ABCD	
	*******@gmail.com	********
From	Mr.H	IPDC BLIP Branch Manager Controller of Complaint Handling
	000-007@ethiopia.com	000-070
Subject	Report on The accident of main water pipe ruputure	

We are happy to report the result of resolving the captioned complaint or problem that was requested from your company as follow.
Please fill in your opinion in the lower box and return thsi letter to me.

Complaints and problems

Degree of Urgency (our request to the agency)		Urgent (within 24 hours)
Receiving Date & Time	Date	11/12/2018
	Time	9:35:00 AM
Cause of the problem	Damaged flange bolt***	
We completed the solution.	Date	11/12/2018
	Time	9:50:00 AM
We are still ongoing resolution.	Reason for delay	0
	Expected completion (DD/MM/YY)	0

Note: Use Gregorian calendar and international time for the date and time.

Below from here are the entry fields of the investor

Please indicate your acceptance and comments below.

(1) When we completed the solution, please enter hereunder.

Accept	*Yes or No*	
Accept with comments	*Yes or No*	
Comments	*Describe*	
Not accept	*Yes or No*	
Reasons for not accepting	*Describe*	

(2) When we are still ongoing resolution, please enter hereunder.

Agreed. Please continue.	*Yes or No*	
Not agree and want to talk with you.	*Yes or No*	
Comments	*Describe*	

Please indicate below.

Your Name		
Date of sending	DD/MM/YY	

Form-4: Report to HO

Complaint Handling Report

IPDC Branch Manager at BLIP

Title	Complainant (Investor)	Category	Responsible Agency	Degree of Urgency	Receiving Date	Action Date	Completion Date	Report to Investor Date	Acceptance Date	Comments from Investor	Supplementary Explanation from IPDC Branch Manager
The accident of main water pipe ruputure	H	Water	Water Authority under Addis Ababa City Administration	Urgent (within 24 hours)	11/12/2018	11/12/2018	11/12/2018	12/12/2018	0.40972222	0	*******