

Building Disaster and Climate Resilient Cities
in
ASEAN

Inception Report

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Japan International Cooperation Agency (JICA)

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CHAPTER 1 INTRODUCTION

1.1 BACKGROUND

Due to their climatic environment and geological property, disaster risk in ASEAN area is high and it bring number of disasters to ASEAN countries. Approximately 90% of victims of natural disasters are from Asia according in accumulated total of the record from 1984 to 2013.

According to the study conducted by Swiss Re¹, Asia's metropolitan cities are most at risk from natural hazards. Based on their population exposure to five natural hazards of river flood, earthquake, tsunami, wind storm, and storm surge combined, the top five riskiest conurbations are all in East and Southeast Asia.

While at the same time, today, more people move and live in cities from rural areas. By 2050, it is expected that 68 percent of the world's population would live in urban areas. This unprecedented growth of cities, particularly in countries in the ASEAN region cause problems of resource management and land use management and poses a huge challenge to disaster risk management and sustainable development.

Not only being key drivers of economic growth and political, social, and cultural hubs for its own countries, but cities are highly interconnected to the global economic system. When disasters strike such economic centers, the ripple effects can be felt for thousands of miles and years to come. In fact, Great East-Japan Earthquake in Japan Chao Phraya river great flood in Thailand both occurred in 2011 have brought not only human and economic damages but furthermore, the disasters have impacted the regional and world economy by affecting the supply chain. Under the globalization trends in modern society, once a city is hit by a disaster, it causes not only human casualties but also impacts the national, regional and, to some extent, the global economy.

Hence, building urban resilience to disaster and climate risks has become an important issue in ASEAN region, and ASEAN Committee on Disaster Management (ACDM) and ASEAN counties have been addressing disaster risk reduction in regional level

1.2 PURPOSE OF PROJECT

Based on Concept Note 18 (CN 18) "Building Disaster and Climate Changes in ASEAN Cities" of AADMER Work Programme Phase 2 under ACDM Working Group on Prevention and Mitigation, this project will develop the implementation framework for CN 18.

Overall, this project aims to increase the resilience of ASEAN cities to disasters through the following:

- 1) Establishment of a cross-sectoral collaboration mechanism at the regional level to facilitate partnerships among stakeholders in urban development planning and disaster risk reduction and climate risk management;
- 2) Integration of disaster risk reduction and climate change adaptation measures in urban development, land use planning processes, and building regulations; and
- 3) Improvement of the capacities of ASEAN Member States to assess urban risk and implement urban disaster and climate risk management policies and measures.

1.3 EXPECTED OUTPUTS

- 1) Establishment of a regional cross-sectoral collaboration mechanism and formation of partnerships to increase urban resilience in ASEAN;

¹ Sundermann, L., Schelske, O., and Hausmann, P. 2013 Mind the Risk. Zurich: Swiss Re.

- 2) Evaluation of candidate cities, indicator development for city resilient and commitment and partnership building for the demonstration project on risk assessment of priority cities in ASEAN Member States ; and
- 3) Development of tools on building resilient cities in ASEAN

1.4 PROJECT AREA

ASEAN countries (10 member states)

CHAPTER 2 APPROACHES FOR THE PROJECT

2.1 PRINCIPLE OF TECHNICAL APPROACHES

[Technical Approach 1]: Close Coordination with ASEAN Secretariat and ASEAN Member States

ASEAN Secretariat, which is a member of Steering Committee of this project and plays a role of focal point/facilitator of ASEAN Member States, has a base in Jakarta, Indonesia. The Project Team also tentatively locates the base of project activities at Jakarta to smoothly communicate with ASEAN Secretariat.

The Project Team basically communicates with ASEAN Member States through ASEAN Secretariat. In addition, the team leader and secretariat management expert will visit operational focal point of each ASEAN Member States in the beginning of the Project. The Project Team will share the same understanding of project purposes, necessity of active participation under AADMER Work Programme Phase 2 CN 18 with the ASEAN Member States by realizing face to face communication. The Project Team creates the working environment where the Project Team, ASEAN Secretariat, and ASEAN Member States can closely coordinate with one another during the project period.

[Technical Approach 2]: Assistance to Promote Active Participation by Stakeholders of ASEAN Member States toward Building Disaster and Climate Resilient Cities in ASEAN

This Project is required to strengthen coordination among ASEAN Member States and construct network for the coordination. The Project Team encourages ASEAN Member States to active participation with the following approaches.

(1) Clarification of Position and Purposes of Forum, and Dissemination to Stakeholders

The Project Team will disseminate the position and purposes of forum based on the background of AADMER Work Programme Phase 2 CN 18 to ASEAN Member States, in order to foster understanding by ASEAN Member States during the project period. About half year would pass to have the first Forum since the Project starts. It is necessary for the Project Team to have an opportunity of direct talk with ASEAN Member States, deepen understanding of ASEAN Member States, and raise awareness for active participation and cooperation to the forum. To have this opportunity, the Project Team will visit each ASEAN State and directly talk with the operational focal points in ASEAN Member States.

(2) Promotion of Networking and Communication by Utilizing Meeting and Publicity

The Project Team will set networking time to encourage direct exchange among the members in forum and workshop. The Project Team also addresses “promotion of interactive communication”, “information dissemination to be able to see the presence of the stakeholders”, “carrying information to meet the needs of the stakeholders”, and “encouraging feedback from the stakeholders” by disseminating not only project outputs and progress but also beneficial information for the stakeholders.

(3) Discussion on Self-reliance of Forum including Secretariat Organization and Action Plan

To ensure sustainability of the forum after the project completion, ASEAN Member States need to examine operational approach and build consensus among the concerned organizations during the project period. To encourage the discussion among ASEAN Member States on future self-reliant forum, the Project Team promotes examination on secretariat of the forum and action plan. Continuation of the forum requires operational budget, so the Project Team will propose approaches of budgeting by referring the similar instances

with the forum.

[Technical Approach 3]: Efficient Data Collection in combination with Existing Data and Field Surveys

The Study Team will collect baseline data for the project through three key measures by 1) utilizing data collected by current studies, 2) collecting key data from the ASEAN stakeholders and 3) conducting field surveys to collect primary data of candidate cities in ASEAN Member States.

The study team will give the priority to two measures of 1) and 2), taking account of homogeneous data level in every country to minimize data gaps of quantity and accuracy for wide spread 10 countries in ASEAN. However, the study team will also conduct field surveys by sub-contracts in ASEAN countries to collect considerable primary and/or detailed data such as current disaster management and operation status in each country through direct visits with data requests and interviews.

Table 2.1.1 Three Key Measures for Data Collection

Method	Approach	Relevant Organizations
Utilizing Data Collected by Current Studies	Relevant current studies collection implemented by JICA	ASEAN Country Reports on the Data Collection Survey on ASEAN Regional Collaboration in Disaster Management 2012
		Natural disaster risk assessment and area business continuity plan formulation for industrial agglomerated areas in the ASEAN region 2015
	Online studies collection implemented by ASEAN and its countries, International Organizations	Relevant organization web-site (ASEAN, AHA Center, UNISDR, GFDRR, DRR, IGES, ADRC, UNEP-GRID, WB, ADB, etc)
Collecting Key Data from the ASEAN Stakeholders	Data collection through contact focal points	10 countries in ASEAN (e.g. each NDMOs and/or key relevant ministry's officer)
	Data collection from relevant international organizations and ASEAN countries through supports from of ACDM-ASEAN	AHA Center
		UNISDR, 100 Resilient Cities (Rockefeller Foundation), Other relevant international organization covering ASEAN Member States
Conducting Field Surveys	Detailed data collection through surveys by sub-contract bodies in each ASEAN Member State	Relevant administration offices of candidate cities in the middle-list for the demonstration project on risk assessment in ASEAN Member States

Source: JICA Project Team

[Technical Approach 4]: Creating a draft TOR for a widely deployable demonstration project for ASEAN cities.

In ASEAN countries, since disaster types and urban development situations are assumed to be different, risk are different. The Project Team will carry out a study of the draft TOR for the demonstration project. At the same time, the Project Team will examine a shortlist of candidate cities of this project and disaster types taking into account the position of the target cities in each ASEAN countries.

(1) Creating a draft TOR to be a widely deployable in the strengthening disaster resilience in ASEAN cities

The purpose of creating a draft TOR for widely deployable demonstration project is to contribute to the strengthening disaster resilience cities of ASEAN countries. The content of a draft TOR will consider capability in the ASEAN countries, the availability of information in each country, and the abilities, etc. of government and stakeholders.

In addition, after the end of the study, there is a need to make continuous efforts in the project by ASEAN

officials after the study team stops work. The TOR will cover project implementation and evaluation using the PDCA cycle that enables constant improvement, including how to implement, how to evaluate, how to improve and how to plan again.

(2) Consensus building in the candidate city selection process

Candidate cities will be cities that can be used as a guide for all ASEAN. Criteria of the city selection will include consideration of disaster type, topography, and population size. It will also reference the opinions from national officials. These criteria and review process should contribute to make smooth consensus building and distribution. By sharing information, common understanding among the parties is expected to be secure.

[Technical Approach 5]: Creating useful practitioner tools based on good examples of resilient urban development, including proposals for disaster functions

Tools (guides) about resilient urban development should be descriptive and understandable for practitioners who come from a cross-section of organizations. Creation of policies is described below.

(1) Classification by characteristics of the good practices

The classification should include ASEAN countries efforts and good cases of planning the strengthening cities based on the characteristics of the cities.

Classification should aim to clarify the role of the parties concerned for implementation. Users need to be allowed to take advantage of the status of the city depending on their position.

(2) Illustrate the role of the various stakeholders involved in resilient urban development

Tools will be created on the assumption that the users have diverse positions and so will reflect these different roles. Specifically,

- ✓ Supervision of the existing plan and private operators as an administrative director
- ✓ Development of work as a public facility repair person, including infrastructure
- ✓ Work by operators to maintain and run facilities and measures related to disaster prevention
- ✓ Practitioner awareness of measures for residents.

(3) Proposed method of utilization of disaster functions for resilient urban development

Samples of the use of methods will be prepared for utilization. The causes, disaster types, urban planning and development situations need to be applied to the current situation of each of the cities in different ASEAN countries.

2.2 PRINCIPLE OF OPERATIONAL APPROACHES

[Operational Approach]: Utilizing Network of Project Team and Local Consultants in ASEAN Countries

The leading firm of the Project Team has branch offices in Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand, and Viet Nam. The Project Team will utilize the network with the branch offices and receive their support in contacting ASEAN Secretariat, Co-Chairs of ACDM Working Group on Prevention and Mitigation, and Operational Focal Point, for collecting data and information, making appointments for interviews, etc., when the Project Team members work in Japan.

The Project Team will subcontract some data and collection works to local consultants in surveys for some ASEAN Member States to collect necessary data and information efficiently, because the local consultants are familiar with local information and data sources and have connections with the concerned government organizations.

CHAPTER 3 PLAN OF OPERATION

3.1 OVERALL WORK FLOW OF THE PROJECT

The Project has been commenced in the early November 2015 and expected to complete in the end of April 2017. Overall work flow of the Project is presented in Figure 3.1.1.

3.2 PLAN OF OPERATION

[1] Establishment of ASEAN Urban Resilience Forum and holding workshop

(1) Establishment of ASEAN Urban Resilience Forum

JICA Project Team will support establishment of ASEAN Urban Resilience Forum for concerned stakeholders from 10 ASEAN member states. ASEAN secretariat and Lao PDR and Thailand as co-chairs of Prevention and Mitigation WG are expected to be in charge of giving instruction to each member state, and JICA Project Team will support them by providing necessary documents etc.

(2) Holding ASEAN Urban Resilience Forum meeting

JICA Project Team will plan and hold ASEAN Urban Resilience Forum meetings, in total two times. Secretariat/operation office will be in charge of it with cooperation with ASEAN secretariat. Expected schedule of the forum meetings are shown in Table 3.2.1. The venue of the meetings will be confirmed in Project Steering Committee.

Table 3.2.1 Expected schedule and agendas of forms meetings

Forum meeting	Expected period	Expected agenda
First forum meeting	July 2016	<ul style="list-style-type: none">• Purpose, principle and strategy of ASEAN Urban Resilience Forum• Relation between Forum and this project• Discussion on draft term of Forum membership• Discussion on draft action plan for forum• Presentation/speech by resource persons from other donors
Second forum meeting	March 2017	<ul style="list-style-type: none">• Introduction of draft TOR of demonstration project and its candidate cities• Introduction of tool for building resilient cities• Determination of the term of Forum membership• Presentation/speech by resource persons from other donors

Source: JICA Project Team

(3) Holding Workshops

JICA Project Team will plan and hold workshops, in total four times. Expected schedule of the forum meetings are shown in Table 3.2.2. JICA Project Team will be a moderator and give presentations basically on introduction and discussion about project (intermediate) outputs. The venue of the workshops will be discussed in Project Steering Committee.

Table 3.2.2 Expected schedule and agendas of workshops

Workshops	Expected period	Expected agenda
Workshop on Data of ASEAN Cities	July, 2016	<ul style="list-style-type: none"> • Criteria of Long-listed cities • Result of data gathering on long-listed cities • Primary risk assessment of ASEAN cities • Draft contents of demonstration project • Discussion
Workshop on fragility curve	December,2016	<ul style="list-style-type: none"> • Background of developing fragility curve • Methodology and steps of developing fragility curve • Proposed future improvement of fragility curve • Proposed utilization of fragility curve • Discussion
Workshop on draft check list for land use and urban planning	December,2016	<ul style="list-style-type: none"> • Problems of disaster response in ASEAN cities • Current situation of land use and urban planning • Draft check list
Workshop on draft check list for disaster response and measures	December,2016	<ul style="list-style-type: none"> • Proposed action for concerned agencies to future utilization of check list • Discussion

Source: JICA Project Team

(4) Development Action plan for ASEAN Urban Resilience Forum

JICA Project Team will develop draft action plan with close cooperation with steering committee. Action plan shall includes 1) course of action such as purpose, secretariat function, frequency of meetings, and 2) strategy such as intermediate and final goals, active period, etc.

Expected target periods shall be decided based on discussion with steering committee, through it is tentatively considered as three years.

JICA Project Team will collect opinions on draft action plan at the first ASEAN Urban Resilience Forum meeting and develop revised draft action plan. Proposed action plan will be determined by confirmation of steering committee.

[2] Facilitation for enhancing networking among stakeholders

(1) Development of terms of Forum membership

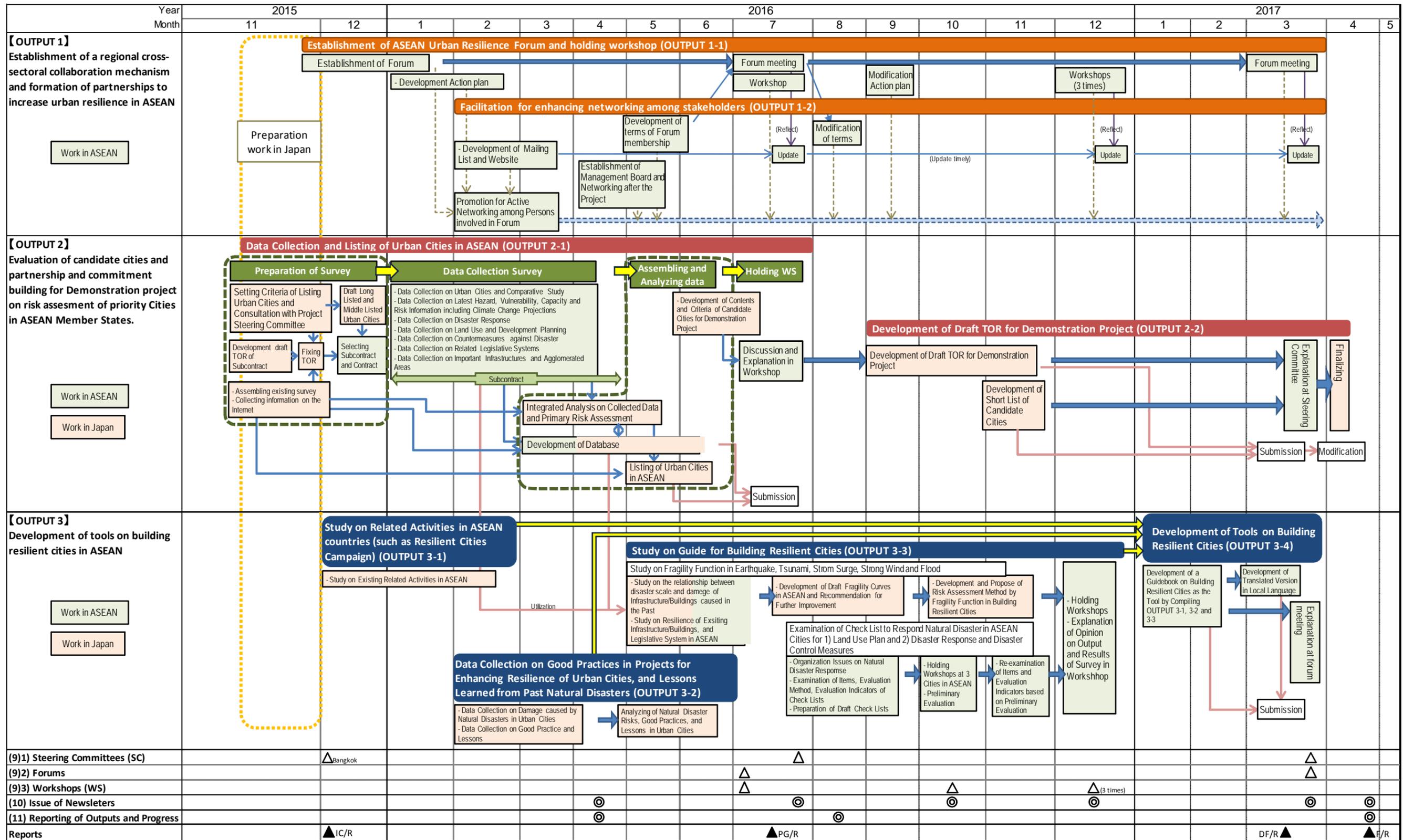
JICA Project Team will develop draft terms of Forum membership based on terms and guidelines of related organizations and frameworks such as ASEAN, ACDM, and AADMER. Framework of the terms shall be deeply discussed in steering committee in order to make the forum sustainable.

JICA Project Team will collect opinions on draft terms at the first ASEAN Urban Resilience Forum meeting and develop revised draft terms. Proposed terms will be determined by confirmation of steering committee.

Table 3.2.3 Expected framework of terms

Items
1. Name of forum / 2. Purpose / 3. Activities / 4. Members / 5. Supporting members / 6. Condition of membership / 7. General meeting / 8. Planning committee / 9. Accounting / 10. Secretariat / 11. Miscellaneous provisions

Source: JICA Project Team



Source: JICA Project Team

Figure 3.1.1 Overall Work Flow

(2) Developing Mailing List

At the timing of establishment of Forum and visit to ASEAN Member States, JICA Project Team requests prospective participants in Forum to share the contact address of focal points and related information and develop a contact list based on submitted information. Regarding this information sharing, from viewpoint of information management, JICA Project Team will clearly explain to focal points that provided information will be published and shared among participants in Forum.

JICA Project Team will also create a mailing list system among focal points in ASEAN Member States, by utilizing private e-mail mailing list service.

In order to facilitate the usage of the mailing list among ASEAN Member States, JICA Project Team will transmit the progress of the project, future plans and information related to building resilient cities, especially in the beginning period of the project.

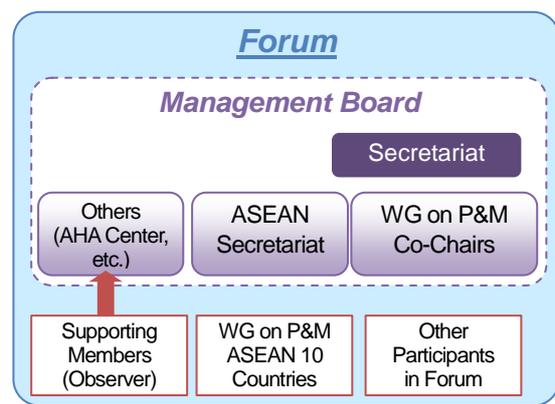
(3) Development of Website

JICA Project Team will develop the website in order to disseminate progresses of the project, to report Forum/Workshop, to share the information and promote public relations. Since it is expected that this website will be utilized continuously after this project ends, JICA Project Team will set the development base in Jakarta where both of ASEAN Secretariat and AHA center locate. In the development process, firstly, the website will be published among only Steering Committee Members including JICA in order to check the contents and then opened to the public.

(4) Establishment of Management Board and Networking after the Project

As of now, December 2015, it is expected that the management board and secretariat mentioned in Figure 3.2.1 will manage Forum after the Project. Regarding the formulation of management board, it is important to take ASEAN's intention into consideration, therefore JICA Project Team will prepare the draft idea of management board members. Based on the proposed idea, JICA Project Team will discuss on it with JICA, ASEAN Secretariat and ACDM WG on Prevention and Mitigation, for realistic and effective establishment of management board.

JICA Project Team expects that framework of networking among member states after the project will be basically based on the forum networking which will be created during the project. Therefore JICA Project Team will prepare the instructions for taking over of activities, such as management (periodical updating) of contact address/ mailing list, information dissemination on website and convening Forum for information sharing.



Source: JICA Project Team

Figure 3.2.1 Prospected Constitution of Management Board

(5) Promotion for Active Networking among Persons involved in Forum

In order to promote the active networking among persons involved in Forum, JICA Project Team conducts the following activities;

- Providing an opportunity for networking as lunch time in Forum meeting
- Transmitting and sharing information periodically by mailing and updating website
- Visiting focal points in ASEAN Member States in early stage and explaining the objectives of the Project, formulation of Forum, information dissemination, and establishment of networking

(This visit will be conducted by Team Leader and Coordinator of JICA Project Team, through mediation of ASEAN Secretariat)

【1】 Data Collection and Listing of Urban Cities in ASEAN

(1) Setting Criteria of Listing Urban Cities and Consultation with Project Steering Committee

The selection criteria for long list and middle list of the urban cities in ASEAN was set by the JICA Project Team during the preparatory study in December 2015 in Japan, which shall be finalized in the second Project Steering Committee.

(2) Data Collection on Urban Cities in ASEAN and Comparative Study

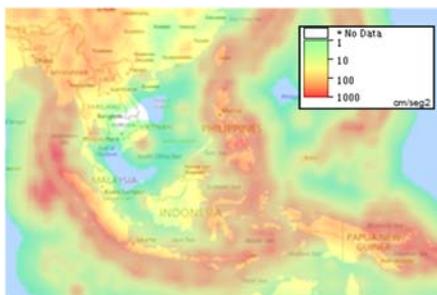
The data on population, social and economic indicators, etc. shall be collected for the long listed urban cities first. Then, the comparative study shall be made to select the middle and short listed urban cities.

(3) Data Collection on Latest Hazard, Vulnerability, Capacity and Risk Information in Urban Cities in ASEAN including Climate Change Projections

The following latest data in urban cities in ASEAN shall be collected:

a) Various Hazard Data :

- Kind of Past Disasters, Date & Place, etc.
- Scale/Magnitude (Rainfall Amount, Earthquake Intensity, Wind Velocity, Flood Inundation Area/Depth/Duration, etc.)
- Damages (Nos. of Casualty/Affected People/Damaged Houses, etc.)
- Interrupted Period of Public Service (Electricity, Gas, Water Supply, Road, Railway, etc.)



Source: JICA Project Team



Source: JICA Project Team

**(Left) Figure 3.2.2 Example of Earthquake Hazard Map²
(Right) Figure 3.2.3 Example of Active Fault Map³**

² GAR Risk Data Platform : <http://risk.preventionweb.net/capraviewer/main.jsp>

³ Asia-Pacific: Tectonic Plates and Faults, OCHA, 2014

b) Causes of Secondary Disasters including Natech Disaster :

- Types of Past Disasters, Date & Place, etc.
- Characteristics of Damaged Industrial Agglomerated Areas (Kind, Location, etc.)

c) Vulnerability of Urban City :

- Population, Infrastructure, Buildings, Industry, Topography, Land Use, etc.

d) Influence by Climate Change :

- Type (Due to flood by increase in rainfall amount/intensity, due to storm surge, etc.), Impact, etc.
- Characteristics of Damaged Industrial Agglomerated Areas (Type, Location, etc.)

e) Possible Disaster Risk and Major Impact :

- Studied in each urban city

(4) Data Collection on Disaster Response in Urban Cities in ASEAN

The following data on disaster response shall be collected for middle listed cities in view of 1) Are “Prevention & Mitigation” concept/measures incorporated into the urban disaster plan? 2) Are manpower and equipment well arranged in the plan? 3) Were activities undertaken as planned during disasters in the past?

- 1) Hard Measures: Immediate Restoration of Telecommunication Facilities, Urgent Measures for Secondary Disaster, etc.
- 2) Soft Measures: Warning Dissemination System, Evacuation System, Urgent Inspection of Related Structures/Facilities, Prompt Collection/Dissemination of Disaster Information, Rescue/Relief Activities, Medical Activities, Fire Fighting, Traffic Management, Emergency Transportation, Publication/Dissemination Information to Affected People, Health/Hygiene Activities, etc.

(5) Data Collection on Land Use and Development Planning on Urban Cities in ASEAN

The Project Team collects information of land use controls and development plans for middle listed cities.

Table 3.2.4 Information Collection on Land Use Condition and Development Plans

Item	Analysis of Information	Information to be collected
With or without of control considering natural disaster	<ul style="list-style-type: none"> • With or without of designation of disaster hazard area by identifying hazardous areas of tsunami, high tides, floods, and areas with soft grounds and active faults • With or without of land use control to disaster hazard areas including development restriction on flood plains 	<ul style="list-style-type: none"> • Upper Plans • Urban Plan / Spatial Plan • Land Use Policy and Approach • Land Use Control / Spatial Use Control
Land use conditions on disaster hazard areas	<ul style="list-style-type: none"> • Land use practice and future land use plan at disaster hazard areas (for example, how to control land use on flood plains and how flood plains will be used in future land use) 	<ul style="list-style-type: none"> • Current Land Use Map • Future Land Use Plan / Spatial Plan • GIS vector data (if possible) • Reference of database link of Raster Data • Open source satellite images
With or without consideration of evacuation	<ul style="list-style-type: none"> • With or without of land use policy and approach considering evacuation when disaster occurs 	<ul style="list-style-type: none"> • Land Use Policy and Approach
With or without development plans in disaster hazard areas	<ul style="list-style-type: none"> • With or without developments projects such as housing development, industrial development, road developments, in disaster hazard areas 	<ul style="list-style-type: none"> • Locational Information of Development Plan / Projects

Source: JICA Project Team

(6) Data Collection on Countermeasures against Disasters on Urban Cities in ASEAN

The following data on countermeasures against disasters on middle listed cities shall be collected:

1) Structural Measures

Data and Location related to a) Earthquake Resistance for River/Coastal Dike, b) Dam/Reservoir, Retarding Basin, Floodway, c) Wind Break Facility, d) Sabo Dam, e) Evacuation Center, f) Pumping Station, g) Building, etc.

2) Non-Structural Measures

Data on a) Organization of Local Government, b) Community Disaster Mitigation (Organization), c) Disaster Education, d) Disaster Fighting, e) Disaster Forecasting and Warning System, f) Hazard Map, g) Evacuation Plan, etc.

(7) Data Collection on Related Legislative Systems in ASEAN

JICA Project Team will collect following information in each National, State/Provincial and City levels.

1) Disaster management plan, e.g. disaster measures plan, disaster response plan, Disaster recovery/rehabilitation plan, Evacuation plan, and Business continuity plan.

2) Agreement, framework of mutual cooperation between concerned agencies, e.g. other cities, superagencies, and private sectors.

3) Organizations for disaster management

(8) Data Collection on Important Infrastructures and Agglomerated Areas

The JICA Project Team will collect baseline data and information for current key infrastructure status (e.g. key sea ports, airports, trunk road networks, railway networks) and industrial agglomerated areas in each ASEAN country in general, and collect detailed information of them in the middle listed cities through the sub-contract field surveys in each ASEAN country, while the study team will review the data of the study of “Natural Disaster Risk Assessment and Area Business Continuity Plan Formulation for Industrial Agglomerated Areas in the ASEAN Region” for relevant data collection.

Table 3.2.5 shows items for data collection for infrastructure and industrial agglomerated areas by level of data (general and detail).

Table 3.2.5 Category of data collection for Important Infrastructure and Agglomerated Areas

Category	Items for Facilities to be Collected (location and relevant statistical data)	Data Collection Level	
		Country General	Candidate Cities
Road and Transportation	Regional and national highways, expressways, railways	●	If any
	Key bridges on the regional and national highways, railways	●	If any
	Provincial highways and railways with bridges	--	●
	Regional and national transportation ports (sea, air, land depot)	●	If any
	Provincial key transportation ports (sea, air, land depots)	--	●
Energy	Power station including (nuclear plant) with high-voltage lines	●	If any
	Agglomerated areas for petroleum and gas tanks	●	If any
Water Supply	Key water treatment plants in cities and surroundings	--	●
	Key water reservoir and dams in cities and surroundings	--	●
Telecommunication System	Key regional and national stations for telecommunications (incl. satellite base)	●	If any
	National and provincial key telecommunication facilities	--	●
Industrial Agglomerated Area	National industrial zone (park, SEZ, hi-tech, chemical plant) by FDI	●	If any
	Other industrial agglomerated areas (national/provincial economic areas)	--	●

Source: JICA Project Team

(9) Integrated Analysis on Collected Data and Primary Risk Assessment

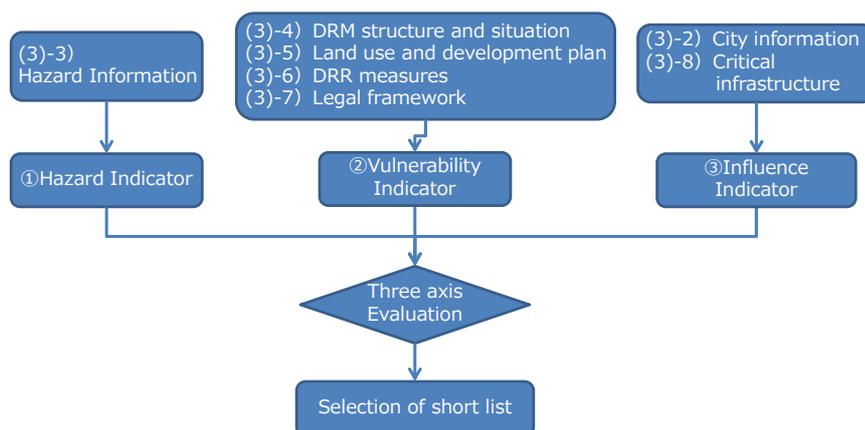
Based on the information collected through (2) to (8), the integrated analysis on collected data and primary risk assessment shall be made by utilizing the following three (3) assessment index, i.e., 1) Hazard, 2) Vulnerability, and 3) Influence.

In general, "Hazard × Vulnerability = Risk", therefore three (3) assessment index shall be set by the following table:

Table 3.2.6 Assessment Index and Concept

Assessment Index	Assessment Concept
(1) Hazard	Level of hazard risk in each urban city shall be assessed (For earthquake, hazard indicator will be scored by normalizing Peak Ground Acceleration (PGA) under the same return period, For flood, based on recorded maximum flood).
(2) Vulnerability	Items related to vulnerability of urban city shall be identified and assessed, and weighting of assessment score for items shall be set based on discussions with concerned agencies.
(3) Influence	Importance of urban city and influence of economic damages shall be assessed.

Source: JICA Project Team



Source: JICA Project Team

Figure 3.2.4 Flow chart of preliminary disaster risk assessment

(10) Development of Database

The JICA Project Team will assemble collected and analyzed data to GIS database. Table 3.2.7 shows the points of GIS database work.

Table 3.2.7 Points of GIS database work

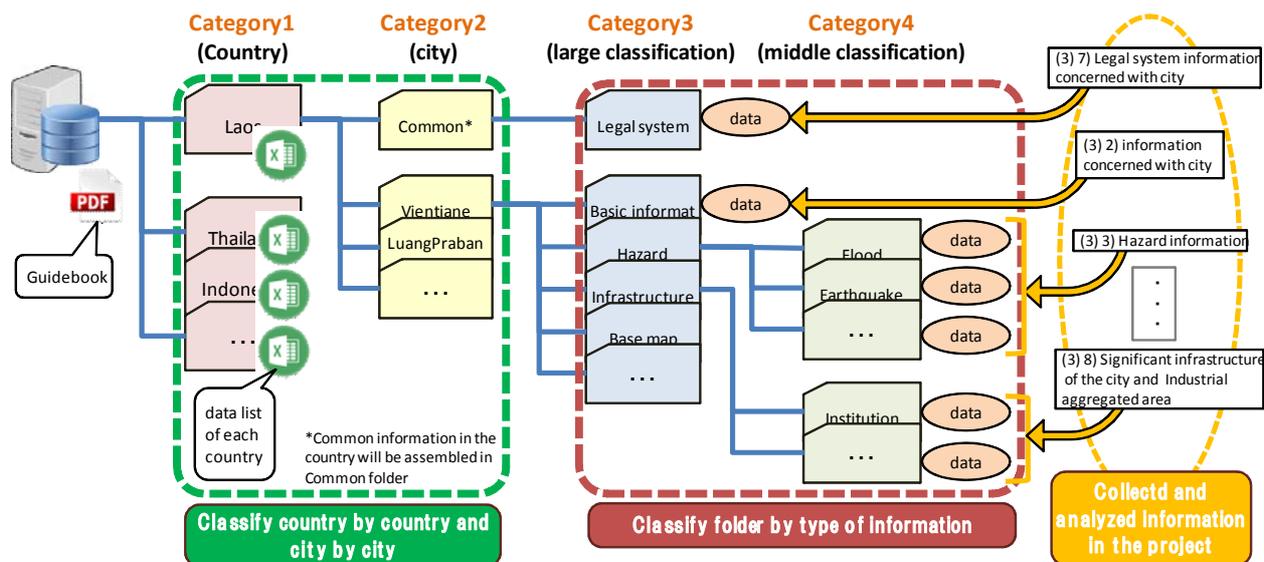
Items	Points of Work
Confirmation of existing database	<ul style="list-style-type: none"> - The JICA Project Team comprehends component and content of existing GIS database in AHA center. - The consultant also comprehends existing GIS system, e.g. GIS software, of focal point facilities in ASEAN, too.
Proposal of draft database component	<ul style="list-style-type: none"> - The JICA Project Team will propose draft database component that all concerned facilities can use easily and that have general versatility data type.
Utilization of existing documents and data	<ul style="list-style-type: none"> - In many cases, it is difficult to obtain data with digital spatial information, and data has a lot of differences in accuracy, range and density of information by country. - The JICA Project Team positively utilizes existing reports of past JICA projects and available open databases of some international authorities to prevent above problems.
Collection and arrangement of information	<ul style="list-style-type: none"> - The local subcontract will collect detail information about middle-list cities.
Formulation of GIS database	<ul style="list-style-type: none"> - The JICA Project Team assembles existing database, open database and subcontract outputs of collected and arranged data in the project to integrated GIS database. - The JICA Project Team will employ a GIS operator in Jakarta. GIS operator will engage in arrangement of GIS database and digitize raster data to vector data for analysis as needed.
Utilization for analysis	<ul style="list-style-type: none"> - The JICA Project Team will positively utilize GIS database for mapping of disaster location, evaluation of disaster risk, and will store results of analysis and mapping to GIS database.

Source: JICA Project Team

Figure 3.2.5 shows image of GIS database component in the project. GIS database should have systematic and comprehensive component by category of each country, city and type of information. GIS database shall be also taken in consideration of procurable information level of each country.

The JICA Project Team will assemble collected and analyzed data basically by city. However, The JICA Project Team will assemble data in common folder of the country, in case of information shall be assembled by country, such as the legal systems, or there are limited information about city etc .

The JICA Project Team will also develop a guidebook that will report data source of information, attributes of GIS data and component of GIS database. The consultant will share this guidebook with concerned agencies.



Source: JICA Project Team

Figure 3.2.5 Image of GIS database component

(11) Listing of Urban Cities in ASEAN

JICA Project Team will develop the long/middle lists based on collected data and result of primary risk assessment. City record will be produced for middle listed cities.

Table 3.2.8 Proposed formats and contents of city list and record

Cities	Format	Content
Long-listed cities	List table	<ul style="list-style-type: none"> Statically data Hazard and disaster risk
Middle-Listed cities	Record and summary table	<ul style="list-style-type: none"> Population, major industry, geographical features, climate Urban development Plan, Land Use Plan, disaster management plan, disaster records (presence or absence)
	City record (In detail)	<ul style="list-style-type: none"> Detailed information collected through survey

Source: JICA Project Team



Source: JICA Project Team

Figure 3.2.6 Image of City Record

(12) Discussions and Explanation in Workshops

JICA Project Team will give explanation about data collection result at the work shop in July, 2016 and collect opinion from participants.

[2] Development of Draft TOR for Demonstration Project

(1) Development of Draft TOR for Demonstration Project

In CN 18 in AADEMER Work Programme Phase 2, work items for demonstration project were proposed. The draft TOR of the works shall be developed based on the discussions of the related agencies. At this moment, the draft TOR is considered as follows:

Table 3.2.9 Outline of Draft TOR for Demonstration Project

Work Item	Draft TOR
1) Risk Assessment of Natural Disaster	<ul style="list-style-type: none"> ● Data Arrangement on Hazard in the Past, etc. ● Data Arrangement on Vulnerability (Response and Measures against Disasters) ● Preparation of Hazard Map
2) Study on Improvement of Existing Urban Development Plan and Land Use Regulation	<ul style="list-style-type: none"> ● Identification of Problems and Issues by Review of Existing Development Plan of Urban City and Land Use Regulation ● Identification of Problems and Issues by Comparison of Hazard Map, Present Land Use Map and Future Land Use Map. ● Study on Improvement of Existing Development Plan of Urban City and Land Use Regulation
3) Study on Risk Finance and Financial Plan by Insurance	<ul style="list-style-type: none"> ● Not decided yet (To be studied during the Survey whether or not it is included in the draft TOR).
4) Preparation of Action Plan for Urban Development in Demonstration City	<ul style="list-style-type: none"> ● Study on Aim of Action Plan in Urban Development Plan Study on Urgency and Priority of Countermeasures ● Set-up of Item of Action Plan, Implementation Schedule, Executing Agency (Preparation of Action Plan)
5) Formulation of National Level Strategy for Disaster Resilient Cities	<ul style="list-style-type: none"> ● Review of National Level Spatial Plan and Economic Development Plan ● Study on Concept of Strategy for Disaster Resilient Cities Formulation of Strategy for Disaster Resilient Cities

Source: JICA Project Team

(2) Development of Short List of Candidate Cities for Demonstration Project

The draft short list of candidate cities for demonstration project shall be developed based on selection criteria in the course of the Survey, such as model example, general versatility, availability of data, willingness of local government, etc.

【1】 Study on Related Activities in ASEAN countries (such as Resilient Cities Campaign by UNISDR)
 JICA Project Team will collect information about activities for protection against disasters from international organizations. (e.g. UNISDR, ROCKEFELLER FOUNDATION, OCHA, WMO and IFNET.)

1) Methodology

Firstly, JICA Project Team will collect information and reports about protection against disasters from international organizations Website. Secondary, JICA Project Team will collect effects and challenges about those activities especially from Japan and ASEAN countries.

2) Related Organization and Study Item

Target international organizations of this study are shown below. If JICA Project Team will request to the relevant agencies for information provision through the Steering Committee in case of detailed documentation, is needed.

Table 3.2.10 Outline of study items

Organization	Activity	Study items
UNISDR (United Nations International Strategy for Disaster Reduction) <u>The Resilient Cities Campaign etc.</u>	To provide advices, partnerships and tools for protection against disasters for making cities resilient <u>-ASEAN Cities-</u> Banda Aceh City, Vientiane City and others (especially cities in Philippines) and many others.	*Effects and contributions for making member cities resilient * The plan of Future activities *Tools and methods for activities +Results of activity +Evaluation of activity
ROCKEFELLER FOUNDATION <u>100 Resilient Cities Centennial Challenge</u>	Support for making a strategy plan of making cities resilient Introduction of platform Information exchanges among participating cities <u>-ASEAN Cities-</u> Bangkok, Da Nang, Mandalay, Phnom Penh, Semarang and Singapore	* Effects and contributions for making member cities resilient *The plan of future activities * Tools and methods for activities +Results of activity +Evaluation of activity
ADRC (Asian Disaster Reduction Center)	To Share the information of disaster management, capacity building, enhance ability of community-based disaster _ <u>ASEAN Member State-</u> Laos, Myanmar, Vietnam, Cambodia, Philippines, Thailand, Malaysia, Singapore and Indonesia	*Contents and effects of participating countries * The plan of future activities * Tools and methods for activities
OCHA (UN Office for the Coordination of Humanitarian Affairs)	International and humanitarian assistance in case of disaster happens Protection of human rights under disaster Disaster prevention Sustainable humanitarian aid <u>- Participating countries -</u> Myanmar, Indonesia, Philippines, Thailand (Head Office: Bangkok)	*Plan of activity, activity and effect of activity of participating countries
WMO (The World Meteorological Organization)	Record of serious flood and drought Management of ‘Help Desk’ <u>-Countries using Help Desk-</u> Thailand and Laos	*Collecting tools and information of flood-control systems *Information of Help Desk project * The plan of future activities
IFNet (International Flood Network)	Training of simulation of Integrated Flood Analysis System(IFAS) <u>-Participating countries-</u> Indonesia, Vietnam, Laos etc.	*Results and effects of activities of training courses (System of simulation of flood) * The plan of future activities
AHA Center (ASEAN) (The ASEAN Coordinating Centre for Humanitarian Assistance on disaster management)	To formulate an integrated ASEAN Regional disaster prevention network	*Study of activity, tools and effects of AHA Center * The plan of future activities

(“*” means collecting from applicable organization “+” means collecting from cities in ASEAN)

Source: JICA Project Team

[2] Data Collection on Good Practices in Projects for Enhancing Resilience of Urban Cities, and Lessons Learned from Past Natural Disasters

(1) Data Collection on Damages caused by Natural Disasters in Urban Cities

JICA Project Team will collect information of natural disasters mainly from websites, especially “Disaster Data & Statistics”(UNISDR), “Information of disasters”(ADRC) for collecting information of each disaster (earthquake, Tsunami, storm surge, strong wind (typhoon and flood). JICA Project Team will contact concerned agencies in each country for more detailed information if needed.

(2) Data Collection on Good Practices and Lessons Learned

JICA Project Team will collect information by literature review mainly on disaster recovery plan and urban planning documents of cities where had experienced a huge disasters. JICA Project Team will organize this

information and adopt them to develop a tool for making resilient cities.

Table 3.2.11 Steps of Collecting Good Examples and Lessons

Item	Good Examples to be collected
Reconstruction Plan (Hazard Map)	<ol style="list-style-type: none"> 1) Information of reconstruction Plan of HanShin Awaji Earthquake , East Japan Great Earthquake and other storm and flood damage disasters, specially the information of process from understanding the condition of disaster to planning the reconstruction plan and making agreement of all concerned parsons. (Japanese cases, target size of city population is 100,000 to 300,000 people) 2) Information of reconstruction plans of Banda Aceh City and Philippines these are members of ASEAN (reconstruction plan for Tsunami Disaster, The Eruption of Mt. Pinatubo Disaster and Typhoon Yolanda Disaster). (Specially the process of planning to action of reconstruction plan) 3) Information of reconstruction plans of other nations (Process of planning to action) 4) Information of Hazard Maps, system of evocation of caution and others 5) Information of alert based on the weather information (system, Well-known method) 6) Information of reconstruction plan of private sectors (example Flood of Chao Phraya River 2011 Thailand)
Law, Regulation	<ol style="list-style-type: none"> 1) Information of revision of building code after serious disaster (example. Janan, California State of USA others) 2) Information of law, rule and regulation about balancing reservoir, conservation of forest etc for preventing nature disaster 3) Information about building code especially the criteria for building permission.
Urban Planning Transportation Planning	<ol style="list-style-type: none"> 1) Information of cases of urban development overcoming national condition (example. Urban Planning of Dutch (Flood tide has been overcome with public engineering works) with documents) 2) Information of urban planning system (zoning system) with geology located on prone areas of earthquake (example. Almaty City etc.) 3) Information about disaster emergency transportation road network and countermeasure for road blockade
Emergency Drill	<ol style="list-style-type: none"> 1) Information of plan for protection against disaster and emergency drills (cities of Japan, ASEAN and other countries) from Hp of internet and documents 2) Information examples of tools using emergency drill 3) Application of cellular phone for emergency tool in ASEAN
Item	How to collect Lessons
Lessons from Suffer	<ol style="list-style-type: none"> 1) Information of lessons of large-scale nature disaster (effect of emergency drill, validity of forest reserve and setting up evacuation area or shelters) from HP internet 2) Information of lessons that after nature disaster private company, educational facilities and public services made
Lessons from Action of Protection Against Disasters	<ol style="list-style-type: none"> 1) Report of validity of making a Reconstruction Plan and enforcement of emergency drill from documents (example. Aitape Tsunami case (1998 Papua New Guinea earthquake) etc.) 2) Issues generated by the implementation of disaster prevention drill (reform measures)
Lessons from Historical Record	<ol style="list-style-type: none"> 1) Information of legends and archives for nature disaster and conjugated cases of these legends and archives 2) Information of preservation of Remains for nature disaster (method of preservation, how to utilizing and agreement)

Source : JICA Project Team

【3】 Study on Guide for Building Resilient Cities

(1) Study on Fragility Function in Earthquake, Tsunami, Storm Surge, Strong Wind and Flood

The Fragility function of a) Earthquake, and b) Water Hazard (Tsunami, Storm Surge, Strong Wind and Flood) shall be developed.

In this project, fragility curve is defined as the functional equation for calculating damage quantity, restoration period from the hazard scales such as seismic intensity, inundation height and its duration. Due to the data limitation, the fragility curve for strong wind is excluded from the scope of this project.

Source : JICA Project Team

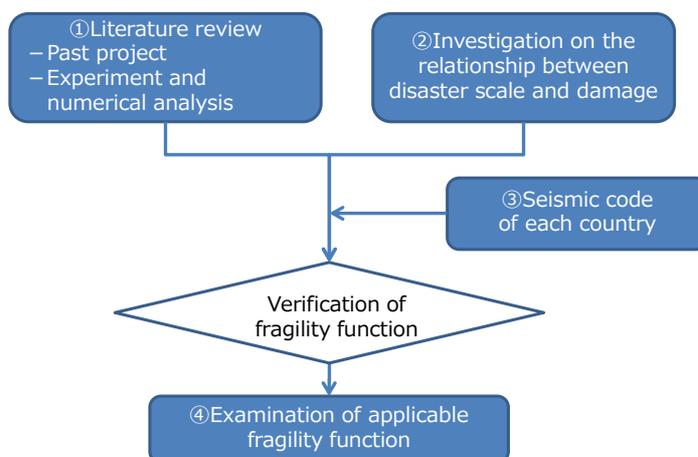


Figure 3.2.7 Investigation flow of fragility curve

The applicable city and area of these fragility curves will be examined with data accuracy and reliability on the step 4). The procedure of the investigation on fragility curve is as follows;

1) Literature review of fragility curve

This literature review will collect the information about fragility curve used in the past project in ASEAN and Japan as well as the papers which set up the fragility curve based on the experiment and numerical analysis in each country.

2) Study on Relationships between Magnitude of Disaster and Damage of Infrastructures/ Buildings caused in the Past Disasters

The relations between magnitude of disaster and damage of infrastructures/buildings caused in the past shall be studied with the data in the following table:

Table 3.2.12 Data of Magnitude of Disaster and Damage

Type of Disaster	Magnitude of Disaster 【Horizontal Axis】	Damage 【Vertical Axis】
Tsunami or Storm Surge	<ul style="list-style-type: none"> Wave Height Inundation Depth, Duration and Flow Velocity 	<ul style="list-style-type: none"> Human Damage (Nos. of Death, Affected People, etc.) Building and structure damage (damaged houses, financial damage, inundated farm land, and so on)
Flood	<ul style="list-style-type: none"> Runoff and Rainfall Inundation depth, duration, and overflow velocity 	<ul style="list-style-type: none"> Interruption period of public service (Electricity, gas, water service, and so on) Restoration Period (road, railway, and so on)
Earthquake	<ul style="list-style-type: none"> Magnitude/Seismic Intensity 	

Source: JICA Project Team

3) Study on Resilience of Existing Infrastructure and Buildings, and Legislative System in ASEAN

The data on resilience of existing infrastructure and buildings, and legislative system in ASEAN shall be collected and analyzed.

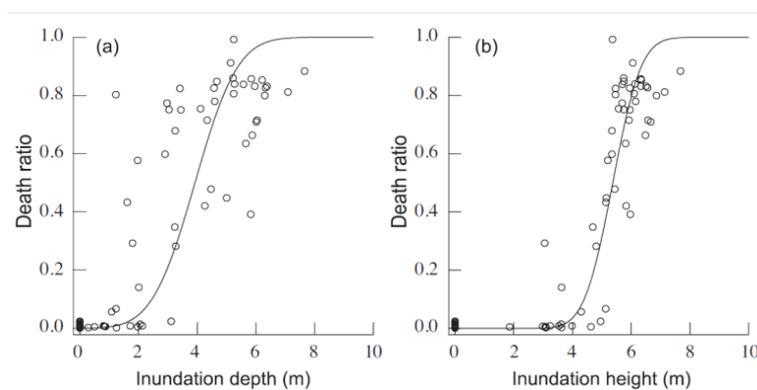
4) Development of Draft Fragility Function in ASEAN and Recommendation for Further Improvement

The draft fragility curve in ASEAN shall be developed and further improvement shall be recommended with the procedure in the following table: Applicable area of the fragility curve will be determined with calibration if necessary.

Table 3.2.13 Draft Fragility Function in ASEAN

Type	Hazard	Fragility Function	Prospected Variables
Building	Earthquake	Damage ratio by seismic motion	<ul style="list-style-type: none"> • Seismic intensity • Structure type • Seismic code
		Damage ratio by liquefaction	<ul style="list-style-type: none"> • Liquefaction possibility • Structure type
	Flood, Tsunami and storm surge	Damage ratio by Tsunami and storm surge	<ul style="list-style-type: none"> • Inundation depth • Structure type
		Damage ratio by flood	<ul style="list-style-type: none"> • Inundation depth • Ground gradient
Casualty	Earthquake	Casualty rate by building collapse	<ul style="list-style-type: none"> • Structure type • Time period
	Flood, Tsunami and storm surge	Casualty rate by inundation	<ul style="list-style-type: none"> • Inundation depth • Evacuation activity
Infrastructure	Earthquake	Damage of bridge	<ul style="list-style-type: none"> • Seismic intensity • Bridge span • Seismic code • Retrofit / reinforcement
	Flood, Tsunami and storm surge	Damage of infrastructure	<ul style="list-style-type: none"> • Inundation depth • Inundation duration

Source: JICA Project Team



Source: Koshimura et al., Journal of Japan Society for Civil Engineering, B Vol.65 No.4, 2009

1) fragility curve of tsunami : (a) inundation depth and death ratio (b) inundation height and death ratio
(The case of Banda Aceh)

Figure 3.2.8 The examples of fragility curve

Due to insufficient availability of statics on disaster data, kind of fragility curve and applicable area for function, etc. are expected to be limited. In that case, further study for improvement shall be recommended in the meetings, workshops, etc. with concerned agencies in ASEAN countries.

5) Development and Propose of Disaster Risk Assessment Method by Fragility Funtion in Building Resilient Cities

The disaster risk assessment method by fragility curve shall be developed to propose option for direction of measures in building resilient cities.

Table 3.2.14 Examples of measures related to fragility curve

Type of fragility curve	Related measures on building resilience
Building Damage (by Type of Structure)	<ul style="list-style-type: none"> • Earthquake Resistance • Reinforcement of Building Standard • Insurance
Flood Damage (Inundation Depth)	<ul style="list-style-type: none"> • Land Use Regulation • Improvement of Flood and Drainage Facilities
Ratio of Death People (Evacuation people)	<ul style="list-style-type: none"> • Flood Fighting Drill • Education, Formulation of Early Warning and Evacuation Plan • Flood Forecasting and Warning System, etc.

Source: JICA Project Team

The measures towards building resilient cities shall be widely proposed, since, situation in each ASEAN country/city is different.

6) Explanation of Opinion on Output and Results of Survey in Workshop

In the Workshop scheduled in December 2016, opinion on output and results of the Survey shall be explained.

[4] Examination of Check List to Respond Natural Disaster in ASEAN Cities for 1) Land Use Plan and Urban Plan, 2) Disaster Response and Disaster Control Measures

The Project Team will prepare check lists compiling what the local governments should execute for responding natural disaster. The Project Team proposes procedures and methodology as mentioned below.

1) Organizing Issues on Natural Disaster Response in ASEAN Cities

The Project Team will organize issues on institution, policies, plans, organization, capacity, resources on urban planning and disaster prevention, which local government have, based on urban information collected in Project Output 2.

2) Examination of Items, Evaluation Method, Evaluation Indicators of Check Lists

The Project Team will develop check list items for developing resilient cities by referring and picking up important items from the field of urban planning, land use planning and disaster management measures.

3) Preparation of Draft Check Lists

The Project Team will prepare the draft check lists as shown in the table below. The user will check the status in the column of “Evaluation” and fill out the evidence in the column of “Remarks”.

Table 3.2.15 Image of Draft Check List for Land Use and Urban Plan

No	Item	Evaluation	Remarks
1	Does Urban Plan manifest “Resilient City” or “Strong City to Disaster” in development vision or future urban image?	<input checked="" type="checkbox"/> Yes, it does. <input type="checkbox"/> No, but it will do. <input type="checkbox"/> No and no examination so far.	Page 4 of XX City Urban Master Plan specifies resilient city.
2	Does land use policy or land use direction mention “Resilient City” or “Strong City to Disaster”?	<input checked="" type="checkbox"/> Yes, it does. <input type="checkbox"/> No, but it will do. <input type="checkbox"/> No and no examination so far.	Page 8 of land use policy in XX City Urban Master Plan mentions resilient city.
3	Are risks of natural disaster with hazard maps considered in the process of land use planning?	<input type="checkbox"/> Yes, they are. <input checked="" type="checkbox"/> No, but to be considered after this. <input type="checkbox"/> No, and not to be considered.	Risks are not considered now, but the risks are to be considered after this according to the official of XX City.
4	Are developments controlled at disaster hazard areas in land use plan?	<input type="checkbox"/> Yes, they are. <input checked="" type="checkbox"/> No, but to be controlled after this. <input type="checkbox"/> No, and not to be considered.	Developments are not controlled now, but the developments are to be controlled after this according to the official of XX City.

Source: JICA Project Team

4) Preliminary Evaluation

The Project Team will visit three selected cities in ASEAN and to have workshops where the officials of urban planning dept. and disaster prevention dept. of local government are the target group. The three cities are to be selected through the discussion in the Project Steering Committee. The Project Team assumes that the cities will be selected from the shortlisted cities for Output 2. The officials will be requested to evaluate the check lists by checking if urban plan and land use plan addresses response to natural disaster hazard as well as if disaster prevention plan comprehensively covers disaster response and countermeasures. In case the response and countermeasures are not adequately covered, the officials will discuss bottlenecks and actions to improve the situation. The officials will be also requested to discuss effective measures to utilize the check lists in the operation of local governments. The Project Team will get feedback from the participants by distributing simple questionnaire sheets in order to grasp usability of the check lists, contribution of the checklists to the operation, and collect ideas of utilizing the checklists.

5) Re-examination of Items and Evaluation Indicators based on Preliminary Evaluation

The Project Team will reexamine the items of checklists and evaluation indicators based on the workshop results and questionnaire answers from the participants as mentioned in 4). The Project Team will share the results of the workshops on the website and get feedback from ASEAN Member States. The Project Team will re-examine the checklists by referring to the feedback.

6) Organizing Items on what Both National and Local Governments should Conduct to Disseminate the Checklist

The Project Team will examine the utilizing method of the checklists based on the results of the workshops and the questionnaire results, and prepare the draft guidance of the utilizing method of the checklists. The Project Team will prepare the explicit draft guidance showing the significance, purposes, instruction with illustrations.

7) Holding of Workshops

Workshops will be held to discuss the draft guidance and the results of the preliminary evaluation. The Project Team will collect the comments for the checklists.

8) Finalization of Check Lists

The Project Team finalizes the check lists and guidance based on the results of the above workshops and feedback in websites.

【5】 Development of Tools on Building Resilient Cities

The Project Team will develop a guidebook on building resilient cities as the tool by compiling the following items.

- i) lessons learned from past disasters that affected cities
- ii) good practices on countermeasures for disasters in cities
- iii) a guide to build resilient cities including the checklist

(1) Meetings

1) Project Steering Committee

The Project Steering Committee Meetings are to be held to oversee and provide guidance to the implementation and management of the project.

Table 3.2.16 Outline of Project Steering Committee

No.	Timing (tentative)	Venue	Tentative Agenda
1 st PSC (explanation of Inception Report)	Dec. 2015	Bangkok	<ul style="list-style-type: none">• Organization of Study• Study Approach, Study Methodology• Work Schedule• Criteria of Selecting Cities
2 nd PSC (explanation of Progress Report)	July, 2016	To be Confirmed	<ul style="list-style-type: none">• Study Progress for each Project Output up to July 2016
3 rd PSC (explanation of Draft Final Report)	March, 2017	To be Confirmed	<ul style="list-style-type: none">• Study Progress for each Project Output up to March 2017• Way Forward after the Project

Source: JICA Project Team

2) ASEAN Urban Resilience Forum

(2)-1) Formation of forum and holding forum mentioned the forum in detail.

3) Workshop targeting ASEAN Member States

(2)-2) Holding of Workshops mentioned the workshops in detail.

(2) Development of Tools for Publicity

The Project Team will develop tools for publicity covering the works in the Project, the progress and outputs of the Project.

Table 3.2.17 Draft Outline of Publicity Tools

No.	Timing	Major Events of the Project	Contents
1	December 2015	Preparation of Inception Report, the 1 st Project Steering Committee	<ul style="list-style-type: none"> • Outline of Inception Report (basic approach, work items, work schedule, etc.) • Criteria of Selecting Long and Middle List Cities
2	April 2016	—	<ul style="list-style-type: none"> • Outline of Survey of Information Gathering • Progress of the Information Gathering Survey
3	July 2016	Preparation of Progress Report, Forum, Workshop Steering Committee	<ul style="list-style-type: none"> • Outline of Progress Report (preliminary disaster risk assessment, GIS data base, etc.) • Outline of Forum • Overview of Workshops (TOR for demonstration projects)
4	October 2016	Workshops at three ASEAN Cities	<ul style="list-style-type: none"> • Overview of Workshops (preliminary evaluation of check lists)
5	December 2016	Workshops	<ul style="list-style-type: none"> • Overview of Workshops (function, draft check lists, draft guidance of utilizing the checklists)
6	March 2017	Preparation of Draft Final Report, Forum, Steering Committee	<ul style="list-style-type: none"> • Outline of Draft Final Report • Outline of Forum (guidebook on building resilient cities) • Way Forward after the Project

Source: JICA Project Team

(3) Dissemination of Outputs and Report of Study Progress

The outputs of the Project will be disseminated in ASEAN Secretariat, ACDM meetings, and Minister Level meetings. Co-Chairs of ACDM WG on Prevention and Mitigation, Lao PDR and Thailand, will report the Project at these meetings. The Project Team will also assist Co-Chairs in preparation of reports and attend the working group meeting if necessary.

(4) Preparation and Discussion of Progress Report

Progress up to July 2016 will be made into the Progress Report. The Project Team will explain and discuss it in the 2nd Project Steering Committee.

(5) Preparation and Discussion of Draft Final Report

Results of the overall works will be made into the Draft Final Report. The Project Team will explain and discuss it in the 3rd Project Steering Committee.

(6) Preparation of Final Report

Final Report will be prepared and submitted based on the comments made to the Draft Final Report by the Project Steering Committee and JICA.

CHAPTER 4 WORK SCHEDULE

4.1 WORK SCHEDULE

The Project is commenced in the Early November, 2015 and will continue until April, 2017. Overall work schedule of the Project is summarized below.

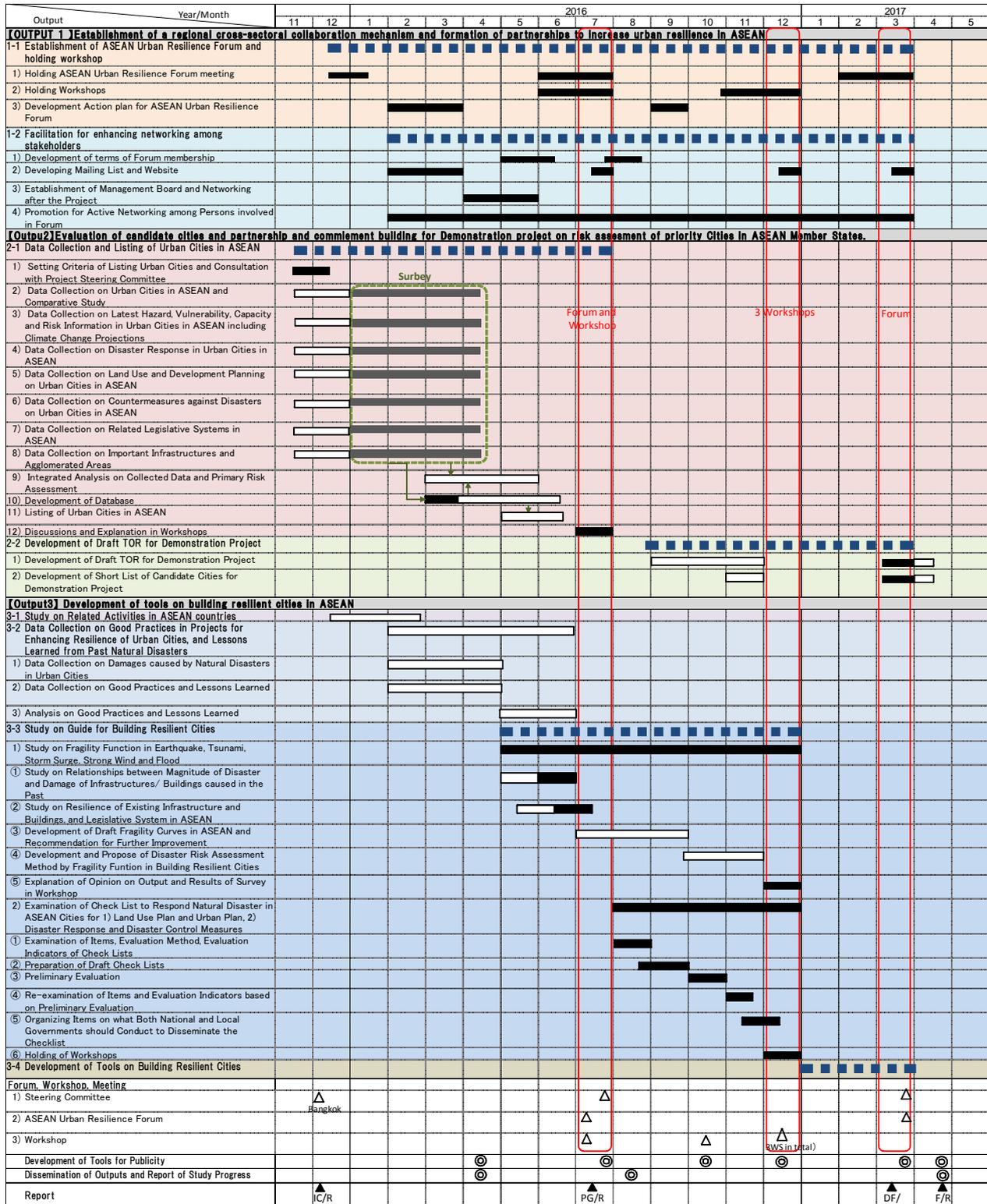


Figure 4.1.1 Work Schedule

4.2 REPORTS

4.2.1 Reports

Four types of reports will be submitted for the Project.

Table 4.2.1 Outline of the Reports

No	Reports	Submission periods	No. of copies
1	Inception Report (IC/R)	December 2015	60 Copies
2	Progress Report (PG/R)	July 2016	60 Copies
3	Draft Final Report (DF/R)	March 2017	60 Copies
4	Final Report (F/R)	April 2017	60 Copies

Source: JICA Project Team

4.2.2 Other outputs

Following items will be submitted for the Project.

Table 4.2.2 Other output materials

	Related output	Materials	Submission periods	Format	No. of copies
A	Output2	GIS database	July, 2016	CD-R	5 Copies
B		Long list of ASEAN Cities	July, 2016	Digital data	-
C		Short list of candidate cities of demonstration project	March, 2017	Digital data	-
D	Output3	Guidebook for developing resilient cities	March, 2017	Printed and CD-R	11 Copies
E	Other PR materials		Together with report submission	Digital data	-

Source: JICA Project Team

CHAPTER 5 STAFF SCHEDULE

5.1 PROJECT TEAM MEMBERS

The Project Team consist 12 experts. Name and position of each expert are shown in the table below.

Table 5.1.1 List of Project Team Members

Name	Position
Mr. Shinichi FUKASAWA	Team Leader/Urban Planning
Mr. Makine KUSANO	Sub-Team Leader/Urban City Survey
Mr. Hideki SATO	Disaster Risk Reduction in Urban City
Mr. Yasushi SHIMANO	Disaster Risk Assessment (Flood)
Dr. Iwao SUTOMI	Disaster Risk Assessment (Earthquake)
Ms. Nozomi HISHIDA	Institution and Management system
Mr. Yasunori NAGASE	Infrastructure Survey
Mr. Yusuke KATO	Disaster Vulnerability Assessment (Flood)
Mr. Masashi INOUE	Disaster Vulnerability Assessment (Earthquake)
Dr. Atsushi MORI	Damage Assessment of Infrastructure
Mr. Chikara UCHIDA	Disaster Risk Assessment2/GIS and Database System
Ms. Yukiko SAKAI	Coordinator and Seminar Management

Source: JICA Project Team

5.2 ASSIGNMENT SCHEDULE

Assignment schedule for the Project is as shown in the figure below.

CHAPTER 6 UNDERTAKINGS OF THE ASEAN MEMBER STATES

The concerned agencies' (ASEAN member states) undertakings are the following items.

1. Providing available data and information
2. Selection of participants for forum meetings and workshops
3. Credentials or identification cards and support in assurance of security during survey
4. Other general support in assurance of security
5. Exemption of custom procedure and tax etc. for necessary equipment for the project
6. Other undertakings in need requested y JICA Project Team