

Adaptation Finance

- How can Private Sector play for Adaptation Finance? -

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Abstract

Climate Change Adaptation becomes an urgent global issue. Varieties of counter measures, including Physical Measures and Economic Measures, shall be taken and enormous amount of funds is required. Public fund has a limitation but private sector can do a lot for Adaptation Activities same as the case of Mitigation Activities.

Climate Insurance is an instrument for supporting the recovery from the disaster and can reduce the construction cost of structures such as dams, dykes, irrigation systems. Weather Index base Insurance for Agriculture (WIIA) in Thailand is an example of the private driven challenge. This is in the early stage of the development and for the diffusion of Climate Insurance it is expected to provide public support such as below.

1/ Data collection

2/ Subsidies to reduce the premium payment

Climate Risk Consideration is an idea for reducing Climate Risk at the project. Project and corporate shall review Climate Risk and take measures including the business continuity plan (BCP) and the preparation of finance options for the recovery from the disasters. Adaptation Consideration Guideline is an idea too. When it is shared by many financial institutions, it may provide big impact on the project design and decision making. Institutional investors manage USD 85 trillion of funds a year and invest more than EURO 7 trillion to Social Responsible Investment (SRI). They are very influential players for the change of business behavior and finance mechanism through the adoption of Adaptation Consideration Guideline.

Climate Hazard Map is a very useful instrument for the identification of Climate Risk and the consideration of Adaptation Measures. It is better to prepare for all area but it is likely to take long time due to the lack of information. Remote sensing technology may help to prepare Climate Hazard Map quickly.

Climate Risk and Adaptation Cost has not been reviewed yet at the business operation. We can see hidden Climate Cost clearer than now by considering Adaptation Measures. Private sector's involvement to Adaptation Activities is very crucial.

Climate Change becomes a very serious threat to economic development, business and our life and assets. We are taking necessary actions (Adaptation Activities) and developed countries are asked to provide financial support to Adaptation Activities in developing countries. It seems that enormous amount of finance is needed for Adaptation Activities. We should to clarify Adaptation Activities for using Adaptation Finance effectively and efficiently and consider the possibilities of private sector's involvement to Adaptation Activities for scaling up Adaptation Finance.

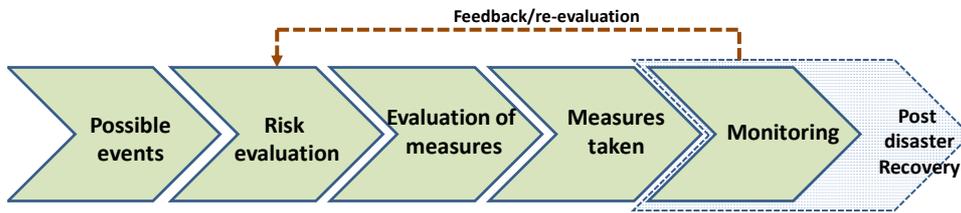
1 Adaptation Activities

Climate Change makes the scale of extreme weather, such as flood, storm, high tide, drought, heat wave, bigger and its frequency is increasing. Agriculture, cities and infrastructure, and mining and natural resource development projects are understood as examples of very vulnerable sectors for Climate Change. When we consider counter measures, the first step is identification of the potential events.

Then we will evaluate risk of these events. Climate Risk is defined, theoretically, as “potential damage X provability of the events”. For instance, when expected damage is big and its provability is high, we will determine that it is high risk. However, if provability is not so high but it is very difficult to recover from the damage, we will conclude its risk is not low.

For controlling Climate Risk, measures (Climate Measures) are needed. Government and local government will take measures to prevent/mitigate theses disasters and prepare instruments for the post disaster recovery (public services). However these actions are not likely to all potential Climate Risk or not enough for post disaster recovery, therefore private sector is better to take measures for securing their operation too (self defense manner).

Adaptation Consideration (General)



Identification of possible events
 ✓ Heavy rain, flooding
 ✓ High tide
 ✓ Strong wind, Tornado
 ✓ Drought
 ✓ Sea level rise
 ✓ Change of agriculture
 ✓ Infection/disease

Risk = Potential damage X Probability

✓ Measures shall be determined by evaluating the risk and cost.
 ✓ Combination of hard infra to reduce the risk and soft infra such as evacuation system insurance.

<Physical Measures and Economic Measure>

We have two types of measures, Physical measures and Economic Measures. Physical Measures is constructing structures for preventing and reducing the physical damage by extreme weather, such as dams, dykes, irrigation equipment. Economic Measures is not a preventive measures and focus on the recovery from the damage by events, such as insurance (Climate Insurance) and reserves for disaster recovery (Climate Reserve). Combination of Physical Measures and Economic Measures is a practical for preparing Climate Risk.

Adaptation Actions are divided into 3 tiers; National Planning, National Measures and Project measures

<National Planning >

National Planning is the basement of the pyramid of Adaptation Actions.

- ✓ Analysis and identification of Climate Risk of the country
- ✓ Public Awareness of Climate Risk
- ✓ Adaptation Plan
- ✓ Implementation of National Measures

<National Measures >

Both Physical Measures and Economic Measures are needed. Physical Measures are mostly

taken by government including local government. In addition to the construction of structures, it is necessary to prepare software for using such infrastructure effectively.

- ✓ Construction of structures such as dams, dykes and irrigation system (Physical Measures, Hardware)
- ✓ Monitoring extreme events and alert/evacuation system (Physical Measures, Software for structure)
- ✓ Post disaster national program (Economic Measures)

<Project Measures>

Project need to take measures for keeping the project well even though National Measures are taken. At the planning stage of the projects, all the possible risks shall be pick up and reviewed and counter measures will be decided based on these risk analysis. Climate Risk is a part of the project risk but is not reviewed explicitly as Climate Risk alone.

- ✓ Change of location if risk is so critical
- ✓ Construction of the structures (Physical Measures)
- ✓ Use of insurance (Climate Insurance)
- ✓ Set aside cash for contingency reserves (Climate Risk Reserve)

Climate Risk which is very crucial for continuing operation but it is difficult to review because many scientific studies have been done already but it is not enough for precise projection at project level. It is necessary to study the progress of scientific analysis continuously and monitor the surrounding climate of the project. Its outcome should be feed-back and reflected on the revision of the adaptation plan.

2 Adaptation activities and financing

USD 100 billion a year of finance is planned to be mobilized for supporting climate change mitigation and adaptation in developing countries. However, there is a limit to public funds, which are consist of grant, concessional finance, public trade and investment finance and finance through multilateral finance and USD 100 billion is unlikely to be provided only by public fund. Private fund, which is much bigger capacity, is expected to be mobilized for Adaptation Activities.

According to OECD DAC statistics, in 2003-2012, USD 200 billion a year of fund was mobilized to developing countries by private sector. This is a double of ODA of the period (USD 108 billion). These funds were mostly directed to profitable investment, such as manufacturing related investment, energy and resource development and infrastructures. Now fund invested by institutional investors are thought to be a new source of fund. USD 85 trillion was invested by institutional investors every year (OECD) and over EURO7 trillion

or over were invested in SRI(Social Responsibility Investment). Very big amount of fund could be directed to Adaptation Finance if appropriate mechanism is developed.

Available and suitable finance for these 3 types of Adaptation Actions vary depending on its nature and surrounding environment including economic matters.

<National Planning >

Cost of National Planning is mostly funded by the public. Typical source of fund from developed countries is grant. Private sector can provide services as contractor by analyzing climate data or creating hazard map but its involvement is limited.

<National Measures>

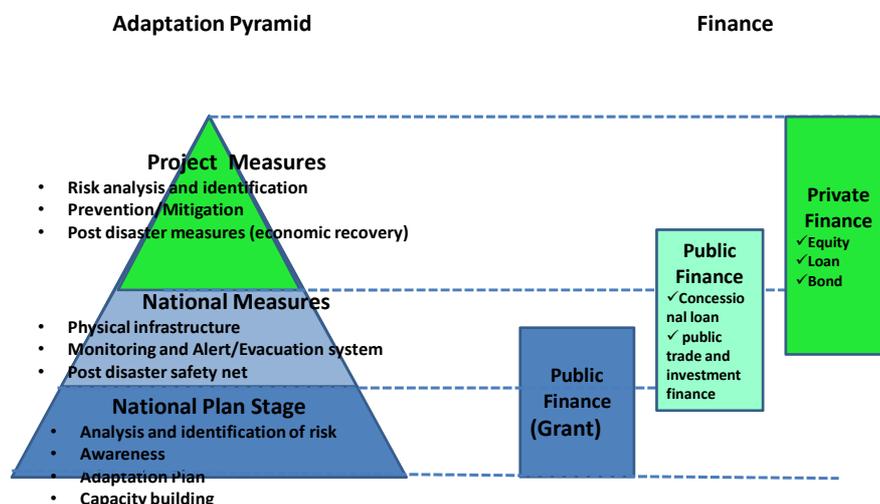
Physical infrastructure, such as dams, dykes, drainage system and irrigation system, requires huge amount of funding. These are mostly constructed by the public sector. When government needs to have external financing, concessional loan or public trade and investment finance is often used in addition to the finance from domestic Financial market.

Recently Public Private Partnership becomes a big stream and Public Private Finance and Private Finance support these projects. National Measures can be financed by both public and private funds.

<Project Measures>

Every project, both public and private projects, are affected by climate change and its impact varies project by project. For instance, transportation or mining projects are very sensitive to extreme weather in general. Projects need to have Physical Measures and Economic Measures for defending their projects from Climate Risk. These projects are financed by varieties of finance, such as public trade and investment finance or pure commercial finance. Adaptation components are financed as a part of project cost and, for the time being, there is no incentive mechanism for supporting the inclusion of the adaptation components.

Adaptation Activities Pyramid and Finance



3 Adaptation Considerations at project development

Some projects, such as located in vulnerable area or projects with high dependence on water, are exposed to high Climate Risk.

<Case of Climate Risk at project>

- Cooling water; Water recycle system at boiler and turbine is hart of power plant. Power plane needs to intake of cooling water and discharge of water after cooling. In 2012, heat wave hit US and at some power plants, temperature of intake water became higher than planned temperature and river level height became lower than planed level. It was a big threat to the power plant operation. Obama’s Action Plan pointed out power sector is exposed to serious Climate Risk.
- Transportation; In 2010 and 2012, Australia was hit by extremely big scale of flood. Coal mines were forced to stop production due to the break of railway for exporting. This led to the price hike of global coal market.
- Supply chain; In 2011 a serious flood hit Thailand. Industrial zone near to Bangkok were flooded and many manufacturers there were damaged. They produced many supply for automobile and electronics industry and play important role at global supply chain. Automobile and electronics industry, particularly Japanese

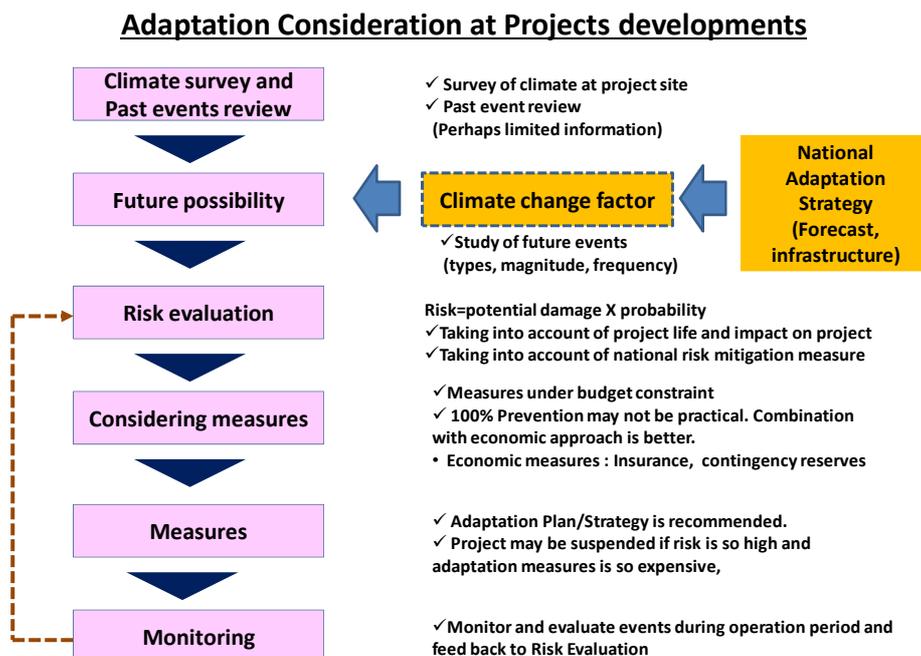
companies, were seriously affected by the drop of the production.

Climate Risk is implicitly reviewed at financial due diligence. When we focus on Climate Risk at the project, we will the limitation for the due diligence.

- ✓ Lack of information about Climate Change: It is not clear when and how serious events will be emerged. Enough quality of Climate Risk for the determination of the assumption is not available.
- ✓ Project boundary; In addition to Climate Risk at project site project faces Climate Risk to their supply chain and markets. It seems to be beyond the control of project company.

Physical Measures, structures and equipment, may reduce the risk at the project site but has a limitation. Also it is not effective for Climate Risk at transportation and supply chain. Therefore combination of Physical Measures and Economic Measures is practical.

Preparation of Adaptation Strategy and Plan for the project is recommended for understanding and controlling Climate Risk. During project implementation, it is better to monitor the weather and climate at the project site and study the progress of National Plan and National Measures and it should be feed back to Adaptation Consideration for their projects.



4 Climate Insurance – A tool for Economic Measures

Climate Insurance is an instrument to support the recovery from the damage by providing financial support.

- ✓ Risk of extreme weather could be reduced by Physical Measures but it is unlikely to prevent all possible events.
- ✓ Government and local government will support the recovery. However sometime it takes time to deliver the financial support by the complicated and long process for the identification of damage. Also there is a risk that government support is not enough for the recovery.

Climate Insurance is a kind of self defense mechanism.

<Investigation base or Index base>

Investigation base insurance is commonly used, like car insurance. When event is happened, investigation expert comes to assess the damage, how big is the damage and whether it can be covered by contracted insurance policy. On the other hand, Index base insurance will pay out to the beneficiary without investigation of the damage when index at the contract, like amount of precipitation, temperature or other numerical figures, hit the trigger.

Investigation base insurance, in general, takes longer time for the payout compare to Index base insurance. When large scale extreme weather provides damage on many people, corporate and community, it takes much longer time in the case of investigation type insurance. Index base insurance has advantage in terms of quick delivery of insurance payment. However, people may feel gap between actual damage and payout. Index as the trigger is very crucial for the acceptance and diffusion of Index base insurance.

<Beneficiary; Public use or Corporate/Individual use >

Both government and corporate/individual can be beneficiary of insurance. In general, beneficiary pay premium but variation of burden sharing could be possible.

- ✓ Person as a beneficiary buy insurance (pay premium) and receive payout
- ✓ Person as a beneficiary buy insurance and receive payout. But its cost is subsidized by government.
- ✓ Government of developing country as a beneficiary pay premium and receive payout. Government distributes payout to the people damaged by extreme events. As an application of this style, developed country pay premium on behalf of

developed country.

Modality of Weather Insurance

	Public type insurance	Individual type insurance
Outline	Public such as government , local government or community will receive insurance payment when trigger is hit.	Individuals will receive insurance payment when trigger is ht.
Payout condition	Investigation/Trigger	Investigation/Trigger
Support the recovery from loss and damage	Indirect. Affected people will receive financial support from government which receive payout	Direct Directly pay out to affected people with contract.
Quickness	Depending on the payout allocation system. It may take time.	Quicker
Gap between damage and payment	Depending on allocation system (depending on host country side)	Depending on insurance policy
Fairness of allocation	Depending on the implementation process by government. (Risk)	No allocation risk. (Following the contract)
Transaction cost	Low for insurance system. Payment allocation and delivery system by local government is needed.	High. Combination with local partner is better option.

Benefits of Climate Insurance are summarized as follows,

- ✓ Combination with Physical Measures can reduce the cost of National Measures and Project Measures by changing the specification of structures.
- ✓ Climate Insurance can leveling the annual financial cost for preparing the future economic damage (time horizon) and share the financial cost by pooling Climate Risk with other parties
- ✓ Climate Insurance can mitigate Climate Risk at the supply chain and market, which cannot be controlled by project company.
- ✓ Climate Insurance premium may indicate the hidden cost of Climate Risk. And it may push climate change mitigation action.

<Case study 1 : Weather Index base Insurance for Agriculture in Thailand>

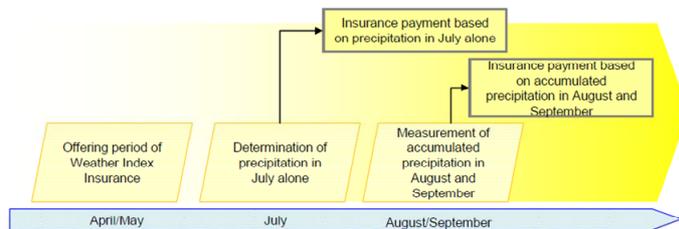
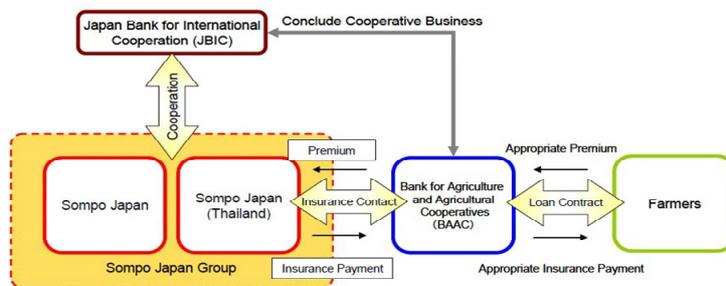
Sompo Japan, a leading insurance company in Japan, has developed index base insurance for agriculture (WIIA : Weather Index base Insurance) in Thailand under the cooperation with BAAC (Bank for Agriculture and Agricultural Cooperation. State owned bank in Thailand) and JBIC (Japan Bank for International Cooperation) and now it is implementing commercial base.

This insurance product covers the drop of rice production by weather condition and is

sold as a supplemental financial product of loan contract between BAAC and rice farmers. WIIA in 2012 pays out contractually predetermined insurance payments when the result of the accumulated precipitation, in July alone or during the two months of August and September, observed by the Thai Metrological Department. Premium was Thai Baths 464- 4640 and payment will be equivalent of 15% or 40% of loan contract.

In 2010, as the first year, WIIA was sold in Kohn Kaen (Province) and 1158 farmers contracted and, in 2011, its cover area was expanded to 5 provinces and number of contract is increased to over 6000. However its number was sharply decreased due to the political and economic turbulence in this area after the serious flood in Thailand. Sompo Japan has a plan to expand its cover area and improves the insurance policy in order to get better fitting of the situation in Thailand.

Case Study : WIIA in Thailand by Sonpo Japan Insurance



* When the accumulated precipitation in July alone meets the criteria for the payment of insurance payments, this insurance contract will be terminated.

Source : Sompo Japan Insurance

(Background)

Major incomes source in north east Thailand is agriculture. Rice is very important agricultural products and double/triple cropping of rice is possible if irrigation facility is well prepared. However mostly its production is rainfed, particularly in summer, and major income source is the first cropping. Their livelihood and economy are very vulnerable by the extreme weather, particularly drought.

JBIC organized a study group for the possibility of WIIA as an option of market base Climate Change Adaptation in 2008 and Sompo Japan was a key member of the group. Sompo Japan started its sales on 2010. BAAC was keen to start WIIA too because

agriculture is a vulnerable by Climate Change and BAAC sought for new services for farmers. This was an important mission for BAAC determined by government policy.

WIA has a great potential for mitigating the economic damage by the extreme weather. However, it is not so common in developing countries. Barriers learnt from this program are as follows.

- ✓ Local Partnership; farmers were not so familiar with agricultural insurance, in general. However, WIA was accepted well in Thailand because BAAC, state owned bank in Thailand and has long history for supporting farmer, sold insurance together with their loan contract. Farmers trust on the nature of the insurance products. This partnership was matched by JBIC, which had a good cooperation partnership with BAAC.
- ✓ Availability of data; In general, historical data about weather, rice production and income are necessary. It is said that, in general, 10-30 years historical data of the area is needed for the development of insurance model and this is actually higher barrier. Kohn Kaen which is the first province selling WIA had series of basic data although it was not assembled to the statistical database.



Communications with farmers (from web of Sompo Japan)

- ✓ Premium payment capability: In the north east Thailand, rice is commercial commodity and famers are affordable to pay premium. Also farmers feel that it is

not big additional burden by combining insurance with loan contract.

WIIA could be a nationwide program but the below is needed for further diffusion.

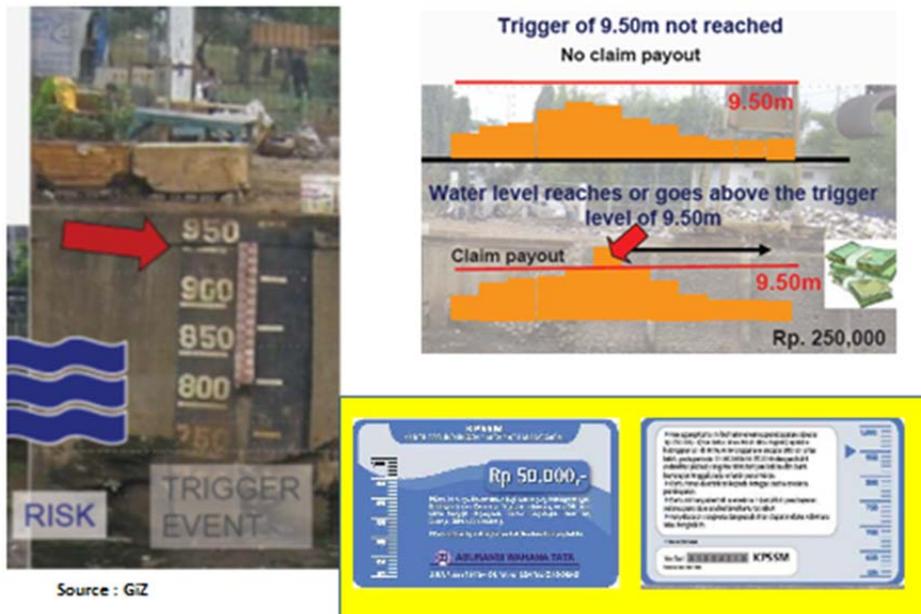
- ✓ Flood risk cover: According to the scientific study, hydraulic cycle in South East Monsoon Asia will be changed by climate change and the risk of flood in rain season and drought in dry season become higher. Farmers need to have instrument to cover the damage caused by both flood and drought.
- ✓ Data collection: Basic data was available in North East Thailand but data collection was not easy. For constructing insurance model in other region, government support for the data collection is very effective. Satellite data may be useful for constructing data base for the insurance model.
- ✓ Subsidies for reducing burden: WIIA is a self-defense type instrument but very helpful for stabilizing local economy under climate change. Its benefit is enormous and government can save expenditure for constructing national safety net. It is worth subsidizing by government, for instance, half of premium will be paid by government.

<Case Study 2; Flood Insurance in Jakarta>

Number of megacities is increasing in developing countries, particularly in Asia. Many of megacities are located along coast line, particularly at river mouth, or big rivers and city area is sprawling to lower area. These areas are frequently damaged by flood or high tide and its risk is increasing by Climate Change. Physical infrastructure, such as dykes, breakwaters and drainage systems are planned to be built but the construction of these structures is very slow due to the lack of funding and complicated procedure including resettlement for the construction.

A pilot insurance project was implemented by GiZ of Germany. It covered flood risk at lower area in Jakarta City, Indonesia. This is Index base insurance too and its trigger is water level of the river. People who feel flood risk bought insurance card (Rp. 50,000 a card) before rainy season. When the water level at the observation point is higher than 9.5m, then policy holders can receive payment (Rp. 250,000 a card) without investigation of damage.

Flood insurance by GIZ : Jakarta



Observation of this pilot project is as below;

- ✓ Acceptance; Many of people in the project area were not familiar with insurance products therefore many meetings were organized for getting better understandings. In addition to verbal explanation, they use cartoon like the below.



- ✓ Index; Trigger is river water height. On the insurance card, its trigger and its point was clearly showed and it can be observed and confirmed by the people anytime they want to.
- ✓ Implementation; In general, transaction cost and implementation network are very critical for insurance, particularly in the region where insurance is not common financial services. Insurance card was acquired by the people who bought the insurance and they will keep the card. They can easily to identify whether they can receive payout or not. When the trigger is hit, they will get payment exchanging the insurance card. No complicate management system is needed.

This is very smart system but has not been developed to commercial one because frequency of flood is so high and same area is flooded every year. We learn the necessity of the combination of the hard infrastructure preventing flood.

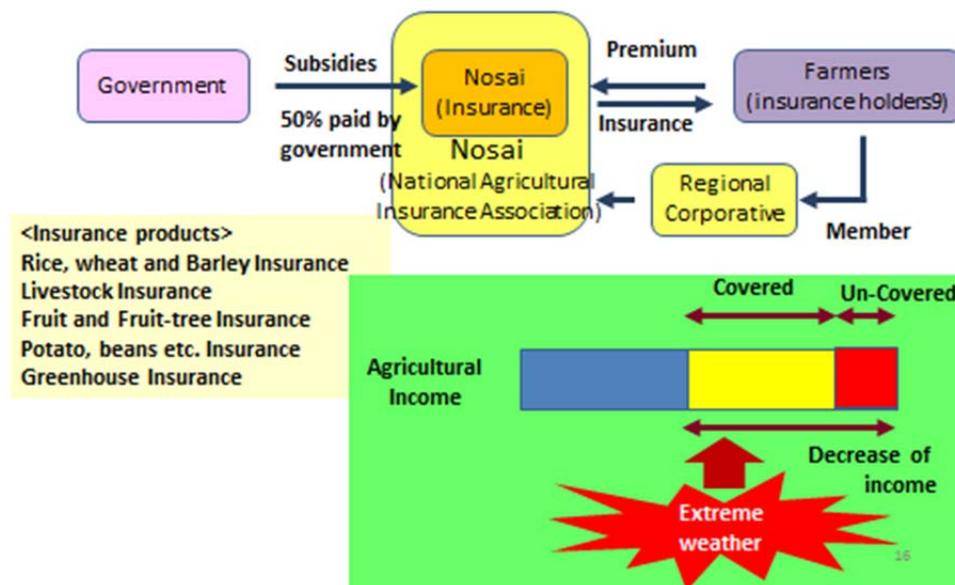
<Case Study 3; NOSAI – national agricultural scheme in Japan>

Both WIIA in Thailand and Flood Insurance in Jakarta are private driven safety net systems for Climate Risk. Public driven base insurance system is implementing too.

Nosai, National Agricultural Insurance Association, was established in 1940 in Japan by “National Insurance Law” and has provided insurance services for their members. They sell 7 insurance products which cover both agricultural products and equipment and system for agriculture such as green houses. Farmers as members of the association pay premium for buying insurance but a half its premium is subsidized by Japanese government because this is a part of social safety net system. Stability of agricultural sector is politically very important in Japan and Government will provide special finance support to farmers when magnitude of weather event is unexpectedly large. Japan has two tiers safety net system.

Nosai has been collecting many data including agricultural production, market, and weather for many years and provided these data for their members for improving their operation. In addition to these services, some regional corporative provide weather forecast data by contracting private driven weather forecast company. Nosai provides not only post weather event recovery services but also information for prevention of damages.

NOSAI : Agricultural Insurance scheme of Japan



5 Recommendations – For private sector’s involvement

Government is expected to take actions for securing life, property and asset from Climate Risk but it is unlikely to prevent all climate disaster. Economic Measures are needed. And corporate and individuals should take additional measures by themselves as a self defense manner.

Following supports are better to be considered.

5-1 Climate Insurance

The following public support is effective for the diffusion of WIIA and other Climate Insurance.

- ✓ Data base and Climate Risk Model; Collection of data and construction of data base is very effective support and, in other word, data base is a public good. Many useful data are observed and stored in developing countries but many of them often have not been disclosed. It is very helpful if governments collect and reconcile these data, construct data base, and disclose it. In developing countries, weather observation points are limited. Remote sensing technology is useful for gathering data and making data base. Regional cooperation is effective for analyzing the data from remote sensing.

- ✓ Reduce the financial burden: At the beginning of Climate Insurance, not so many contracts are expected and therefore its premium payment is likely to be high. Subsidy for reducing insurance premium, as a national safety net, is a good support.
- ✓ Local partnership: Local partners are very crucial for the development, marketing and implementing. Capacity building for the insurance sector in developing country is effective.

5-2 Climate Risk Reserve

Climate Risk Reserve, which is contingency reserves for Climate Risk, could be an option for the preparation of the cost for the recovery from the damage. When many projects have Climate Risk Reserve, the recovery from the economic damage in the country or at the region could be faster. Incentive for reducing its financial cost is recommended.

- ✓ Tax incentives for the reserves: Climate Risk Reserve should be tax exempt reserve.
- ✓ External financing: As a part of adaptation components, it should be financed because it is necessary from the beginning of the project.

5-3 Adaptation Consideration Guideline

Climate Risk is emerging. BCP (Business Continuity Plan) and post disaster recovery plan is better to be considered as a part of investment decision making. Adaptation consideration is strongly recommended as a risk control, particularly for projects which are vulnerable for Climate Risk.

A practical way to adopt Adaptation Consideration is to start as a voluntary and self defense action. Firstly “Adaptation Consideration Guideline” will be studied by internationally. Discussion itself is important for improving “awareness”. And then it is expected to develop to an international good practice. Finally the guideline will be used for restrictive approach and preferential approach.

- ✓ Construction of Adaptation Consideration Guideline”; Multilateral public financial institutions and bilateral public financial institutions have guideline for environment due diligence (Environment Guideline) and major international banks participates “Equator Principle” for their environment consideration. This is a good precedent practice and it is recommended to set up groups for studying the Guideline.
- ✓ Restrictive Approach: Environment Guideline provides enormous impacts on the investment decision making of project investors, particularly pollution control and

natural environment conservation. If financial institutions adopt the guideline and ask project sponsor to make Climate Due Diligence, project company will consider Climate Risk more seriously and projects will be more resilient for Climate Risk.

- ✓ Preferential Approach: Incentive to the project adopting Adaptation Consideration is needed. The below are examples of ideas

1/ International Private Financial institutions play important role for financing large scale projects. One of the options for inviting these influential institutions to this approach is tax incentives. Withholding tax is charged on the interest and dividend from cross boarder transaction and reducing the tax rate is a good incentive for financial institutions and investor.

2/ Lower interest rate to the project with Adaptation Consideration is a good incentives for investors. OECD Export Credit Credit Guarantee determines common risk premium for the public finance. When the risk premium for the project adopting Climate Due Diligence is discounted, it is a good economic incentive to the project, particularly project with long payback period.

3/ Institutional investors invest big amount of funds to SRI market. If institutional investors decide the adoption of Adaptation Consideration Guideline as a condition for SRI, it would be an incentive for corporate and project too.

An example of the guideline is as follows.

Adaptation Consideration Guidance

<Purpose>

- ◆ Encourage the adoption of “review Cycle” for project risk control
- ◆ Paying attention on the risk of supply chain

1 Review and Identification of climate related risk

- Potential risk shall be listed up even though its risk seems to be not so big.
- Damage and loss at project itself.
- Community of work force
- Logistic of project including transportation.
- Supply chain of energy, material and parts etc
- Damage at their market

2 Consideration of Adaptation measures

- Taking into account of risk, damage and cost, measures to be taken will be determined
- Improve physical infrastructure for preventing/mitigating future events.
- Alert and evacuation system (safeties)
- Insurance and other economic instruments (Contingency reserves)
- Diversification of market and alternative resources.

3 Implementation of Measures

4 Review and feedback

5-4 Climate Hazard Map

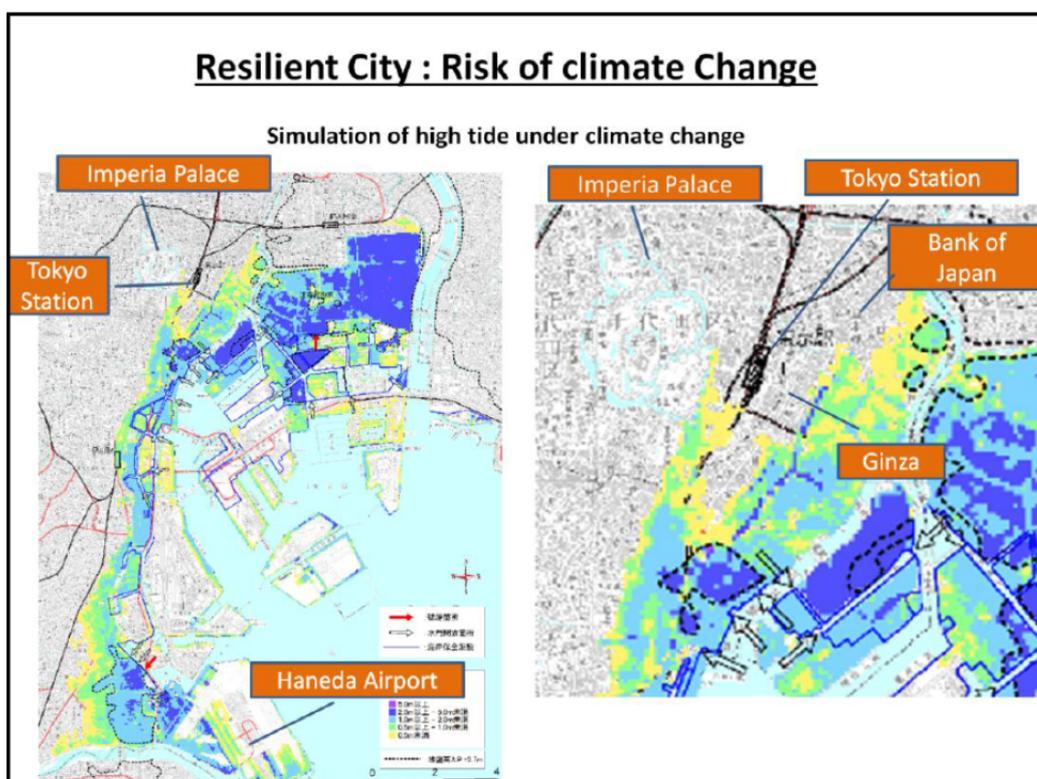
When we consider Project Measures, the first step is to identify Climate Risk including the future climate events. One of the useful instruments to know the situation is Climate Hazard Map which shows possible events and counter measures including National Plan and National Measures. Climate Hazard Map is useful for the development and diffusion of Climate Insurance.

Many hazard maps have been prepared in many countries and it shows the risk of natural disasters, such as flood, high tide, tsunami, eruption of volcano, in many countries. However, they do not cover all vulnerable area and many of them do not include Climate Risk. It need to be modified taking into accounts of climate change.

Required Hazard Map is follows.

- ✓ Types of events; Hazard Map should include possible climate event which are highly likely to be happened and the magnitude of these events. Events to be included vary area by area.
- ✓ Precision; It is necessary to be precise enough to distinguish project site. It is not precise enough but it is “better than nothing” and so step by step approach is practical way.
- ✓ Revision; Climate Science is progressing. Climate Hazard Map shall be updated following the progress of Climate Science and National Plan/National Measures.

Preparation of Climate Hazard Map is very urgent measure. For speed-up of the preparation, use of satellite data and regional cooperation is very effective.



6 Definition and Monitoring of Adaptation Finance – Use fund effectively and efficiently

Monitoring of finance flow is important for confirming the achievement of the commitment and improving the effectiveness and efficiency of Adaptation Activities and Adaptation Finance. Purpose of the monitoring is the encouragement of taking Adaptation Activities and it should not be a big burden by opposing complicated monitoring method.

The first thing we need to do for the consideration of the monitoring system of Adaptation Finance is the determination of the definition of Adaptation Finance, Adaptation Activities includes a lot of activities and varieties of finance are used for activities. There is no “one-size-fits-all” methodology. Therefore, for having comprehensive system, “principle” of the system is needed. The followings are recommended,

- ✓ Encourage taking Adaptation Activities:
- ✓ Inclusive, but not exclusive:
- ✓ Appreciation of Leverage effect and function:

<Scope of Adaptation Finance and accounting methodology>

Following the principles above, Adaptation Finance is better to be defined as “Finance intended for Adaptation Activities” The below is an idea of basic category of Adaptation Activities to be monitored.

- ✓ National Planning
- ✓ National Measures
- ✓ Project Measures including

They include various types of funds

- ✓ Grant including capacity building
- ✓ Concessional finance
- ✓ Public trade and investment finance (including public insurance and guarantee)
- ✓ Equity participation (direct investment)
- ✓ Loan and bond
- ✓ Portfolio investment (including fund)

It is practical to develop appropriate and practical accounting methodology one-by-one manner. Construction of structures has multiple benefits and there may be other benefits besides Climate Change Adaptation. If one of the major objectives of the structure is adaptation, then it should be included to Adaptation Activities. Insurance and other economic measures help to the recovery from the disaster and amount of asset or investment covered by insurance should be accounted as Adaptation Finance because insurance show the “opportunity cost of damage” and is an alternative or supplemental one for Physical Measures. The table below is an idea.

Counting of Adaptation Finance

Adaptation Activities	Adaptation Finance	From developed countries	Remarks
Capacity building	(Amount of grant or others)	Amount of grant or others	
Construction of structures	Amount of finance to the project	From developed country including through the third country	
Project with Adaptation components	Amount of finance to projects including adaptation components	From developed country including through the third country	Climate Risk at project is mitigated by the adaptation components
Insurance	Amount of asset insured	When it is implemented by developed country institutions. If it is JV, share equivalent is counted.	Climate Risk at project is mitigated by the insurance
Insurance (index base)	Amount of payout on the contact	it is implemented by developed country institutions. If it is JV, share equivalent is counted.	Climate Risk at project is mitigated by insurance
Climate Reserves	Amount of investment including reserve	it is implemented by developed country institutions. If it is JV, share equivalent is counted.	Climate Risk at project is mitigated by Climate reserves

<Monitoring Platform>

Currently public Funding including multilateral finance is monitored by OECD DAC Statistic. It was designed and started for monitoring the financial support to the economic development in the developing countries when international private finance was not so active and domestic finance market was not well developed. This experience and platform can be used for the monitoring system of Adaptation Finance as well as Mitigation Finance when it would be modified.

Tracking the funds of private sector from developed countries to developing countries for Adaptation Activities is rather complex.

- There are varieties of financing options including equity, loan, bond and investment to stock market.
- There are varieties of channels for financing to activities in developing countries for instance, to developing countries directly, through the third countries including offshore market and re-investment at the investment country.

There is no comprehensive reporting system of cross boarder private transaction. OECD DAC Statistics report private funds flow but has a limitation. Therefore a practical option is the combination of existing regulatory system and new voluntary reporting system. Benefit for the private sector joining the voluntary reporting system is “reputation”. They can use their track record of Adaptation Activities as “authorized” or qualified one. Institutional investor’s proactive involvement by calling for the

adoption of Adaptation Consideration Guidelines and the participation to the reporting system is very supportive.

7 Conclusion

Private sector can do a lot for Adaptation Activities. Firstly private sector's involvement can reduce Adaptation Cost and secondary it is unavoidable Actions for the private sector to continue business under Climate Risk. When we consider Adaptation Finance, we should not miss the role of private sector activities. More dialogue between public sector and private sector is needed and platform for discussing Adaptation Activities by public and private is recommended.

Currently climate science cannot show magnitude and frequency of climate change impacts clearly and consideration and experiences of Adaptation Measures has not been accumulated so much. We are in the leaning-by-doing stage and exchange of good practices is needed and we should try everything we can.

<Reference>

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