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THAILAND'S FLOOD MANAGEMENT POLICY: ISSUES, DEVELOPMENTS AND IMPLICATIONS FOR THE THAI TOURISM INDUSTRY

Abstract:

This paper aims to propose initiatives for flood management in order to prevent and alleviate the instability of tourism flows and economic loss of tourism industry, including cultural heritage tourism. Urbanisation and changeable demographics of floodplains and flood behaviour as well as the climate change have increased the exposure to flood risk in Thailand. Thai tourism sector was heavily affected by the floods in 2011. The disaster caused severe damages and losses such as a slowdown in income and a decline in the number of foreign tourists. Nonetheless, the negative impacts can be mitigated. Proper countermeasures include the developments of a proactive and integrated disaster risk management policy and effective non-structural strategies.

Keywords:

Flood management policy; Disaster risk management; Tourism industry; Developing countries; Thailand; Non structural strategies; Impacts of flood

JEL Classification: Q54, H59

1. INTRODUCTION

The major incidents considered as striking setbacks for the tourism industry are listed in Table 1. They include some well-known events such as the recent political turmoil and natural disasters such as tsunami or flooding. The number of inbound visitors dropped from 10.8 million persons to 10 million persons in 2003 in the presence of the SARS epidemic in Asia (Immigration Bureau of Royal Thai Police, Tourism Authority of Thailand, 2014; Ministry of Tourism and Sports, 2014). After the tsunami, the number of inbound visitors slightly declined to 11.52 million visitors from 11.65 million visitors of the year before (Immigration Bureau of Royal Thai Police, Tourism Authority of Thailand, 2014; Ministry of Tourism and Sports, 2014). The number of inbound visitors and domestic visitors also decreased in 2009 resulting from the impacts of the world recession and domestic political instability.

Table 1. Major incidents considered as setbacks to Thai Tourism industry year 2001-2011

Incident	Period	Place	Details
1.Incidence of September 11	Sep 2001	World	Global concern on terrorism and biological war regarding anthrax. US & Muslim markets slow down.
2. Unrests in the southernmost region	Late 2003 – presents	Southern region	It has long been in a quest for peaceful measures to quell the five-year unrests in the southernmost region including a part of Songkhla, Pattani, Yala, and Narathiwat.
3. SARS and Influenza A H5N1 Bird flu	2003-2005	Central region	Death from SARS in East Asia scared out tourists. Avian flu led to the 'killing field' of poultry. It directly devastated poultry industry and also threatened the tourism industry with scares for outbreak and human transmission
4. Tsunami	26 Dec 2004	Southern region	Tsunami attacks devastated tourist areas in six provinces on the Andaman coast, including popular tourist destinations Phuket and Khao Lak in Phang-Nga
5. Big protest and Parliament dissolution	Feb-Mar 2006	Bangkok	Anti-Thaksin protest (PAD) gathered to put pressure on Prime Minister Thaksin Shinawatra to resign after the sell-off of his stake in Shin Corp with tax liability exemption
6. Military Coup	19 Sep 2006	Bangkok	Thai Army units loyal to the army chief of staff, Gen Sonthi Boonyaratglin, staged a coup attempt to unseat PM Thaksin Shinawatra to stop creation of social divisions as reasons
7. Government House seized and airports in the South closed	Aug 2008	Bangkok Hat Yai Phuket Krabi	PAD protestors occupied the Government House and closed down airports in Southern region against PM Samak Sundaravej as a nominee for former PM Thaksin
8. Big Yellow-shirt protest	Sep - Oct 2008	Bangkok	A state of emergency declared to pacify the clashes, but the crisis swelled after PM Somchai Wongsawat succeeded PM Samak and let the police disperse protestors violently
9. Seizure of Suvannabhumi and closure of Don Muang	Nov 25-26 2008	Bangkok area	PAD executed "Operation Hiroshima" to seize Suvannabhumi airport to force government to resign. All flights were soon canceled, leaving thousands of travelers stranded in the airport.
10. ASEAN Summit & Red-shirt protest	Apr 8-16, 2009	Pattaya & Bangkok	Thaksin Supporters called for People revolution over the government of PM Abhisit Vejjajiva disrupting ASEAN summit, then a state of emergency in Pattaya & Bangkok.
11. Influenza A H1N1 Swine flu	Apr-May 2009	World	Swine flu outbreaks discovered in Mexico could become a worldwide flu pandemic
12. UDD issues protest and a transfer of protest camp to financial zone	Mar 2010	Bangkok area	Red shirt or Thaksin supporter (UDD) protests result in 18 deaths and over 800 injured. Many countries, including Australia, Canada, Great Britain, Hong Kong, New Zealand, Philippines, and Singapore issued new travel advisories for their citizens.

13. More violence and clashes across Bangkok	Apr 2010	Bangkok area	Violence escalates as police and troops besiege protest camp. At least 35 people are killed and over 250 injured in clashes, including foreign journalists and medical workers. "Red Shirt" leaders warn of the possibility of civil war.
14. Arson attack after ceased fire, many buildings collapse	May 2010	Bangkok area	Army overruns red shirt camp resulting 12 deaths. Red Shirt leaders surrender and are arrested which is followed by rioting across Bangkok. Many buildings are destroyed by arson attacks including Central World shopping centre.
15. Big flood	Oct–Nov 2010	Central& Southern	Big flood in Central, part of North Eastern and Southern region, especially Songkhla province.
16. Gigantic flood	Sep–Dec 2011	Central& Southern	Catastrophic flooding in Central, part of North Eastern and Southern region, especially in Central region. Worst in 70 years.

Adverse situations arose which impacted the tourism industry negatively. Such sudden shocks maybe regarded as temporary and not affecting the long term growth, however the series of the effects on some direct tourism and tourism-related sectors may lead to economic costs due to the loss in revenue and the rise of unemployment caused by set-backs and instabilities. This paper aim to analyze the impact of the worst flooding in 70 years which happened in the last quarter of 2011 and provide policy recommendations on prevention and alleviation of possible instability of tourism flows to relevant authorities of Thailand.

2. LITERATURE REVIEW

Tables 2 below provides a list of key literatures on a computable general equilibrium (CGE) model and its application to the tourism industry.

Table 2. Brief Summary of Literature Reviews about the CGE application on Tourism and related issues.

Author(s) or Model name	Country & Base year	Main database	Major simulation	Results
1.Goorooch urn (2004)	Mauritus (2003)	Data of Mauritus for the Ramsey model	A small increase (0.1%) in the sales tax rate to each sector, keeping the other tax rates constant. Test for various indexes eg. Gini coefficient	Taxing tourism related sectors is relatively more efficient than taxing other sectors. Tax reform shifting for taxing this tourism sectors prevents welfare to fall while increasing tax revenue.
2.Narayan (2003)	Fiji (1999)	Modification of the CGE (1999), Fiji case	10% increase in demand for tourism, 25% increase of value added tax, and 10% reduction in tariff	1) Trade balance improved, tourism gain outweighed the fall in exports 2) Price rose from vat, lower tourism 3) price fell from tariff cut, tourism increased.
3.Wattanak uljaras (2006)	Thailand (2001)	Input-Output Table (2000) and the corresponding databases of the Social Accounting Matrices, SAM (2001) for comparative static CGE model	10% and 20% inbound tourism expansion rate and a removal of piped water subsidy	Growth in inbound tourism can stimulate real GDP and improve the current account deficit. Piped water subsidy reduction benefits more than the costs.
4. Forsyth (2006)	Australia (2006)	Database of the STCRC model (extended from MMRF model of Centre of Policy Studies)	$1.5 million subsidies lead to $7.5 million of additional expenditure/ intrastate expenditure to specific region for five scenarios with five economic conditions	Possible for offering subsidies to attract economic activity. Other regions may face negative impacts, but the nation as a whole can be either positive or negative. Impacts

Author(s) or Model name	Country & Base year	Main database	Major simulation	Results
				depend on circumstances.
5.Giesecke, Burns, Barret, Bayrak, Rose and Suher/ORANI-LA (2010) 6.Verikios, McCaw, McVernon and Harris/ Monash-health model (2010)	U.S.A. (2009) Australia (2009)	ORANI-LA is an LA-County part of the single US region model ORANI-R by Giesecke (2009). Using IMPLAN data for LA-County and some relevant parameter values from USAGE, a large scale CGE model of USA Input-Output Data 2009 of Monash-Health model with details for health treatment industries that based on the International Classification of Diseases of the 10th Revision. Using data from Australian Bureau of Statistics (2009b) to determine the size and composition of Tourism sectors	1) Resource loss effects with $26.2 million of lost labour input, no capital damage and $1.4 billion of lost output 2) Behavioural effects with 3 types: a rise in regional wage premium, a rise in regional required rate of return, and fall in willingness to pay for regional exports 2 Scenarios: 2009 outbreak & severe on these 4 economic shocks: 1) Surge in demand for hospital and other medical services 2) Temporary upsurge in sick leave & school closures leading to withdrawal of parents from the labour force 3) Some deaths with a related permanent reduction in labour force 4) temporary reductions in inbound and outbound international tourism and business travel	1) Fall in real GDP $5 million and fall in regional labour supply with a small rise in regional wage rate. Business interruption costs higher in the short run. 2) Behavioural effects are small in short run but big in the long run. Effective public policy would minimise the cost of interruption. 1) 2009 outbreak peak in 2009:4, GDP and employment are 0.9% & 0.7% below the baseline The decline in GDP relative to employment reflects the loss in labour productivity and the stronger fall in capital in use relative to employment. 2) Severe outbreak peak in 2009:4, with 6 to 7 times larger than scenario 1 at peak. It reduces GDP and employment by 3.6% and 2.2% later recovers but

Author(s) or Model name	Country & Base year	Main database	Major simulation	Results
				still recessed.

There has never been any dynamic CGE study on Thai Tourism. Wattanakuljaras (2006) could be seen as the only comparative static study for Thailand focusing on the effects of inbounded tourism to the Thai economy. Research done by Gooroochurn (2003), Narayan (2003) and Forsyth (2006) are good examples for fiscal application on Tourism.

3. METHODOLOGY

Some concepts on Tourism

According to the International Recommendations for Tourism Statistics 2008 (2010) of United Nations, it is recommended that three basic forms of tourism can be classified as:

(a) Domestic Tourism: comprises the activities of a resident visitor within the country of reference either as part of a domestic tourism trip or part of an outbound tourism trip. Domestic tourism expenditure is the tourism expenditure of a resident visitor within the economy of reference;

(b) Inbound Tourism: comprises the activities of a non-resident visitor within the country of reference on an inbound tourism trip. Inbound tourism expenditure is the expenditure of non-resident visitors being viewed as tourism revenue of the country of reference;

(c) Outbound Tourism: comprises the activities of a resident visitor outside the country of reference, either as part of an outbound tourism trip or as part of a domestic tourism trip. Outbound tourism expenditure is the expenditure of resident visitors being viewed as tourism expense of the country of reference;

The above-mentioned three basic forms of tourism can be combined to derive other forms of tourism. The following definitions should be used:

(a) Internal Tourism: comprises domestic tourism and inbound tourism, that is, the activities of resident and non-resident visitors within the country of reference as part of domestic or international tourism trips;

(b) National Tourism: comprises domestic tourism and outbound tourism, that is, the activities of resident visitors within and outside the country of reference, either as part of domestic or outbound tourism trips;

(c) International Tourism: comprises inbound tourism and outbound tourism. This includes the activities of resident visitors outside the country of reference, either as part of domestic or outbound Tourism trips and the activities of non-resident visitors within the country of reference on inbound tourism trips.

Tourism Satellite Accounts

Tourism Satellite Accounts presents the macroeconomic information regarding the direct economic contribution of tourism. The information provided in the accounts is not only tourism's direct gross value added and tourism direct gross domestic product, but also other similar aggregates for the total economy and economic activities in particular related areas of interest. This includes the data on tourism consumption with the extensive concept associated with the activity of visitors in some specific types and a description of the equilibrium where demand is equal to supply. They are in details organized and derived from supply and use tables which can be compiled both at current and constant prices (United Nations, 2010). Tourism Satellite Accounts also provide the detailed accounts of tourism industries, including data on employment, linkages with other productive economic activities and gross fixed capital formation. Some other information on tourism, such as number of trips (or visits), duration of stay, purpose of trip, modes of transport, etc., are specified to reflect the related characteristics of the economic variables.

Nevertheless, although Tourism Satellite Accounts give some details of economic contribution of tourism, it should also be noted that the 'more' comprehensive impact analysis could be enhanced by other instruments as suggested by International Recommendations for Tourism Statistics (United Nations, 2010) as:

> "The Tourism Satellite Account is mainly descriptive in nature and does not include any measurement of the indirect and induced effects of tourist consumption on the economic system as a whole. This means that the impact of tourism on the economy is not fully reflected in the Tourism Satellite Account tables and must therefore be measured and analysed using other means. This can be done for instance using input-output or computable general equilibrium models based on the Tourism Satellite Account or other modeling instruments which allow for comprehensive tourism impact analysis"

This paper employs a dynamic computable general equilibrium model for the Thai economy and a case study method for analysing the impact of 2011 flood on the Thai Tourism industry. It can be applied either to examine a slice of a historical period for the contributions of several changes of economic variables or to perform a wide-range of economic analyses of forecasting and policy implementation. The CGE model is intended to be an explainable basis for the relationship of all the important economic variables either macroeconomic or sectoral: overall production, consumption, investment, employment, price level, international trade, GDP as well as important policy measure variables related to tourism and non-tourism sectors. Furthermore, in relation to the above-mentioned model the core database for the Thai economy using Tourism Satellite Accounts of Thailand (TSA) is also constructed.

The model is applied to the unstable fluctuations of tourism flows over time; especially the economic loss as a result of setbacks which are normally unfavorable for the related economic agents, in this case, the impacts of the flood in 2011 is discussed. This policy simulation could put forward the recommendations to the related authorities that have the task to mitigate such tourism setbacks. Analyses for policy simulation, in terms of the possible 'what if' scenarios, are then carried out as a guideline for future research as another add-on attention of the paper.

4. FINDINGS AND DISCUSSIONS

Table 3 summarises information on damages and losses of several sectors including infrastructure, production, social and cross cutting. Details are shown below:

Table 3. Information on damages and losses by group of sectors (million baht)

Sector	Disaster effects			Ownership		
	Damages	Losses	Total	Public	Private	Total
Infrastructure						
Water resources management	8,715	-	8,715	8,715	-	8,715
Transport	23,538	6,938	30,476	30,326	150	30,476
Telecommunication	1,290	2,558	3,848	1,597	2,251	3,848
Electricity	3,186	5,716	8,902	5,385	3,517	8,902
Water supply and sanitation	3,497	1,984	5,481	5,481	-	5,481
Production						
Agriculture, Livestock and Fishery	5,666	34,715	40,381	-	40,381	40,381
Manufacturing	513,881	493,258	1,007,139	-	1,007,139	1,007,139
Tourism	5,134	89,673	94,807	403	94,405	94,808
Finance & Banking	-	115,276	115,276	74,076	41,200	115,276
Social						
Health	1,684	2,133	3,817	1,627	2,190	3,817
Education	13,051	1,798	14,849	10,614	4,235	14,849
Housing	45,908	37,889	83,797	-	83,797	83,797
Cultural Heritage	4,429	3,076	7,505	3,041	4,463	7,504
Cross cutting						
Environment	375	176	551	212	339	551
Total	630,354	795,191	1,425,545	141,477	1,284,066	1,425,543

Source: Ratanavong (2012)

Damage in the tourism sector was mainly felt in accommodation assets and attractions. Other components included food and beverage, shopping, entertainment, sightseeing and local transport and tour operations. All of these components of the tourism industry belong to the private sector, with the exception of attractions which belong to both the private and public sector. These attractions include cultural assets such as temples, museums and monuments. The estimation on damages in the tourism sector also includes natural assets such as scenic parks, beaches and countryside areas. The total damages in the tourism sector accounted for approximately THB 94.8 billion, whereby

the shopping component was most affected with damages of approximately THB 26.6 billion. Accommodation experienced damages of an estimated THB 22.5 billion, food and beverages saw damages of approximately THB 14.5 billion, whereas the entertainment component felt damages of approximately THB 14.8 billion. In addition to this local transport and tour operations experienced THB 8.5 billion in damages, the sightseeing component experienced THB 4.5 billion in losses, and finally other components such as attractions felt a total of THB 3.3 billion in damages, where as THB 403 million of this figure was in the public sector (World Bank, 2012).

This sub-section informs the after-effect forecast growths (deviations) relative to base case forecast from 2012 to 2020, as shown in Figure 1 and 2. Both behavioural and resource-loss effects of flooding reduce real GDP and its components overtime as shown in Figure 1 for its demand side of the economy. It shows that the effect is more intense overtime. In 2020, the real GDP is reduced by -4.127 percent relative to the baseline, comparing to about -3.374 percent in 2012. This stems from the much lower consumption (-7.195 percent) and investment (-8.390 percent) in 2020. The fall in investment is great after the policy shock, especially from capital damage, and it still falls relative to baseline in 2020. Other components are also shown to be negative and ranged around the same magnitude as of 2012 whereas only the effect on inbound tourism improve overtime as in 2020 the effect becomes lower (0.181 percent increase instead of negative effect earlier).

With a small economy, the deviation for exports is negative but improved through time. Without any shock on foreign demand for exports on this scenario, the improvement in export volumes is accompanied by the fall in foreign currency prices. For imports, assume that any changes in local demand have no effect on foreign currency prices, the over-time slight deterioration in terms of trade, or a smaller ratio of the price of exports to the price of imports would mean a further decline in consumption relative to the GDP. This is also the case for the gain in the balance of travel, where, as aforementioned, the improvement in inbound tourism exists while the outbound tourism slightly declines as confirmed in the travel receipts and expenses shown in Figure 2.

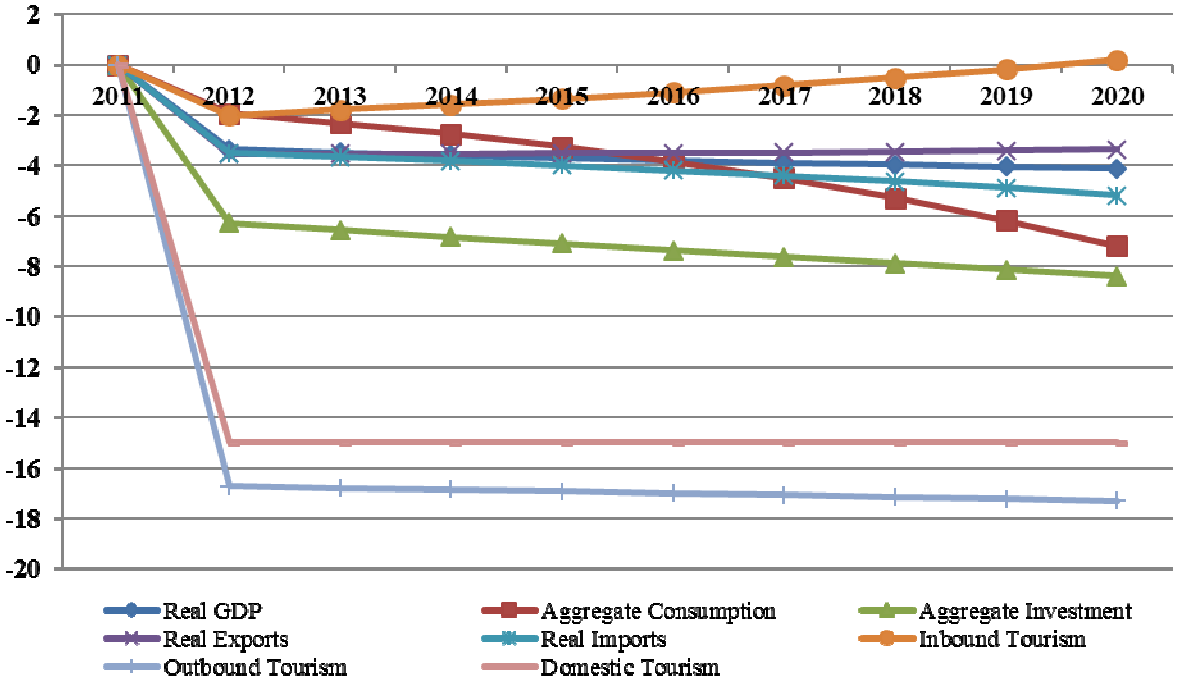

Figure 1. % Deviations from Base case Forecasts of Real GDP and its composition

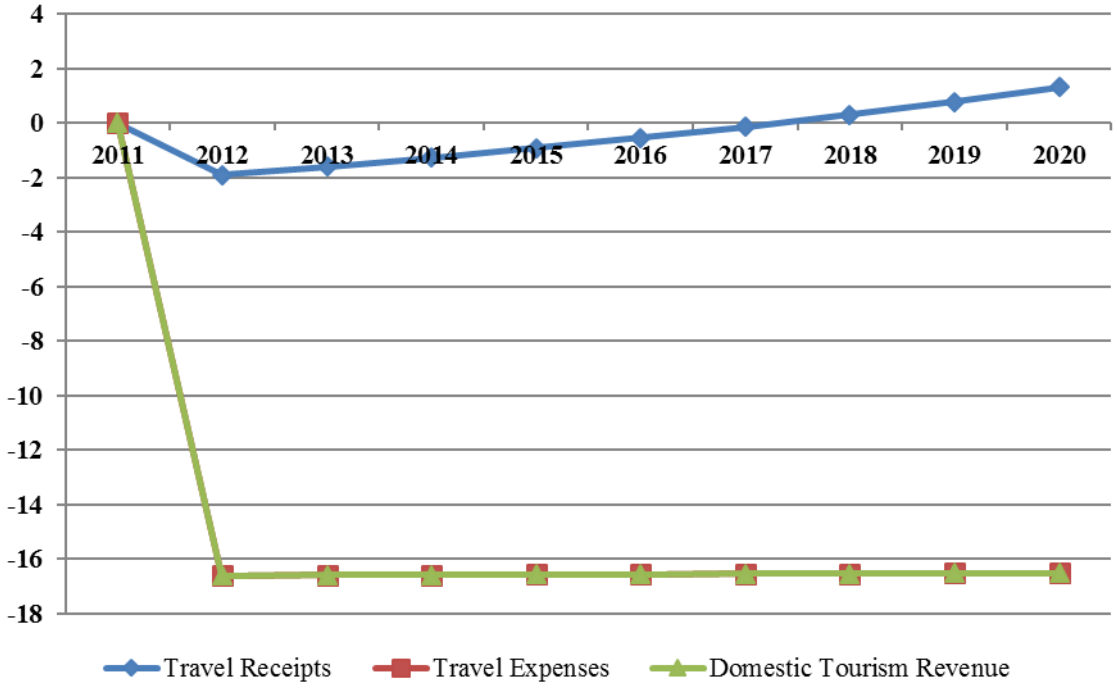

Figure 2. % Deviations from Base case Forecasts of Travel Receipts & Expenses and Domestic Tourism Revenue

5. POLICY RECOMMENDATIONS

Generally, flood risk in a specific place depends on the frequency of flooding and its associated consequences to the society. Flood management, hence, usually involves the reduction of either the frequency of flooding, or its effects, or both (National Flood Risk Advisory Group, 2008). First of all, to reduce the frequency of flooding, floodplain management should be developed and implemented based upon an integration of

management measures considering the range of floods, for example, from the minor, more frequent events to the rarer, more extreme events. Then, the floodplain management authorities should examine the catchments and factors that influence flood behavior and hazard in the local basis. This will facilitate the structural flood mitigation measures such as embankment's establishment, detention basins, flow capacity strategy, and land use zoning (Ibid).

Recommendations in the short-term included improvement and the building of dykes and pump stations. Sandbags are generally a mediocre measure for flooding, but the recommendation was that a more stable bank/barrier should be made soon. In addition to this, because water flows from the northeastern part, this means that northeastern banks must be strong, and sewer systems must be effective against the dirty sewer water which contains many harmful substances. Moreover, there were recommendations to educate the public to build awareness, to cooperate and monitor research surveys and also to have practical drills in the event of a similar situation in the future (Mizuta, 2012).

The policymakers should pay attention to impacts on people and on public and private infrastructure after flooding. There must be effective flood warning systems and messages, the action in response to this threat, and the assistance that may be available to populations. The information must be based on credible flood intelligence from various sources, and must be improved through data collection after flood events. The warning systems should include detailed evacuation planning and identify infrastructure, routes and services such as emergency hospitals and evacuation centers, emergency water, sewerage and power supplies (National Flood Risk Advisory Group, 2008).

The countermeasures against natural hazard like flooding disaster should be evolved from defensive action to risk management and living with floods sustainably by reducing the vulnerability of human beings and goods exposed to them; this should not be limited to minor floods that occur quite often, but also the rare, major floods. Policy makers should start with the reduction of frequency of the floods through integrated river basin approach which requires the maximization of the economic and social benefits derived from water resources while maintaining ecosystem functioning in a long-term sustainable vision (Global Water Partnership, 2000).

In order to avoid instability of tourism flows and economic loss of tourism industry, some general principles should be applied. First, the most profitable locations must be identified so that the policymakers and local authorities can maximize the interactions between the tourist attractions and enhance the public transportation based upon the tourist hot spots. Second, tourist attractions and their surroundings' layout and design must be developed in the appropriate manner that facilities and services are able to function timely and effectively while the adverse impacts must be avoided or reduced simultaneously (Department for Communities and Local Government, 2006). To achieve all of the above, policymakers need to understand and integrate these concepts altogether: market demand, environmental impact, transportation and accessibility, functional links, regeneration benefits and human resources management.

In relevance to flood management, tourism policies should integrate the flood management recommendations to tourism general principles since floods and tourism industry affect each other as a cycle. The key factors of tourism approach like

environmental impact and transportation and accessibility influence the floods and their consequences both positively and negatively. Tourism policy makers should aim to preserve natural resources to attract tourists and minimize negative impacts on environment that can reduce the flood risks in return. The enhanced flood-risk areas planning based on river basin management will also increase the capacity of water flows and mitigate the damage of floods toward the population and visitors. Similarly, the design and layout of transportation system and related infrastructure would be based on the fact of how to facilitate the trips for the tourists and give out the best sight-seeing experiences which means the local people and the property as a whole can enjoy the better public transportation that is, at least partly, safe from floods.

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