

### 3. REGIONAL CHARACTERISTICS

Japan and Taiwan are located at the Western Pacific chain in East Asia, bordering the East China Sea. (Figure 6) With the rich but harsh natural environment, limited habitable space, and high population pressure, land use has been an important issue in Japan and Taiwan for the past few decades.

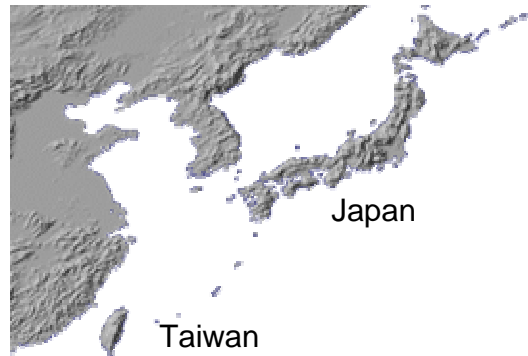


Figure 6 Study Area

Following the hypothesis of this study, the comparisons of economic development and land use change between Japan and Taiwan are briefly introduced in this section.

#### 3.1 Economic development

The economic development of northeast Asia in the past few decades was broadly studied in the world. After WW2 the NIEs (Taiwan, Korea, Singapore, Hong Kong) had remarkable economic growth following the only advanced county, Japan. In the early of 1990s, Taiwan shifted its industry structure toward knowledge-based and high-tech industries, following the trajectory of Japan.

Table 1 shows the Per capita income and per capita GDP (gross domestic product) between Japan and Taiwan from 1980s. By analyzing these economic indexes, it is clearly that the economic development of Taiwan has a time lag behind Japan.

Table1. Per capita income and Per capita GDP in Japan and Taiwan

year	Japan US\$	year	Taiwan US\$	Year	Japan US\$	year	Taiwan US\$
1981	10,063	1990	7,413	1980	9,280	1989	<b>7,455</b>
1982	9,307	1991	8,189	1981	10,077	1990	<b>7,918</b>
1983	10,132	1992	9,591	1982	9,302	1991	<b>8,769</b>
1984	10,734	1993	10,011	1983	10,117	1992	<b>10,274</b>
1985	11,544	1994	10,816	1984	10,709	1993	<b>10,757</b>
1986	16,907	1995	11,630	1985	11,502	1994	<b>11,613</b>
1987	20,414	1996	12,610	1986	16,850	1995	<b>12,488</b>

Source: various issues of the Statistical Yearbook of the Republic of China and Statistical Book of Japan

#### 3.2 Land use of paddy filed

Table 2. Current land use of Japan and Taiwan

		Taiwan	Japan
<b>Area</b>	total	35,980 sq km	377,835 sq km
	<i>arable land:</i>	24%	11%
<b>Land use</b>	<i>permanent crops:</i>	1%	1%
	<i>permanent pastures</i>	5%	2%
	<i>forests and woodland:</i>	55%	67%
	<i>other:</i>	15%	19%

Yamada (1992) applied principal component analysis to make a regional classification of agriculture for Asian countries. 17 relevant variables against 25 countries for 1963, 1980 and 1987 were analyzed in his research. The analysis has derived three main principal

components: the modernization component; labor-using/land-saving component; and land-using/labor-saving component. The analysis results in the following regional classification:

- (1) **Developed East Asia: Japan, Taiwan, Korea**
- (2) Developing East Asia: China, North Korea, Viet Nam
- (3) General South Asia: Thailand, Indonesia, Myanmar, Bangladesh
- (4) Export-oriented Asia: Malaysia, Sri Lanka, Philippines
- (5) The others....

According to the result of Yamada (1992), Japan and Taiwan belong to the same type of agriculture classification. It also means Japan and Taiwan have similar agricultural land use and socioeconomic environment in agricultural industry.

Table 3 shows the transition of cultivated land in Japan and Taiwan from 1960-1999. Rice production was the most important agricultural land use both in Japan and Taiwan. Areas of paddy field in Taiwan began decreased during the 1960s. While the loss of paddy fields in Japan began in the late of 1960s.

Table 3. Areas of Cultivated land in Japan and Taiwan from 1960-1999

TAIWAN				JAPAN			
year	Total	Cultivated land Paddy fields	ha fields	year	Total	Cultivated land Paddy fields	ha rice
1960	869223	525580	343643	1960	6071000	3381000	2690000
1965	889563	536772	352791	1965	6004000	3391000	2614000
1970	905263	528927	376336	1970	5796000	3415000	2381000
1975	917111	515852	401259	1975	5572000	3171000	2402000
1980	907353	509326	398027	1980	5461000	3055000	2406000
1985	887660	494535	393125	1985	5379000	2952000	2427000
1990	890090	476997	413093	1990	5243000	2846000	2397000
1995	873378	459335	414043	1995	5038000	2745000	2293000
2000	851495	442005	409489	2000	4830000	2641000	2189000

Source: various issues of the Statistical Yearbook of the Republic of China and Statistical Book of Japan

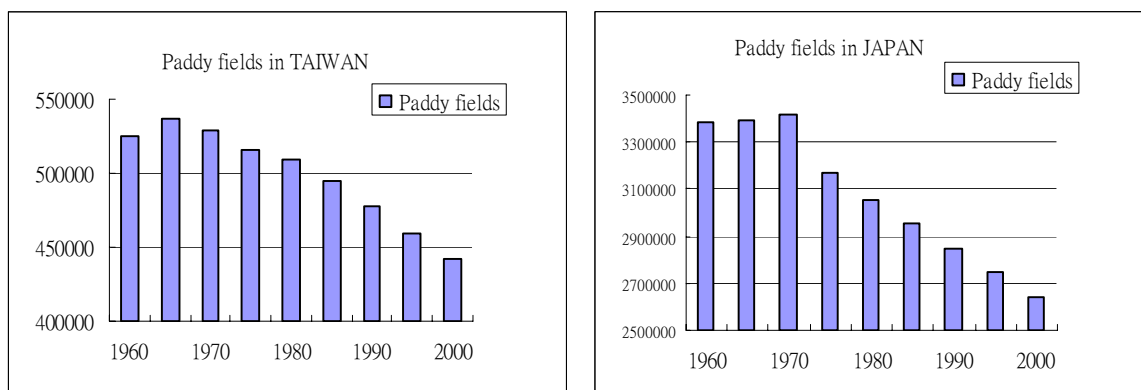


Figure 6 changes of paddy fields in Taiwan and Japan after 1970

After 1970, primarily because of economic development in Japan and Taiwan, areas of paddy field have been steadily converted to built-up land or the other kinds of land use. In the next section, multiple regression analysis will be used to identify the relation of economic development and the loss of paddy field between Japan and Taiwan.

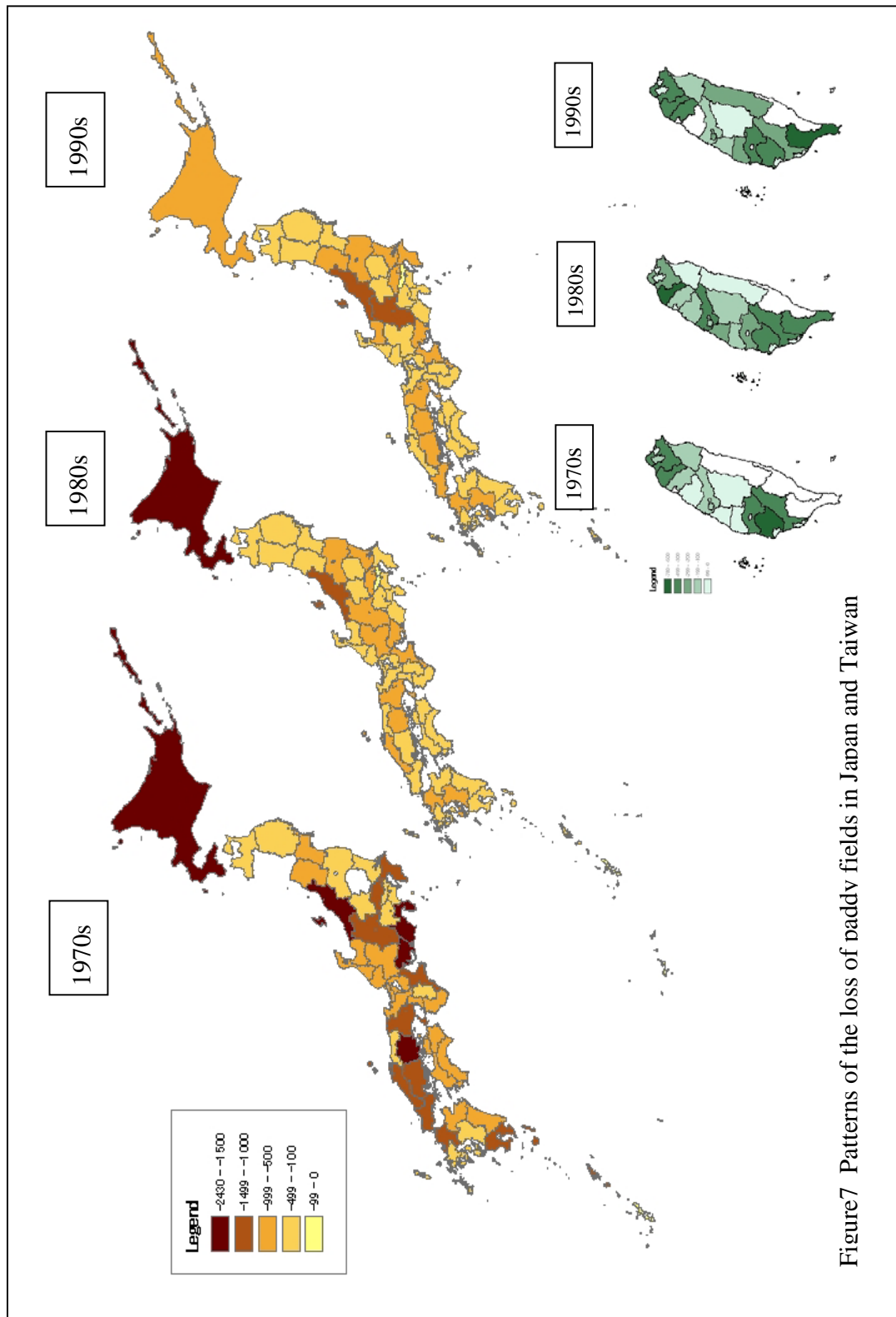


Figure7 Patterns of the loss of paddy fields in Japan and Taiwan