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Author(s)	Narumi, Kunihiro; Kato, Daisuke; Nguyen, Cao Huan
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Land-use Change by Urbanization of Hanoi city : Afer the Adoption of Doi-Moi Policy

Kunihiro NARUMI*, Daisuke KATO** and Nguyen Cao Huan***

** Prof. Dr., Osaka University, Department of Environmental Engineering*

*** Doctoral course student of Osaka University, Department of Environmental Engineering*

**** Prof. Dr. Hanoi University of Science ,Faculty of Geography*

ABSTRACT

In this study, we firstly organize the information of land-use condition of Hanoi city in both 1986 before Doi-Moi policy and 1996 a decade after adopting the policy, and make them graphical information as maps. We compare these results in order to discuss land-use changes between before and after Doi-Moi policy. Main land-use changes. planned urban area, unplanned urban area and industrial area, between the two time pints are clarified. And also the typology of unplanned urban area is carried out from the viewpoint of forming process.

KEYWORDS

Land-use change, landfill of water surface, unplanned development, urbanization, Hanoi city

INTRODUCTION / Background and Destination of the study

Our group, Field2 “Environmental Creation and Conservation”, began the research under the theme of “Alteration of natural and historic environment in the process of urbanization and their preservation” at first. But we finally have came up with the theme of “Inquiry into the Urban Form / Urban building Form Going on in Symbiosis with Nature especially with Water environment in Hanoi” after the several research exchanges.

Generally, land-use consists of two divisions, urban land-use and natural land-use. Any land can be said to be in the situation of some kind of land-use at the present moment under land-use standpoint. When we think a land “un-utilized” in a certain point of view, the land can be thought on the contrary “utilized” in other points of view. In short, there are many cases that a land is recognized as “un-utilized” unless the land-use is positively valued.

When a city grows, urbanization proceeds. The place where urbanization proceeds is land in natural land-use, which are “agricultural land”, “forestland/grassland”, “water surfaces” and so on. Therefore, urbanization can be regarded as changes of land-use: from natural land-use to urban land-use. In this case, it is essential to examine whether the changes of land-use are appropriate or not. Many countries introduce legal procedures to control land-use changes, which is called “Land-use Regulation”.

In the meantime, urban land-use involves residential use, commercial and business use, industrial use, and mixed use of those mentioned here. Parks and green spaces connoted urban area are also considered to be one of the urban land-use. Urban land-use is characterized by block plan and site plan, and shape and use of buildings on the site. In many country, site condition and building form, scale and use are legally controlled. This system is called “Building Regulation”. Both Land-use Regulation and Building Regulation are indispensable to create ideal urban environment.

Urbanization has been proceeding through time, therefore, urban area connotes historic center area developed in old time and lately urbanized area. Historic center area has been formed with the socio-cultural background of each era, and usually represents fascination and identity of the city. Lately developed area without urban planning must be required redevelopment in the future because its environmental condition is in low standard, even though this area is appreciated its cultural value to be able to observe habitation and lifestyle of common people.

In Vietnam, after the adoption of Doi-Moi policy, market economy was adopted in economy system and that enabled people to own land individually and use it freely. Relating land owning, it became possible to ①exchange, ②handover, ③rent, ④inheritance and ⑤mortgage the land, but many lands are unregistered in fact. Hanoi city started to issue “Right of Land Use / Certificate of Building Owner” from 1986, little certificates had been issued indeed.

System of land-use control and building control in urban area following appropriate conservation of natural land-use are so important to form favorable urban environment in the future. Even though it is very difficult to establish such system in the situation that there are so many unregistered and illegally used lands, we have to take the first step forward.

Hanoi City has long history and rich water environment that seem to contribute to unique development in the future. We believe that this research we are about to mention is the very first step to approach our study goal, “Inquiry into the Urban Form / Urban building Form Going on in Symbiosis with Nature especially with Water environment in Hanoi”.

MATERIALS AND METHODS / the purpose and means of the study

In this study, we firstly organize the information of land-use condition of Hanoi city in both 1986 before Doi-Moi policy and 1996 a decade after adopting the policy, and make them graphical information as maps. We compare these results in order to discuss land-use changes between before and after Doi-Moi policy. At present, Hanoi city consist of 12 administration districts (7 urban districts and 5 rural districts, gross city area is 927.5km²), and we pick up following administration districts as objects of our study because these districts show significant changes of land-use. We see TAY HO district, CAU GIAY district, BA DINH district, HOAN KIEM district, DONG DA district, HA BA TRUNG district and THANH XUAN district, in all 7 administration districts as research objects of urban districts, and gross area is 88.29km². As for rural districts, TU LIEM district (partly) and THANH TRI district (partly), and gross area is 102.86 km².

First, we set 1983 and 1996 as base year, and got topographic maps of both year or nearest year (1 to 10 thousandth scale). In the next place, we figured out boundaries of different land-use areas from both maps according to Table1, and integrated them into two land-use maps. Due to

prohibition of export 1 to 10 thousandth scale topographic maps in Vietnam, we did these work in Hanoi University. Students of Hanoi University made decision to shift through each land-use referring to building density and forms of city blocks on the maps. We take top priority to complete the map because this kind of maps seemed undeveloped so far in Hanoi. Therefore, these maps need to be revised by checking land-use on planned development urban area with development related material, and by identifying land-use to actual place with on-site research.

With these two land-use maps, we clarified the land-use condition of each year and the land-use changes during 1983 to 1996, and considered the results to know problems of urban development in Hanoi city.

RESULTS AND DISCUSSION / Current status of present land-use and land-use changes through years : compared with 1983 and 1996

1) Comparison of the entire area of 1983 and 1996

The land-use map is shown in Figure 1 and 2. As Hanoi city 「河内」 in Chinese characters is obvious proofs that this city is surrounded by the flow of Red River. Historic city center had developed on the dim high place located on southeast of LAKE WEST, and its surroundings are low land. There are so many ponds and marshes that we expect to be the former traces of Red River flow.

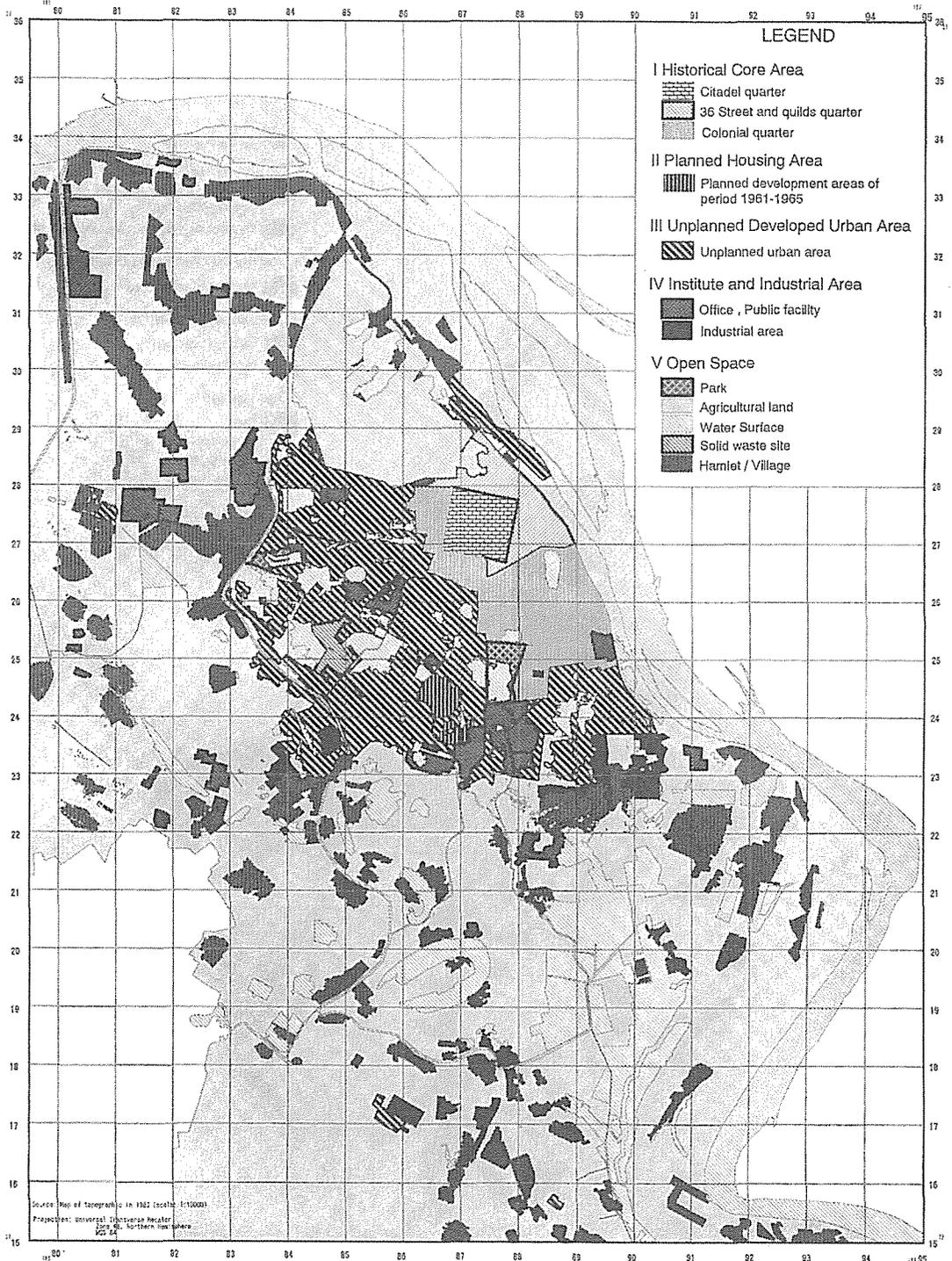
type of land-use (major)	type of land-use (minor)	Urban District		Rural District	
		dimension	ratio	dimension	ratio
		km ²	%	km ²	%
Historical Core Area	Citadel Area	1.23	1.39	0	0.00
	36 Streets and Guilds Area	1.76	1.99	0	0.00
	France Colonial Area	4.76	5.39	0	0.00
Planned Housing Area	Planned Developed Area during 1961~1965	0.52	0.59	0	0.00
Unplanned Developed Urban Area	Unplanned Urban Area	15.27	17.30	0.19	0.18
Institute and Industrial Area	Office and Public Facility Area	3.35	3.79	1.72	1.67
	Industrial Area	1.37	1.55	0.69	0.67
Village Area	Village Area	7.36	8.34	11.72	11.39
Open space Area	Park	0.46	0.52	0	0.00
	Agricultural Land	39.90	45.19	76.29	74.17
	Water Surface	11.89	13.47	12.25	11.91
	Solid Waste Site	0.42	0.48	0	0.00
total		88.29	100.00	102.86	100.00

Table1. Land-use condition in 1983

At the time point of 1983, urban area stretches out the old Hanoi castle district (which had been colonized by France since 1873, and now the west half is used for monumental institutions), 36 craftsman districts, and the historic center of the colonial district, and around these districts, unplanned urban area is spreading. This unplanned urban area was redeveloped before 1945, and

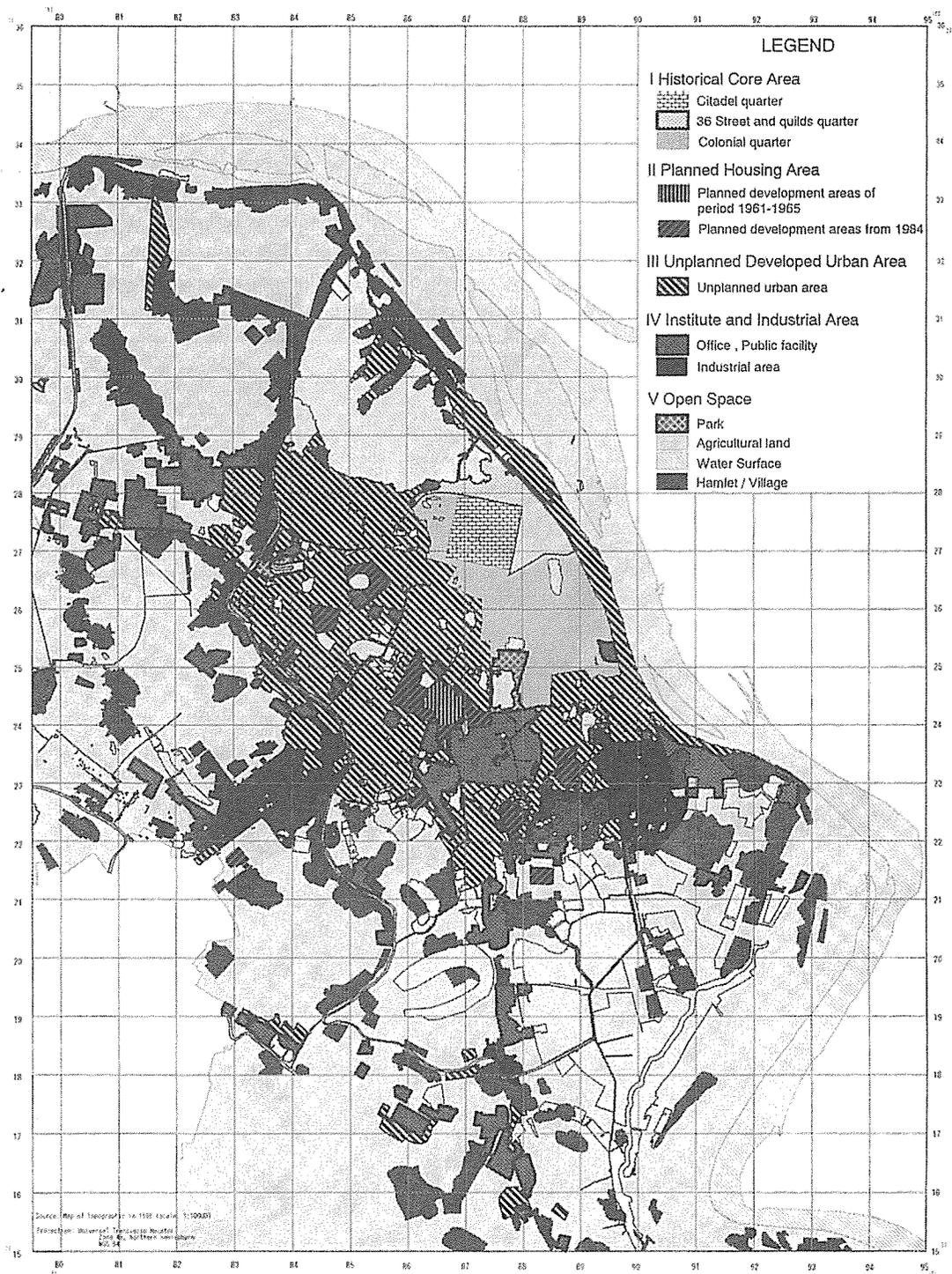
LAND USE MAP OF HANOI CITY IN 1983

Figure 1



LAND USE MAP OF HANOI CITY IN 1996

Figure 2



after changing to socialism system, planned urban areas consisting of collective housing were developed.

At the time point of 1996, it shows characteristic situation that unplanned urban area sprawled around of 1983 urban area, and huge industrial area was formed further outward of these areas. This is because limitation of individual and free development under the socialism system and industrial oriented policy after economic liberalization. Thus, the effect of adopting Doi-Moi policy in 1986 can be clearly seen in urbanization process.

type of land-use (major)	type of land-use (minor)	Urban District		Rural District	
		dimension	ratio	dimension	ratio
		km ²	%	km ²	%
Historical Core Area	Citadel Area	1.23	1.39	0	0.00
	36 Streets and Guilds' Area	1.63	1.85	0	0.00
	France Colonial Area	4.71	5.33	0	0.00
Planned Housing Area	Planned Developed Area during 1961~1965	0.38	0.43	0	0.00
	Planned Developed Area after 1983	1.89	2.14	0.30	0.29
Unplanned Developed Urban Area	Unplanned Urban Area	22.78	25.80	1.49	1.45
Institute and Industrial Area	Office and Public Facility Area	6.70	7.59	4.42	4.30
	Industrial Area	4.60	5.21	0.87	0.85
Village Area	Village Area	7.60	8.61	14.51	14.11
Open space Area	Park	0.49	0.55	0	0.00
	Agricultural Land	26.15	29.62	67.99	66.10
	Water Surface	10.13	11.47	13.28	12.91
total		88.29	100.00	102.86	100.00

Table2. Land-use condition in 1996

Table 1 and 2 show land-use condition of each year by land-use classification and square measure. Urban districts and suburbs are separately shown. In urban districts, unplanned urban area and institute and industrial area are spreading and agricultural land and water surface, are decreasing. In suburbs, also unplanned urban area and institute and industrial area are spreading and water surface is slightly increasing. This is the effect of increasing of water surface in Yen So district where agriculture using water surface and fishery are richly promoted.

2) Distinction of land-use change during 1983 to 1996

Main land-use changes between the two time points are as followings.

	Planned Urban Area		Unplanned Urban Area		Industrial Area	
	ha	%	ha	%	ha	%
Water Surface	3.8	1.6	201.6	18.0	53.8	4.9
Agricultural Land	71.6	31.0	675.7	60.5	757.0	68.4
Village Area	0.0	0.0	86.7	7.8	155.4	14.0
Unplanned Urban Area	150.5	65.1	0.0	0.0	127.6	11.5
Solid Waste Site	0.0	0.0	67.6	6.1	0.0	0.0
Other	5.4	2.3	84.6	7.6	13.1	1.2
Total	231.3	100.0	1116.2	100.0	1106.9	100.0

Table3. Land-use classification and square measure of the area that has changed during 1983 to 1996.

① Planned urban area

From 1983 to 1996, planned urban area has been expanded by 231.3ha, and the land-use classification of these lands at the time point of 1983 is shown in Table3. The most dominant is unplanned urban area, which is 65.1%, and in the second place agricultural land is, which is 31.0%. Unexpectedly, water surface is very little. We can see the trend that unplanned urban area is redeveloped and turned into planned urban area.

② Unplanned urban area

From 1983 to 1996, unplanned urban area has been expanded by 1116.2ha. The land-use classification at the time point of 1983 is shown in Table3. The most dominant is agricultural land, which is 60.5%, and in the second place water surface is, which is 18.0%. village area are 7.8%, and solid waste site is 6.1%. The square measure of solid waste site is 67.6ha. This fact means that good proportion of land turned into unplanned urban area. As a result, solid waste site disappeared from the land-use map of 1996.

③ Industrial area

From 1983 to 1996, industrial area has been expanded by 1106.9ha. The land-use classification at the time point of 1983 is shown in Table3. Agriculturl land is the most dominant and the ratio is 68.4%, and village area 14.0%. Unplanned urban area is third dominant that is 11.5%.

3) Actual environmental condition of the unplanned urban area

(1) The typology of unplanned urban area from the viewpoint of forming process

In this study, the area, which government or company acquired and developed in a large scale integrally is called planned urban area, and the accumulation of area that is formed as a result of development by individual or company in small scale is called unplanned urban area. As we mentioned before, in the planned development urban area, it is very necessary to have a confirmation by the related developing informations, however it wasn't carry out in this survey.

As we showed before, in the unplanned urban area, 60.5% of the area is agricultural land, 18% is water surface, 7.8% is village area and 6.1% is solid waste sites. Suspecting the forming process of unplanned urban area, following types would appear:

- ① formed along the existing relatively wide road
- ② formed in the back of the roadside urban area
- ③ formed apart from the main road or existing urban area
- ④ formed as a result of that village area became high density

Moreover, these individual developments are classified into legal ones and illegal ones. The illegal individual developments are considered as followngs:

- ① In the case that individuals deals with unregistered land and construct a building on the site.
- ② In the case that individuals construct a building on landfilled water surface without permission.

(2) Example for environment in the unplanned urban area

It is uncertain that our estimation whether planned or unplanned urban area, legal or illegal are correct actually. However, through the field survey, we can show some pictures below that we regarded as unplanned urban area:



The left picture is Hao Nam pond. In the water, plants are grown, but in the back of roadside urban area, water surface has been reclaimed and individual constructions are proceeding. Waste disposal and water deterioration can be seen. In the land-use map, this area is defined as “unplanned urban area”.



The left picture is Thanh Nhan district. Along the road, individual constructions are proceeding. In addition, constructions are about to carry out in the back of roadside area. In the land-use map, this area is defined as “unplanned urban area”.



The left picture is Hao Nam district. According to the map, this district might have been agricultural land. This area seems that a developing company developed integrally apart from roadside, though it became too dense and it is sure that this development did not satisfy the standard of planned development. In the land-use map, this area is described as “unplanned urban area”.



The left picture is Thon Doai district. This village area with a lot of ponds is becoming high-densely area. Narrow streets spread around, and infrastructure condition is bad. Water reclamation is gradually proceeding. In the landuse map, this area was defined as “village” in 1996. But this picture is taken in 2002, so we guess that building densely of this area is becoming higher.

(3) The environmental problems in unplanned urban area and countermeasure

In the unplanned urban area, as the result of development of building lots by individuals or companies, who obtain the right of land-use, urban area is sprawling, so there falls out various problems enumerated below.

- Problem of living environment that comes from the lack of infrastructure development in the process of urbanization. That results in unplanned urban area with complicated street network and without sewage treatment facility.
- In case urban area is formed by reclaiming pond or marsh, many problems of living environment rose such as waste disposal, deterioration of water quality, flooding by decreasing of water surface. (our another paper also deals with this point.)
- Even if companies developed in the relatively integrated way, they tend to construct a building to the maximum of the site extent, and sometimes they don't make indispensable infrastructure such as access roads. Thus this kind of developments has possibility to result environmental degradation in the future.

In order not to lapse into such a situation, infrastructure development is highly needed and establishment of building regulation is very urgent.

CONCLUSIONS

Every liberal society has experienced the tendency that the urban area is easy to lapse into rapid environmental deterioration, with the economic liberalization and following influences that land or right of land-use and the method of land-use are liberalized. In order to deal with these, urban planning and the system of building regulation have been established among those countries.

Establishment of land registration system is the foundation of urban planning and building regulation. However, in Vietnam now, it is very hard to issue a certificate of land ownership, because there are so many certificate of land ownership for one piece of land which had been issued in the colonial days and in the southern old government era. In order to aim at the development as the international city in the future, improvement of such situation is urgent.

In order to form the city with favorable environment, it is necessary to establish the land-use plan based on land-use control and building control. In addition to this, the institutions to execute the land-use plan and these control systems has to be established. In order to promote development of such urban planning system through international cooperation, it is necessary to create and arrange the data that recorded actual condition of urban area and the present system related city planning. The work of this time, making "landuse map" and clarifying the actual condition of land-use change, is the first trial aiming this direction.

As seen above, it is clear that from the viewpoint of the change of land-use, the water surface is under a very severe situation in the process of urbanization. On the other hand, Hanoi, written with 「河内」 by Chinese characters has potentiality to become the fascinating city as "capital with water". We hope that the joint research "Inquiry into the Urban Form / Urban building Form Going on in Symbiosis with Nature especially with Water environment in Hanoi" will be able to contribute to realize the attractive Hanoi.

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