



True Smart and Green City?
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Categorization of Parcels without Road Frontage in Seoul and Development Possibilities for Sustainable Urban Transformation

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1. Introduction

Background

Road frontage is considered as the ultimate requirement for permitting a building on the lot in the architectural practice and the urban planning.

Parcels without road frontage are weak points in the city in need of public awareness and strategic interest for urban development.

Recently established special planning districts for revitalization in Seoul made some parcels without road frontage have opportunities to be regenerated and upgraded as demanded by the land/building owners and by the public for the healthy and safe neighborhood development.

Goals

To categorize parcels without road frontage.

by extracting multiple factors of the situation

by demonstrating which method of revitalization can be applied to specific parcels based upon their situations.

Strategies

1. Examining distribution of parcels without road frontage in Seoul and urban planning policies allowing their development
2. Analyzing specific distribution of parcels without road frontage and their conditions in case study and assessing revitalization possibilities of those parcels.
3. Suggesting the appropriate regenerating methods of parcels without road frontage.

2. Parcels without Road Frontage in Seoul and Urban Planning Policies

2.1. *Distribution of parcels without road frontage in Seoul*

Occurrence

In Seoul as other old cities, many large parcels were subdivided not as a precedent planning but **as an acknowledgement after settlement.**

A parcel without road frontage is an unintended by-product resulted in those situation.
: **an unwillingly formed property** due to placement of a building, or an incautious parcel without careful considerations on adjacency of roads with the minimum width as required.

Current Situation

There still remains many of them in the residential areas of the inner city.
Parcels without road frontage are **sometimes newly formed** by small-scale private developments.

Relationship between the adjacent roads and parcels determine qualities of buildings and environments.

Previous Policy

The previous Seoul Metropolitan Government plan → inflexible implementations.
→ reconstruction and rebuilding projects **were criticized**

2. Parcels without Road Frontage in Seoul and Urban Planning Policies

2.2. Release of reconstruction and rebuilding projects and designation of leading revitalization project districts in Seoul

Change of redevelopment policy. March, 2015

The city government announced to abandon the conventional redevelopment method in urban planning. Then the government declared to improve the deteriorated urban areas as well as to respect the current situations and dynamics of industrial, cultural and historical values. (March, 2015) 187 districts for reconstruction and rebuilding were released.

Significant role of the urban building regulation

Buildings can be remodeled to accommodate new programs then to improve the environment quality.

An easement agreement is sometimes established between two owners.

A building agreement can be achieved by a gradual process of housing renewal.

Specific project zones

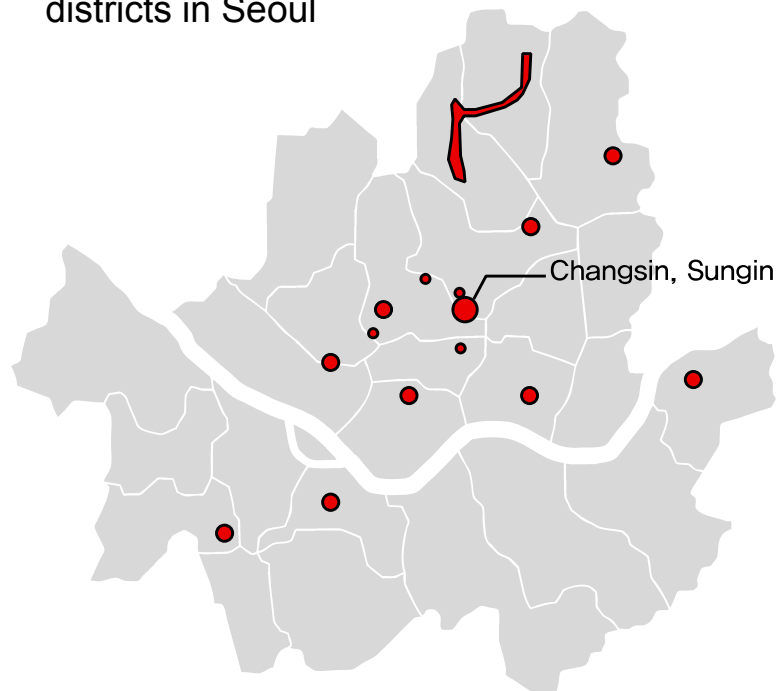
13 leading revitalization project zones were selected by Ministry of Land, Infrastructure and Transport on April of 2014.

2. Parcels without Road Frontage in Seoul and Urban Planning Policies

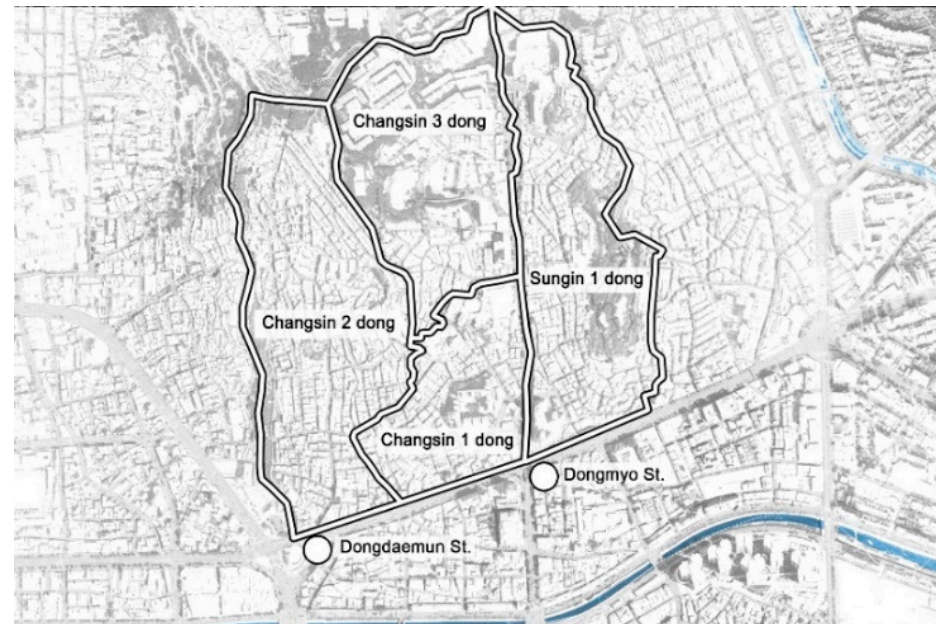
2.2. Release of reconstruction and rebuilding projects and designation of leading revitalization project districts in Seoul

Construction activity at the parcel-level

Seoul Metropolitan Government announced to accelerate revitalization of Changsin Sungin District, one of **13 zones**. In addition, on March 9, 2015, Seoul Metropolitan Government made the announcement at the press briefing that **27 districts were selected** as leading revitalization project districts in Seoul



(a)



(b)

(a) Distribution of 12 deteriorated residential areas designated as leading revitalization project districts in Seoul and Location of Changsin Sungin District.

(b) Scope Area of Changsin Sungin District

2. Parcels without Road Frontage in Seoul and Urban Planning Policies

2.3. Issues in Developing Parcels without Road Frontage

Required condition for building agreement

it is important to have similar conditions between the parcel without road frontage and adjacent parcels.

the owner of adjacent parcels in contact with roads should achieve the substantial benefits from the project.

Necessary information

enough information including benefits and obstacles
detailed information about building agreement process
benefits of the policy to improve the living environment
obstacles against the building agreement.

→ **We will discuss the more thorough analysis on the possibilities of the development in the following section with a case study.**

3. Case Study: Changsin Sungin District in Seoul

3.1. Method

To search the suitable targets of parcels without road frontage, we utilized the GIS software. First, we prepared GIS data about roads and lands around the target area.

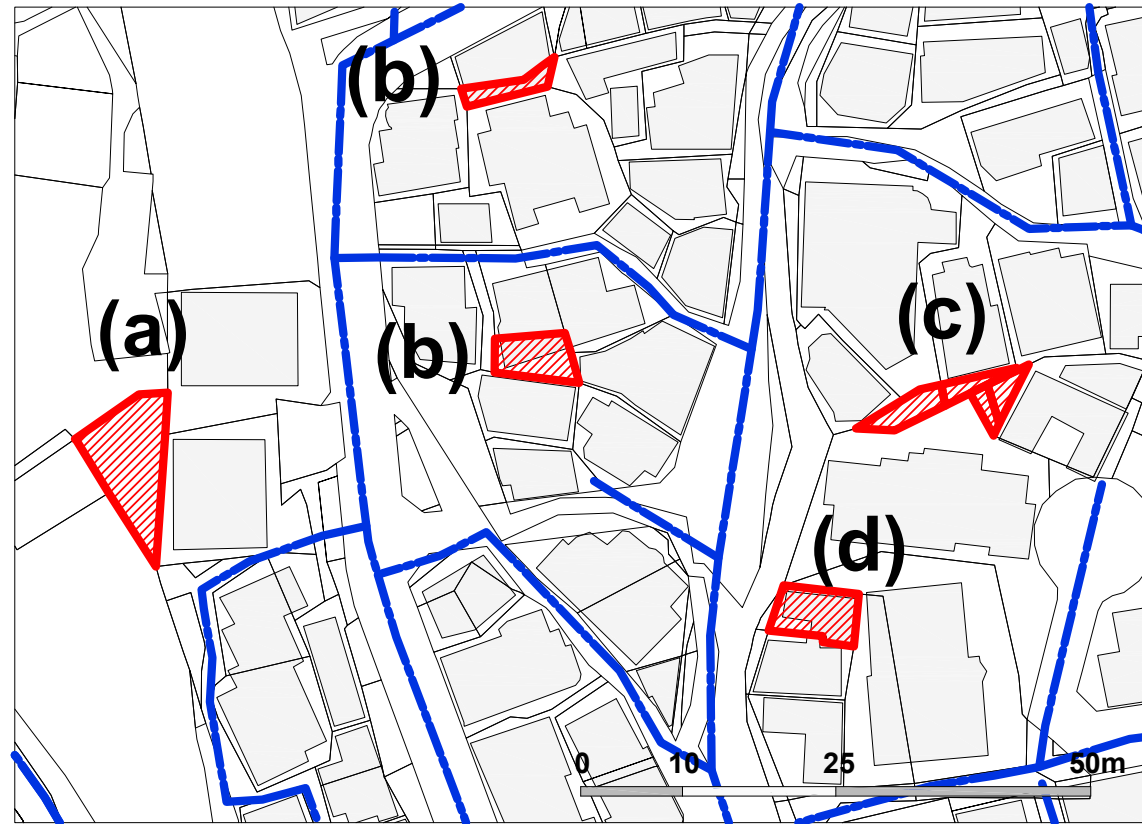
- (1) click 'Select by Location' in the 'Selection' tab of the pull down menu
- (2) Select the lands layer at 'Target layer(s)' section
- (3) Select the roads layer at 'Source layer' section
- (4) Select 'Target layer features are within a distance of the Source layer feature' at 'Spatial selection method'
- (5) Check 'Apply a search distance' and set the value at 10 millimeters

Then, we excluded some kinds of parcels shown in the next page.

3. Case Study: Changsin Sungin District in Seoul

3.1. Method

Examples of excluded parcels

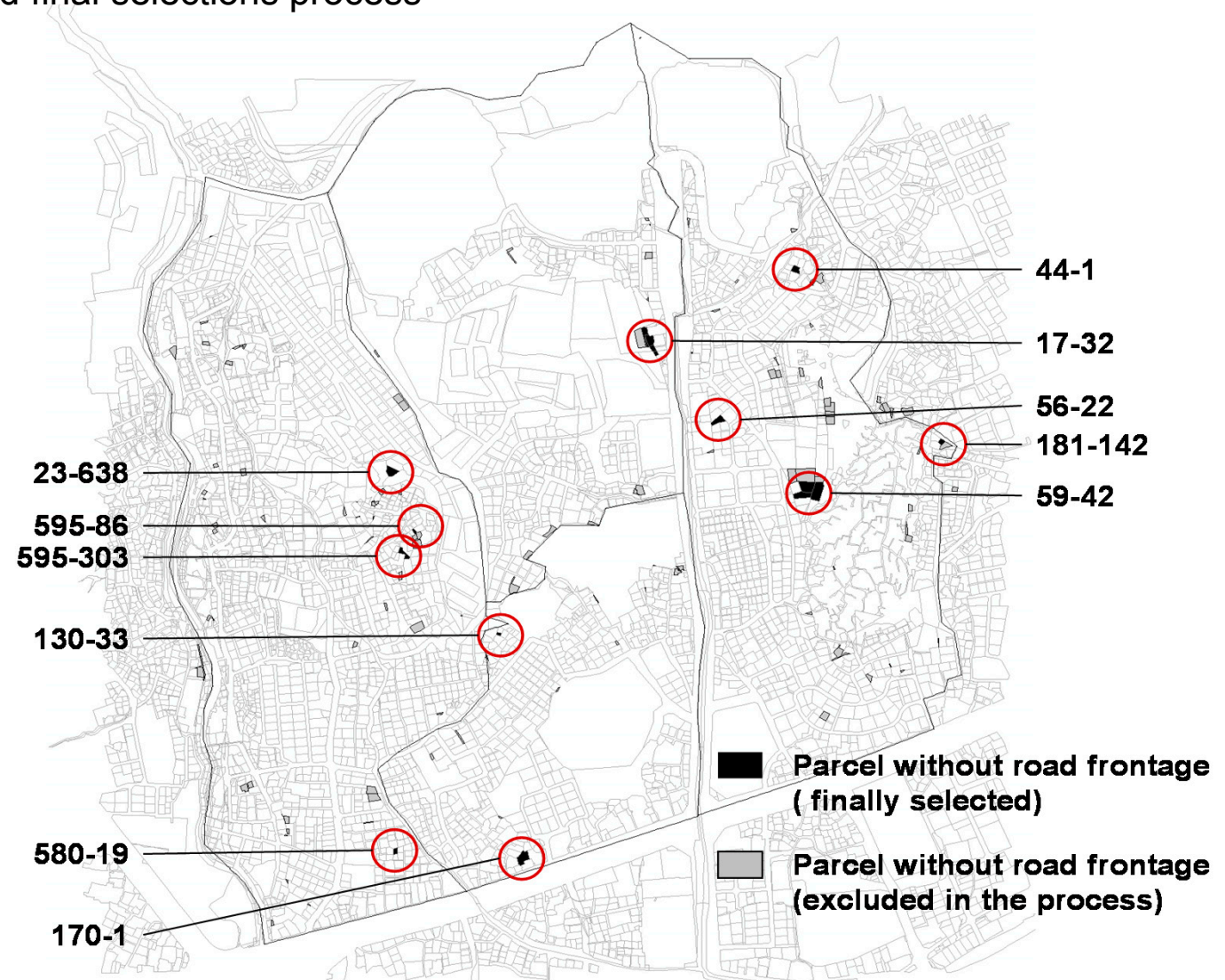


Indicator	Description
(a)	A parcel with no building
(b)	A parcel with a building beyond the adjacent parcel
(c)	A parcel that are micro-size
(d)	A parcel with a very thin parcel to access road

3. Case Study: Changsin Sungin District in Seoul

3.1. Method

Finalized Locations of parcels without road frontage in Changsin Sungin District, indicating exclusion and final selections process



3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

A List of Parcels without Road Frontage and their adjacent parcels for Analysis (1/2)

(Abbreviations: RF=Road Frontage, N.C.= Not Conforming, C=Canceled, FAR = Floor Area Ratio)

Parcel #	Parcel Type	Area (m ²)	Owner (acquisition year)	Owner's residency	Building Registration	Building FAR(%)	Building use	Year of Building Use Permit	Structure
130-33	W/out RF	23.1	CK(2006)	x	-				
130-29	Adjacent + RF	92.6	SM(2005)	x	o	25.0	house	1929	wood
130-32	Adjacent + RF	49.6	TK(2004)	x	-				
170-1	W/out RF	169.3	HK(2002)	x	o	123.1	retail	1970	brick
173	Adjacent + RF	143.8	HK(2002)	x	o	210.7	NLF	1966	RC
23-638	W/out RF	123.3	DC+SL(1991)	o	o	75.4	house	1981	brick
23-639	Adjacent + RF	196	JL(1983)	o	o	32.6	house	1974	brick
595-86	W/out RF	26.4	JL+K com(2006)	x	-				
595-83	Adjacent + RF	89.6	BL+2 pers(1988)	x	o	222.2	house	1985	brick
595-84	Adjacent + RF	23.1	SC(2001)	x	o	190.2	house	1985	brick
595-303	W/out RF	73.52	JL(1990)	x	-				
595-113	Adjacent + RF	125.9	WK(1979)	o	o	92.6	house	1981	brick
595-114	Adjacent + RF	46.3	HO(2005)	x	o	134.6	house	1985	brick
580-19	W/out RF	36.4	MJ(2010)	x	o	63.6	house	1936	wood
580-18	Adjacent + RF	52.9	SJ(1988)	o	o	43.7	house	-	wood
580-20	Adjacent + RF	39.7	AS(2010)	o	o	58.3	house	1936	wood
581-13	Adjacent + RF	69.4	KJ(1987)	x	o	50.6	house	1933	wood
581-28	Adjacent + RF	99.2	IC(2011)	o	o	45.8	house	1933	wood

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

A List of Parcels without Road Frontage and their adjacent parcels for Analysis (2/2)

(Abbreviations: RF=Road Frontage, N.C.= Not Conforming, C=Canceled, FAR = Floor Area Ratio)

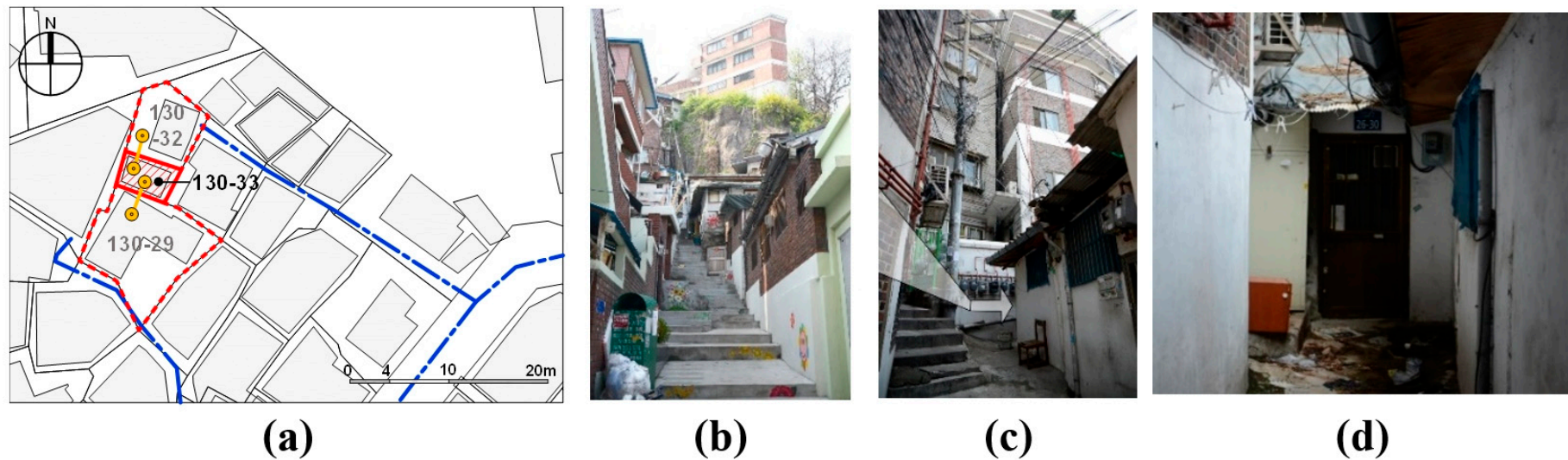
Parcel #	Parcel Type	Area (m ²)	Owner (acquisition year)	Owner's residency	Building Registration	Building FAR(%)	Building use	Year of Building Use Permit	Structure
17-32	W/out RF	93.51	Borough(1988)	-	-	-			
17-13	Adjacent + RF	254.8	BP+MY(1989)	o	o (N.C.)	265.01	retail	1997	RC
17-33	W/out RF	19.32	CC(2012)	x	-	-			
17-23	W/out RF	118.55	BK+EL(2014)	x	-	-			
17-19	Adjacent + RF	184.8	YS(2012)	x	o (N.C.)	295.43	NLF	1970	RC
17-21		20.1							
17-24	W/out RF	45.41	BK+EL(2014)	x	-	-			
17-22	Adjacent + RF	68.5	DL(2014)	x	o (N.C.)	180.79	office/ house	1998	RC
17-35	W/out RF	25.69	JL+YK(2014)	x	-	-			
17-36	Adjacent + RF	107.9	OY+YM(2005)	x	o	227.17	retail / office	1974	RC+ST
44-1	W/out RF	76	YK(2006)	x	o	46.8	house	1964	brick
44-2	Adjacent + RF	59.5	SK(2008)	x	o	56.9	house	1964	brick
43	Adjacent + RF	125.6	SL+YH(2012)	x	o	49.1	house	1966	brick
45	Adjacent + RF	109.3	JK(1966)	o	o	134.6	house	1980	brick
56-22	W/out RF	104.8	JK(2014)	x	o	46.1	house	1958	brick
56-21	Adjacent + RF	239	HL(1988)	o	o	111.8	house	1959	brick
56-89	Adjacent + RF	112.4	DL(2014)	o	o	148.9	house	1989	brick
56-150	Adjacent + RF	125.6	DC(2001)	o	o	48.9	house	1968	brick
181-142	W/out RF	41.7	YL(1962)	-	C	-		-	-
181-143	Adjacent + RF	83.6	5 persons(1998)	-	o (N.C.)	255.3	house	1995	RC
181-144	Adjacent + RF	108.1	5 persons(1997)	-	o	239.92	house	1997	RC+BR
181-168	Adjacent + RF	70.7	CL+7pers(2002)	-	C	-		-	
58-555	Used as road	113.5	Borough(2002)	-					
59-39	W/out RF	231.4	B temple(1966)	o	o	30.87	temple	1964	block
59-42	W/out RF	152.8	SC(2000)	o	o	34.25	house	1965	block
58-284	W/out RF	254.5	B temple(1970)	x	-				
58-286	Adjacent + RF	127.9	JP(2010)	x	-				
59-40	Adjacent + RF	155.4	BK(2000)	o	o	22.55	house	1985	block
59	Adjacent + RF	115.7	DW(1992)	o	o	192.17	house	1963	brick

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 4. (a) Situation map around 130-33, Changsin 1 dong.

(b) (c) (d) Field pictures demonstrating access and situations of 130-33, Changsin 1 dong



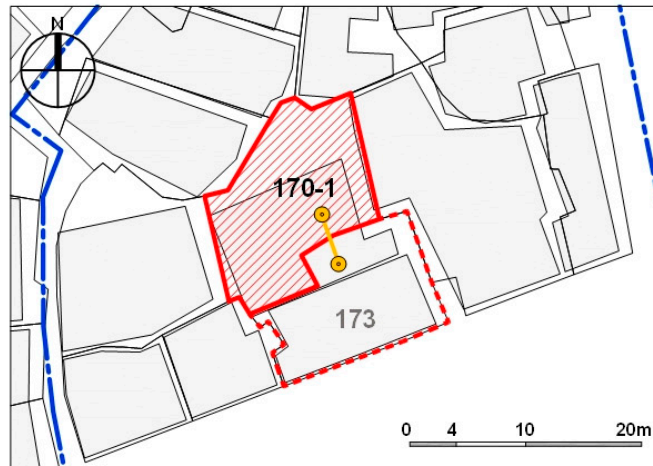
130-33 Changsin 1 dong, the parcel without road frontage is located on the upper slope at the foot of a cliff above (Fig.4 (b)). The parcel has a small and old building, which has a main entrance looking out onto the narrow alley beside the 130-29 (Fig.4 (c), (d)). The parcel has a small and old building, which has a main entrance looking out onto the narrow alley beside the 130-29 (Fig.4 (c), (d)). Although the building has another entrance in the direction of the parcel, 130-32, it doesn't seem to be used. The parcel, 130-33 seems to be very hard to be developed together with 130-32 or 130-29 because the surrounding condition of site is inferior and complicated. The inferior condition means that it's very hard to access and the area of the parcel is very small at 23.1m². Even if three parcels of 130-29, 130-32 and 130-33 are bound and developed together, they would not have enough space for adequate sunlight and ventilation (Fig.4 (c)). The complicate condition means that 130-33 and the surrounding parcels are owned by different persons. In addition, 130-33 and 130-32 don't have building registers.

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 5. (a) Situation map around 170-1, Changsin 1 dong.

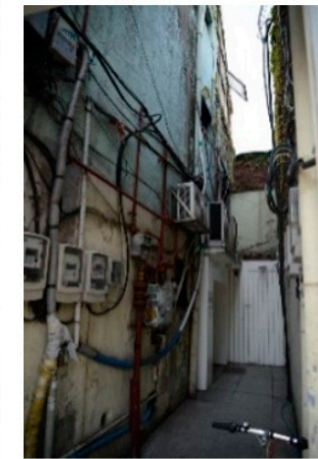
(b) (c) Field pictures demonstrating access and situations of 170-1, Changsin 1 dong



(a)



(b)



(c)

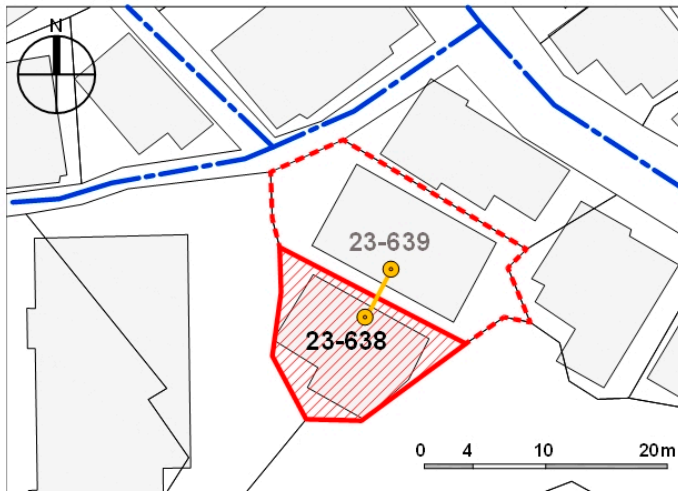
170-1 Changsin 1 dong, the parcel without road frontage is located behind the parcel 173 that faces Jongno, the main road of the area. 170-1 can be accessed from Jongno via a narrow alley located on the part of 173 (Fig.5 (b), (c)). Such an access are assumed to have a relation to ownership of two parcels by one person. The ownership provides accessibility and possibility of development for 170-1. The location and the ownership explains the recent alteration of the building on 170-1 to a hostel for foreigners (Fig. 5 (b)).

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 6. (a) Situation map around 23-638, Changsin 2 dong.

(b) Field pictures demonstrating access and situations of 23-638, Changsin 2 dong



(a)



(b)

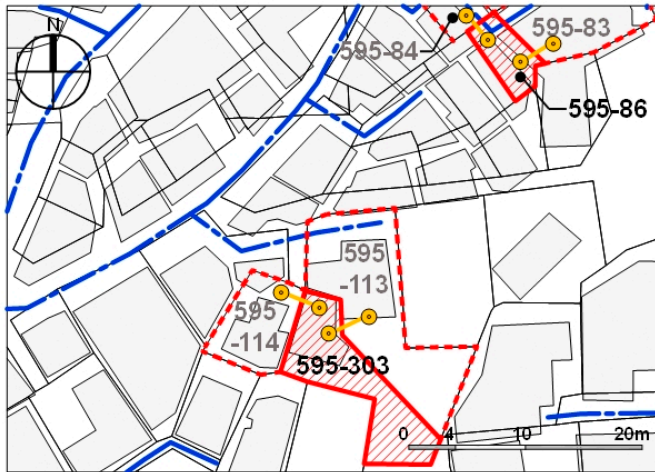
23-638 Changsin 2 dong, the parcel without road frontage, can be accessed from the road through the part of 23-639 that is wide enough even to carry goods (Fig.6 (a), (b)). The building on 23-638 has a good view to its backside because it lies on the edge of a cliff in the middle of slope. In other words, it's not a poor condition to live in as it is. For the new development together with 23-639 in contact with a road, joint development would be possible upon the building agreement. Each owner lives in the building on each parcel, which was built around the same time.

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 7. (a) Situation map around 595-303 and 595-86 Changsin 2 dong.

(b) (c) Field pictures demonstrating access and situations of 595-303, Changsin 2 dong



(a)



(b)



(c)

595-303 Changsin 2 dong, the parcel without road frontage, is one of the parcels surrounded by steep rock that was a quarry during the era of Japanese rule of Korea. In the area where rock was cut out, a lot of houses were built disorderly, that is to say, the urban squatter settlement was formed by the late 1960s (Fig.7 (a)). Although most buildings were registered by government policy, there remains many buildings without building register in this area. Furthermore, the overall forms of many buildings are indistinguishable from the adjacent buildings and most of those seem to have extended extemporaneously as time goes by (Fig.7 (c)). The building on 595-303 is included in those informal agglomerates. It doesn't have a building register. Its form is entirely integrated with the next building on 595-113 (Fig.7 (b)). Therefore, it needs more systematic approach than a parcel-level development like building agreement.

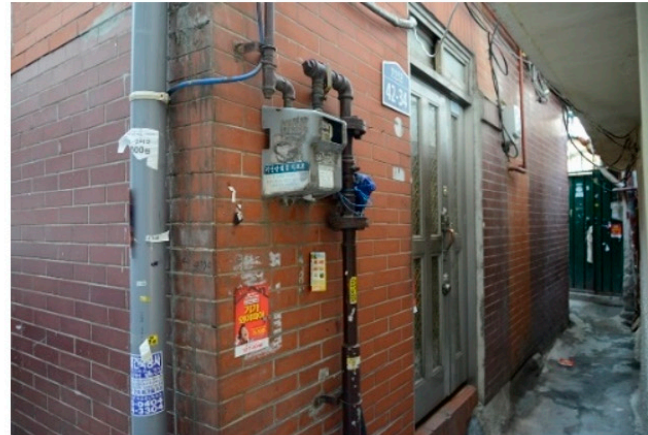
3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

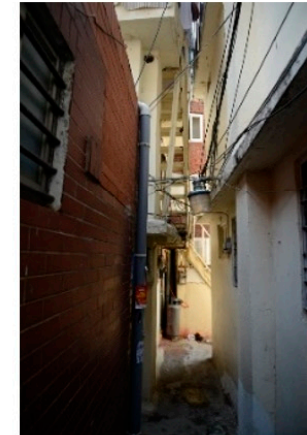
Figure 8. (a) (b) (c) Field pictures demonstrating access and situations of 595-86, Changsin 2 dong



(a)



(b)



(c)

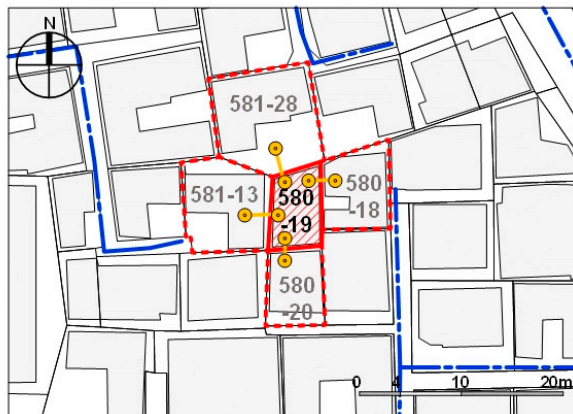
595-86 Changsin 2 dong, the parcel without road frontage, near 595-303 is in the similar situation to 595-303. The access from road to the entrance is very narrow, damp and obscure (Fig.8 (a), (b), (c)). The building on the parcel is not registered. The area of the parcel is less than 50m². These features makes it difficult to remodel the building executively and physically. A senior woman dwelling in the area stated, “The more I spend the money for repair, the more the building require for repair. I need some different measures instead of a temporary repair.”

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 9. (a) Situation map around 580-19 Changsin 2 dong.

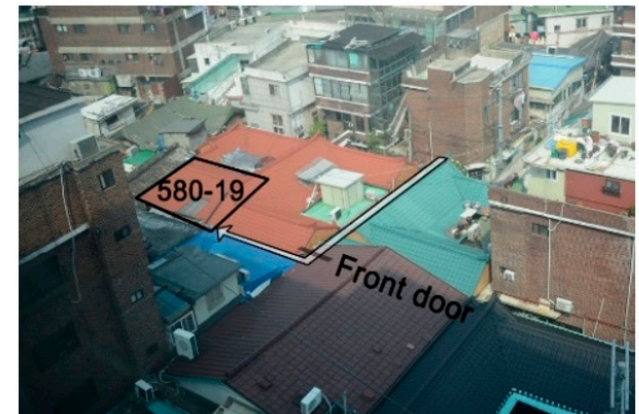
(b) (c) Field pictures demonstrating access and situations of 580-19, Changsin 2 dong



(a)



(b)



(c)

580-19 Changsin 2 dong, the parcel without road frontage, is in the relatively normal condition. It is located near a street market and the main road, Jongno. Although the building has an entrance in the south-east corner of 580-20 (Fig.9 (a), (b)), its new red roof explains that it has been recently remodeled (Fig.9 (c)). The parcel has four building agreement alternatives with an adjacent parcel to north, south, east or west. Most of buildings in this area are constructed in 1930s as sorts of Hanok.

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 10. (a) Situation map around 17-32, 17-23, 17-33, 17-24 and 17-35 Changsin 3 dong.
(b) (c) Field pictures of 17-32, 17-23, 17-33, 17-24 and 17-35 Changsin 3 dong



Although the parcels, 17-32, 17-23, 17-33, 17-24 and 17-35 Changsin 3 dong have no legal road frontage, they have an on-site access alley from the west park site to four buildings on these parcels (Fig.10 (a), (b)). To the east, there are larger parcels with taller buildings fronting a wide road(Fig.10 (a)). However, there is no access route between a group of 17-32, 17-23, 17-33, 17-24 and 17-35, and a group of 17-13, 17-19, 17-21, 17-22, and 17-36 (Fig.10 (a)). The buildings on parcels of two groups have so different conditions - building use, building age, and etc. - that building agreement between two groups would be hard to accomplish.

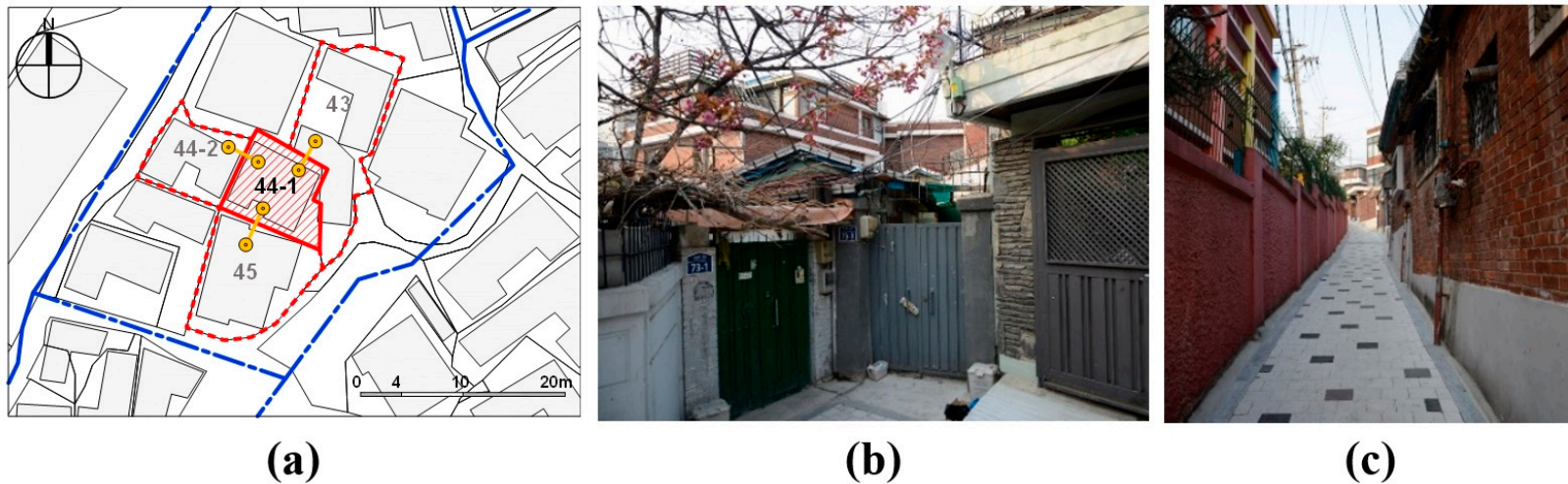
The parcels without road frontage are owned by different persons. In front of the parcel, 17-24, there is a small courtyard shared by four worn-out buildings (Fig.10 (a), (c)). Although buildings are on lease, they have no building register.

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 11. (a) Situation map around 44-1 Sungin 1 dong.

(b) (c) Field pictures demonstrating access and situations of 44-1 Sungin 1 dong



44-1 Sungin 1 dong, the parcel without road frontage, is located in the quiet residential area. The main entrance of the parcel is at its south-east corner, which is a part of the adjacent parcel 45 or 43 (Fig.11 (a), (b)). Although the parcels in the area are owned by different people, some aspects make it possible enough to redevelop them with building agreement. They have similarity in conditions of building age and building materials as well as good environmental quality of surroundings including pavements (Fig.11 (c)).

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 12. (a) Situation map around 56-22 Sungin 1 dong.

(b) (c) Field pictures demonstrating access and situations of 56-22 Sungin 1 dong



(a)



(b)



(c)

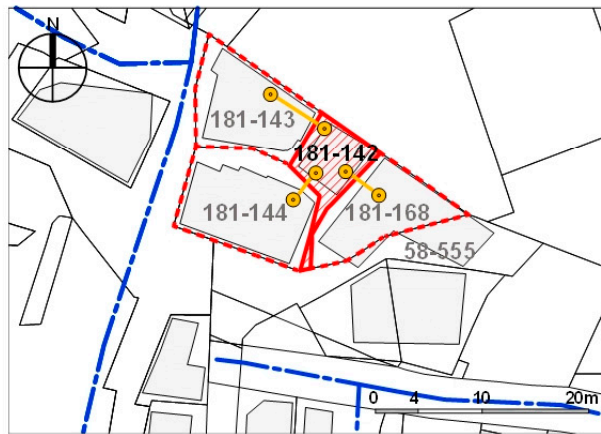
56-22 Sungin 1 dong, the parcel without road frontage is located in the similar condition to 44-1 as mentioned above. The parcel uses the part of 56-89 and 56-21 for access to the building located deep from the road (Fig.12 (a), (b)). Owners of all adjacent buildings live on each parcel, which forms a good condition for building agreement. Even if not redeveloped through building agreement, the current situation is not bad for living. The building on the parcel was recently remodeled (Fig.12 (c)).

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 13. (a) Situation map around 181-142 Sungin 1 dong.

(b) (c) Field pictures demonstrating access and situations of 181-142 Sungin 1 dong



(a)



(b)



(c)

The parcel 181-142 Sungin 1 dong touches the parcel 58-555, owned by the borough Jongno-gu and used as a road currently, with its long and narrow part (Fig.13 (a)). Because the part isn't wide enough for even a person to pass through, 181-142 is considered as a parcel without road frontage in this study.

Considering the adjacent parcels 181-143 and 181-144, it's hard to expect building agreement between 181-142 and adjacent parcels because their conditions, especially such as the built year, are different: adjacent buildings on 181-143 and 181-144 are built in 1995 and 1997 respectively; the building on 181-142 seems to be much more deteriorated than the adjacent buildings (Fig.13 (c)) – it has no choice but to be judged from its appearance because it has no building register.

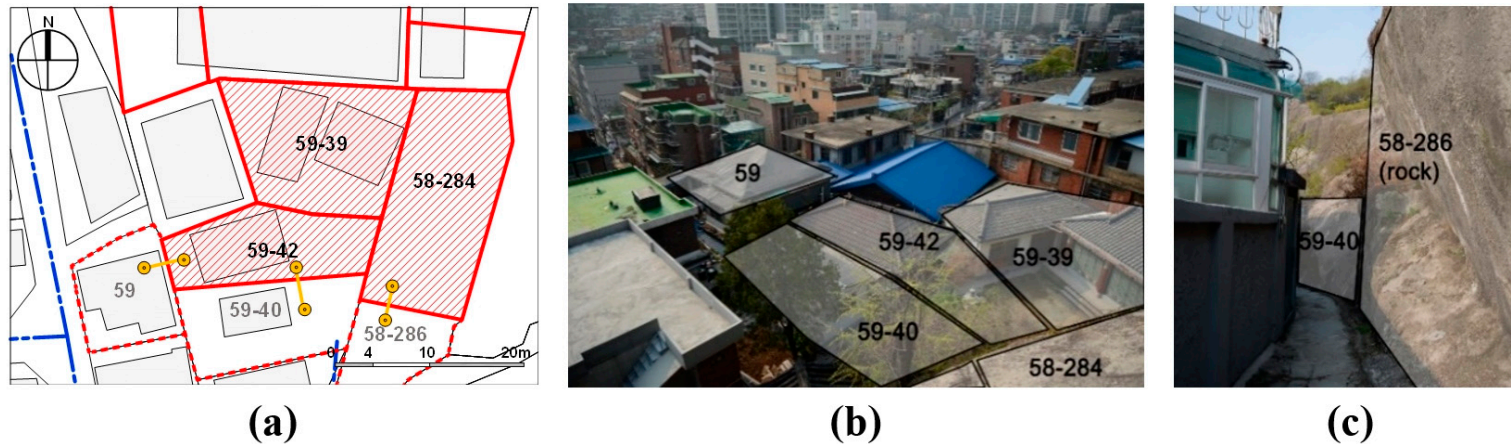
With another adjacent parcel 181-168, it's also hard to expect building agreement between 181-142 and 181-168 because the condition of building on 181-168 is so complicated as follows. First, although its building register was terminated several years ago, there still is a 4-story building on the ground and there are people living inside. Second, it is owned by eight people. Finally, the building is over the boundary with 58-555 owned by the borough as mentioned above. Therefore if a building is legally built again, it would have less floor area than the current building has.

3. Case Study: Changsin Sungin District in Seoul

3.2. Analysis of Types

Figure 15. (a) Situation map around 59-39, 59-42 and 58-284 Sungin 1 dong.

(b) (c) Field pictures demonstrating access and situations of 59-39, 59-42 and 58-284 Sungin 1 dong



The parcels 59-39, 59-42 and 58-284 without road frontage are used as a temple. 59-39 and 58-284 are owned by the temple and owner's address of 59-42 is registered to 59-39. Three parcels without road frontage are considered to be effectively belonged to the temple. As examined on the field, three parcels and 59-40 share a courtyard at the center of four parcels and the entrance to the courtyard at the south border of 59-40(Fig.15 (b), (c)). However, the relationship between the owner of 59-40 and the temple is not verified.

According to the land registration map and land register, the temple had owned the parcel 58-286 that only had road frontage of all the temple's parcels. But in 2010, the temple sold it resulting to isolated parcels from the road. However, the temple seems to have no difficulty in accessing from the road because it shares the courtyard and the entrance as explained in the previous paragraph. Moreover in fact, 58-286 and 58-284 are not flat ground but steep rock, so they cannot be used as accesses to the buildings inside.

The parcels with road frontage in the north of 59-39 and 59-42 have several buildings and are owned by one person. Therefore it's hard to expect building agreement with them. The easiest way for 59-42 to have road frontage is to negotiate with the adjacent parcel 59 to the west. But it is assumed to be difficult because of different building uses. Despite such situations, nothing would be a problem to the temple because the parcels have the stable condition to access and live in.

3. Case Study: Changsin Sungin District in Seoul

3.3. Discussion: Possible strategies for revitalization of parcels without road frontage

Categorization of Parcels without Road Frontage

Table 2. Types of Parcels without road frontage possible for developing with building agreement

	Condition between parcels without road frontage and the adjacent parcels with road frontage	Changsin 170-1	Changsin 23-638	Changsin 580-19	Sungin 44-1	Sungin 56-22
P1	Same owner	○				
P2	Similar building deterioration or condition		○	○	○	○
P3	Relatively easy to access roads		○		○	○

Table 3. Types of Parcels without road frontage difficult to develop with building agreement

	Condition between parcels without road frontage and the adjacent parcels with road frontage	Changsin 130-33	Changsin 595-86, 595-303	Changsin 17-32 and etc.	Sungin 181-142	Sungin 59-42 and etc.
D1	Inferior condition in which joint development between two parcels is not enough for development	○	○	○		○
D2	Different building deterioration			○	○	
D3	Owners more than one individual				○	
D4	Different building use					○
D5	Particular condition around the parcel				○	

3. Case Study: Changsin Sungin District in Seoul

3.3. Discussion: Possible strategies for revitalization of parcels without road frontage

Situations of all the parcels without road frontage are so various.

→ it would not be successful to apply uniform standards and policies in driving urban improvements.

Therefore,

we suggest the situational information of parcels regarding lands, buildings, and owners

we propose the adaptive application of urban policies.

To induce the revitalization project through building agreement, the parcel without road frontage and adjacent parcels **should have following conditions:**

- Each building on every parcel should have a similar building age and owner's desire toward redevelopment of each parcel should be alike.
- Each parcel should have one owner to make the smooth agreement. The principle of building agreement policy is to have a consensus among all the land owners and building owners.
- For redevelopment of adjacent parcels contacting roads, increased FAR should be possible to acquire the investment benefit. Otherwise, the parcel owner shall be the actual resident on the parcel, having the will to improve the living environment.
- For a combined development of two parcels, these parcels should meet minimum feasibility in consideration of building regulations such as set-back requirement from property lines.

4. Conclusions

We propose an approach

by responding to individual demands at parcel-level in the urban development policies to revitalize and improve parcels without road frontage.

The approach of this case-study, **categorization and explanatory analysis** can play a leading role to verify effectiveness of revitalization policies and to propose alternatives.

To adopt adequate and realistic revitalization policies, it is important for the government **not to intend to grasp every situation and condition** of parcels without road frontage **but to open to various guidance policies** for urban regeneration and redevelopment which **the land owners can voluntarily plan** the improvement and maintenance of their parcels.

Expectation

By doing this, if we induce adequate investment on the development of parcels without road frontage in Seoul, it would contribute to revitalization of the parcel, the block and the neighborhood enhancing the value of a parcel and driving the sustainable urban transformation while preserving a healthy neighborhood.

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