



VIETNAM INSTITUTE OF ARCHITECTURE

Ministry of Construction

**INFRASTRUCTURE
DEVELOPMENT IN VIETNAM**
SOME TYPICAL PROJECTS

KEY FUNCTIONS

- Architecture, Construction
- Urban design and Planning project
- Heritage Conservation
- Others

CONSULTING SERVICES

RESEARCH & ADVISORY

- Conduct Codes and Standards in Architecture
- Formulate standardized designs for buildings and construction
- Research and Technology Transfer: Energy Efficiency, Green building, Smart building and city ...
- Architectural and Urban Theory and Criticism
- Architectural and Urban History and Heritage Conservation
- Others

TRAINING & EDUCATION

- PhD program in Architecture and Urbanism
- Capacity Improvement



THE PEOPLE



Vice-Director
Tran Dinh Thai



Vice-Director
Pham Thuy Loan



General Director
Do Thanh Tung

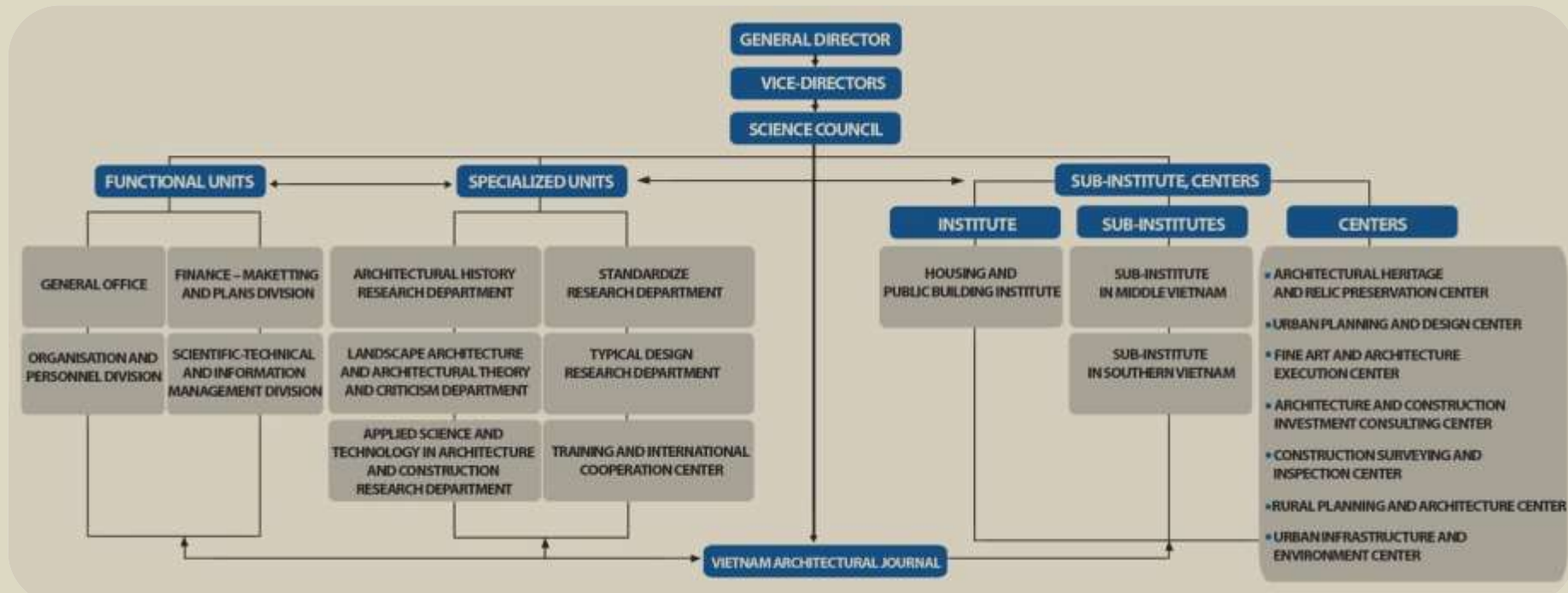


Vice-Director
Vu Dinh Thanh



Vice-Director
Dang Tien Phong

- 300 employees: 1 Assoc. Prof., 9 PhDs, 32 Masters and 175 Bachelors





Urbanization in Vietnam in the overall context of the region and the world

- Urbanization rate increased from **19.6%** with **629** municipalities in **1999** to about **36.6%** with **802** municipalities in **2016**.
- Among 802 municipalities, there are 2 cities of special category of Ha Noi Capital and Ho Chi Minh City, 17 cities of category I, 25 cities of category II, 41 cities of category III, 84 towns of category IV and 633 towns of category V.
- Most of the existing municipalities have been upgraded and expanded in terms of land area, technical infrastructure (transport, power supply, water supply, sewerage, environmental sanitation...) and social infrastructure (education, health care, culture, sport...). The urban appearance has changed positively and the urban living standards have been gradually improved.

Major challenges of urbanization in Viet Nam



- (i) **Lack of control over urban formation and development:** Competitiveness of the municipalities is low. Quality of the municipalities is poor and the municipalities have not been able to be the motives for the regional and national development.



- (ii) **Inconsistent urban infrastructure development:** which has not met the needs for socio-economic development and people's demands. Traffic congestions, floods, environmental pollutions are common... The social infrastructure system, including health care, education, culture, parks is lower than standards.



- (iii) **Unfocused urban development which is not in line with urban planning and plans:** Many new urban areas have low coverage rate, causing waste of land and resources. The existing urban areas, particularly urban centers have been rehabilitated and upgraded in low pace.



- (iv) **Capacity of urban areas in response to climate change is not high:** The national commitment on reducing green house gas emission may not be reached.



- (v) **Resources for urban development is of shortage and has not been effectively used.**



- (vi) **Ineffective urban development management:** There is a gap between the capacity of the municipal authorities in urban development and the demands for development.

- During the last 20 years, the Government of Vietnam sustain the investment in Infrastructure of 10% GDP
- However, infrastructure deficit is one of the main disadvantage or uncompetitiveness of Vietnam economy.
- Areas of weekness include: transportation, water supply and treatment,

ON-GOING PROJECTS

1. Develop criteria and procedure to evaluate and certify 'Green residential development project' in Vietnam.
2. TOD development for Hanoi
3. Urban Mass Rapid Transit – connect Hanoi to Bac Ninh province (20km
4. University village 1
 - 30.000 students, 3.000 billion VNDUniversity village 2
 - 77.000 students, 33.000 Billion VND
5. Water treatment factories (capacity 100.000 m³/ day-night) and network in cities and towns in Bac Ninh Province, total investment 1.500 billion VND

Project 1.

Develop criteria and procedure to evaluate & certify **‘Green residential development project’** in Vietnam

- Context:
 - rapid urbanization, hundred new residential projects every years, housing construction is continued to boom.
 - Realizing Vietnam National strategies and programs on green growth and sustainable development.
 - Responding to the need of the society and the market
- Purpose: promote ‘green’, energy-efficient residential development in Vietnam by providing technical tools and procedure to certify eligible projects.
- Duration: 2017 – 2018
- Expected output:
 - Criteria to certify ‘green residential project’ suitable to Vietnamese context and condition
 - The Criteria should cover at least issues such as: natural setting land uses, planning, infrastructure, greenery, environment, energy-efficiency, and others
 - Procedure and requirements for submission, appraisal and certifying.
 - Policy and incentives to promote application of the certificate.
- Budget: 40.000 USD

Project 2. TOD development in Hanoi city (HAIMUD 2)

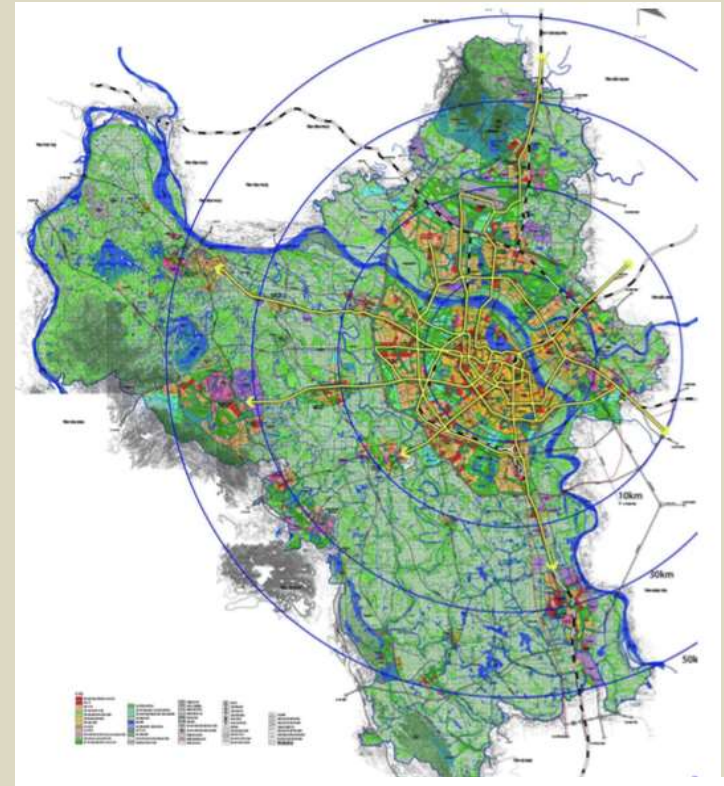
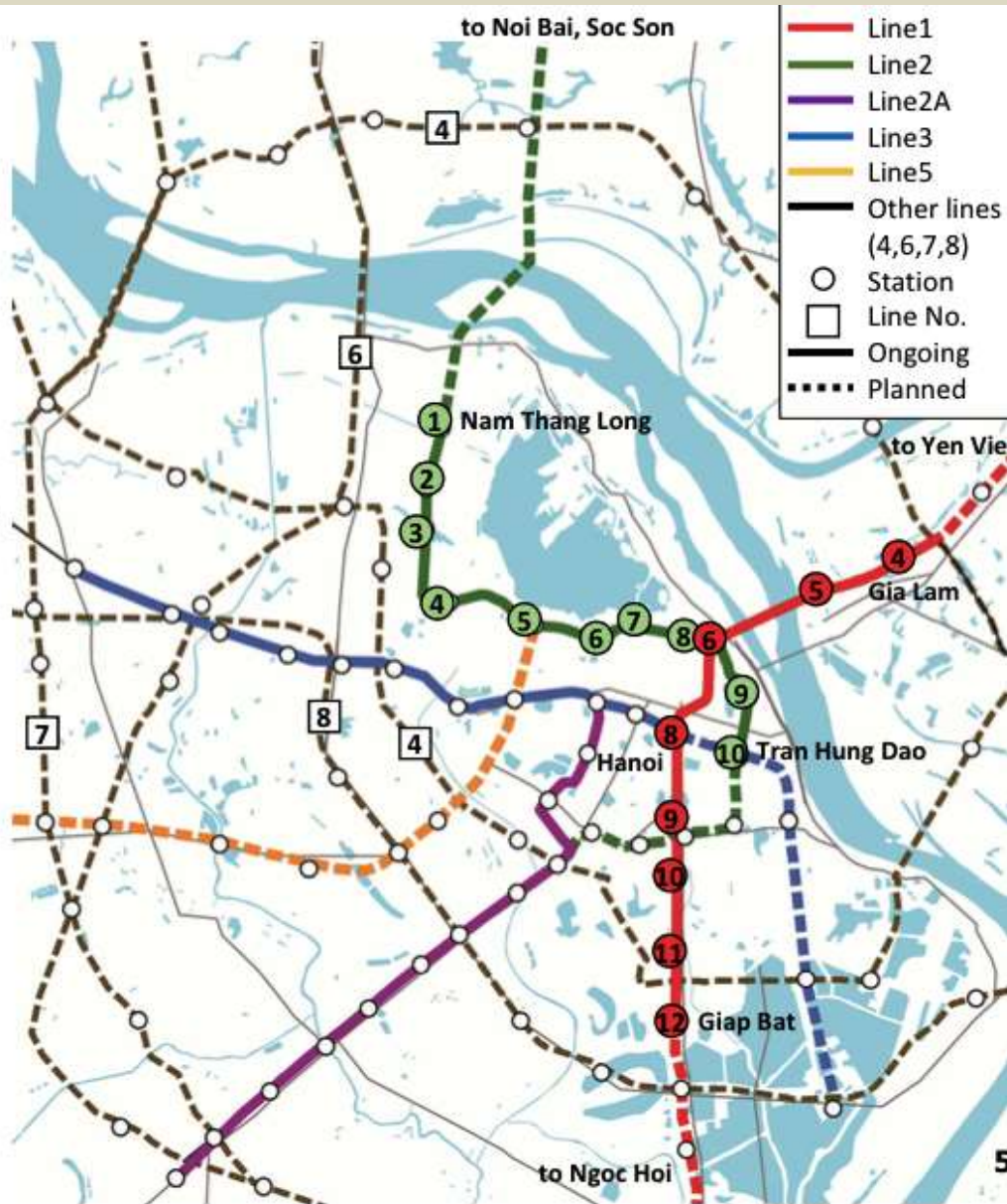
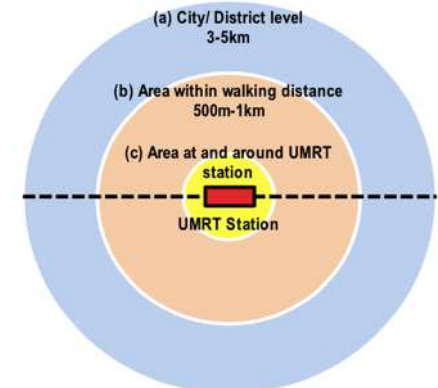
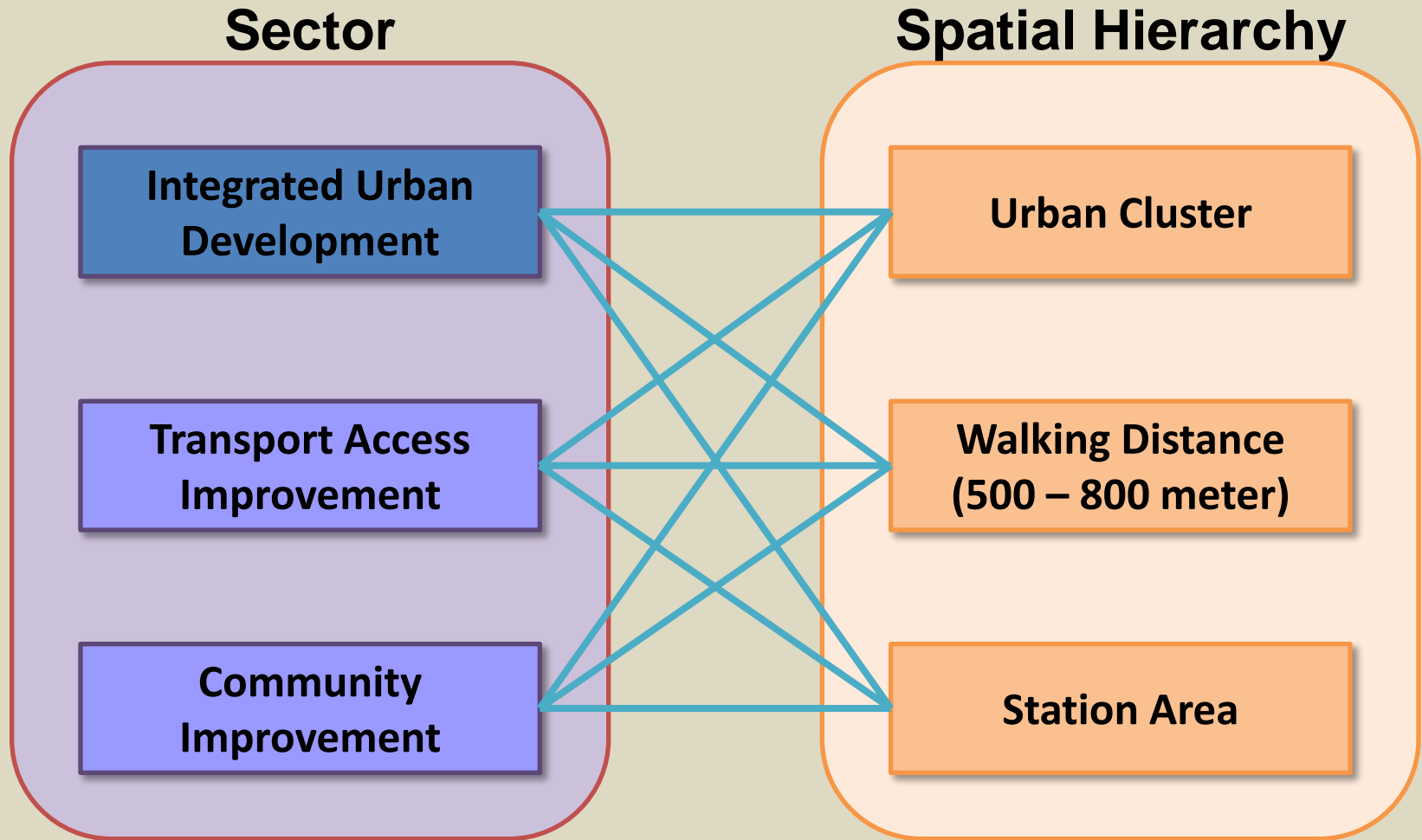


Figure 2.3.3 UMRT Influence Areas

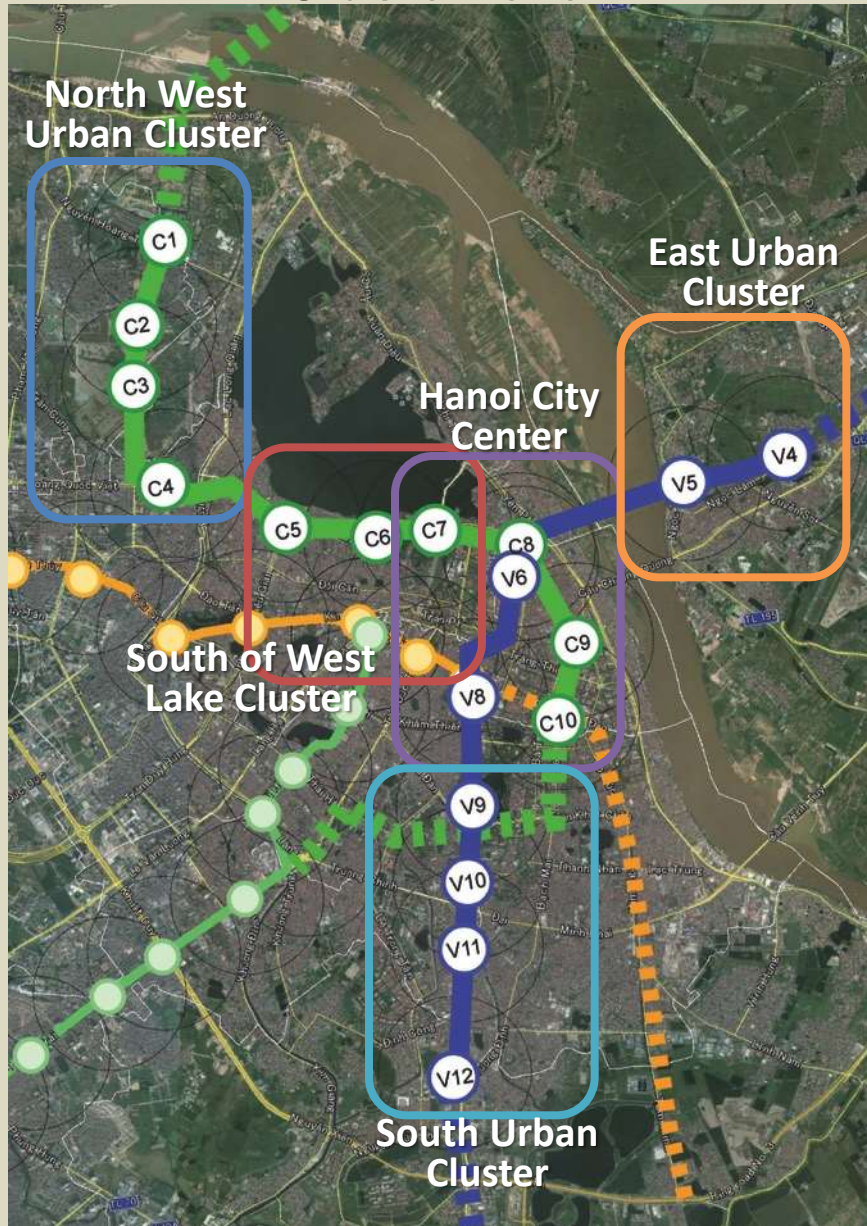


□ Approach to TOD in Hanoi

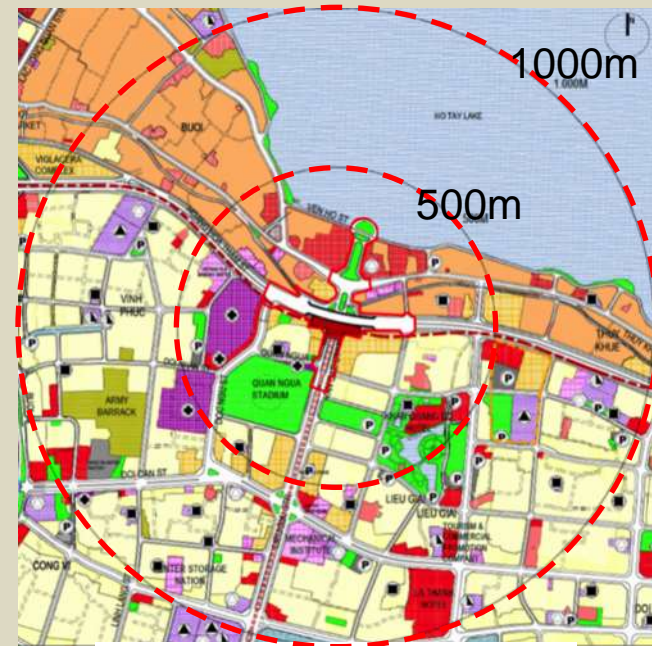


Target Areas for TOD Concept Plan Formulation

Cluster level



500-800m radius area level



Station area level



- **Projects within 500m radius (\cong walking distance) of the station:**
road improvement, road development/ widening, access alley improvement, intersection improvement, etc.
- **Projects within TOD area:** priority road development, station plaza, bus terminal, pedestrian crossing, elevated/ underground walkway, parking facility, underground parking, bus stop, traffic management, etc.
- Projects are categorized and packaged based on project types for effective implementation:
 - **Minimum Projects:** to be implemented before the opening of UMRT operation which do not require land acquisition (inside ROW of UMRT, public lands, etc.)
 - **Short-term Projects:** to be attended as early as possible although partial land acquisition is required
 - **Basic Projects:** which include standard and desirable intermodal facilities such as station plaza, underground parking and other public facilities

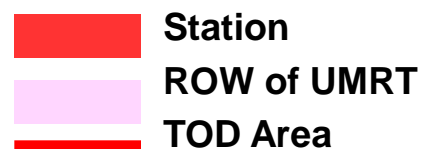
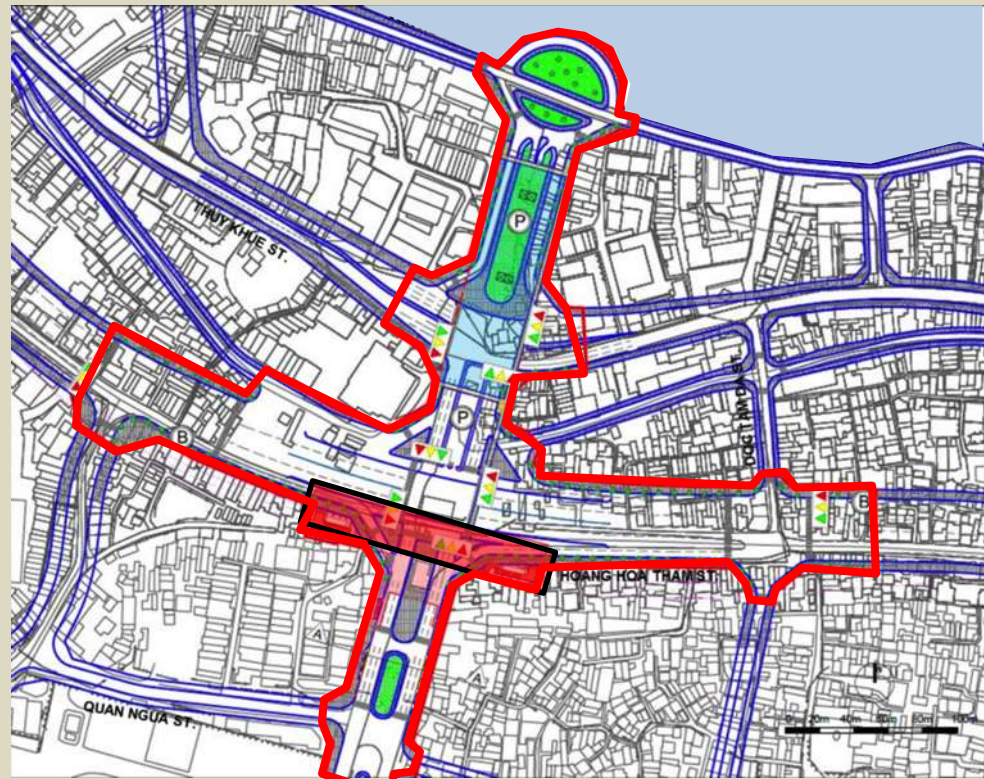
Proposal on Definition of TOD Area

➔ Need for determination of TOD area and its reflection in Zone Plan

Definition of TOD Area

- Area which ensure provision of access to UMRT station and necessary intermodal facilities
- Area/ facilities/ buildings which can be developed/ redeveloped for urban activities on TOD concept and guideline

TOD Area of C5 Quan Ngua Station



Common issues occurred in TODs in Hanoi

- Designation of **TOD Area** and its reflection in **Zone Plan**
- Checking the consistence between TOD Area conceptual plan with Master Plan, Transportation Plan, parking master Plan, and other sectorial plans at city and district level
- Timely completion of the planned trunk road projects that help to connect to stations
- Development/ improvement of secondary and community roads in existing densely inhabited communities
- Promotion of underground parking development
- Promote transit-oriented, pedestrian-friendly, compact urban areas with comfortable access of UMRT Line1, 2 and 3 stations in central districts
- Restriction of entry and use of private vehicles in designated zone through pricing and/ or physical controls
- Promotion of organized and coordinated urban redevelopment to maintain a sustainable environment with culture and landscape
- Identification and implementation of potential urban redevelopment projects (to be included in TOD area)/ promote new CBDs where opportunities are available

Pre Feasibility Study on TOD at Giap Bat Station Area



Approach to the Study

■ Needs

- Development of multi functional competitive urban center to serve rapidly growing southern Hanoi
- Employment, service center, and housing

■ Opportunities

- Strategic location (NH1, RR2.5, RR3, UMRT)
- Availability of underutilized land and space

■ Objective

- To develop compact and competitive new urban core based on TOD concept

■ New approach to Urban Redevelopment in Hanoi

- Adjustment of existing property rights without (or with minimal) acquisition; e.g. from landuse rights to floor, etc.
- Preparation of a model for possible application to similar cases in Hanoi

Project Area in Zone Plan

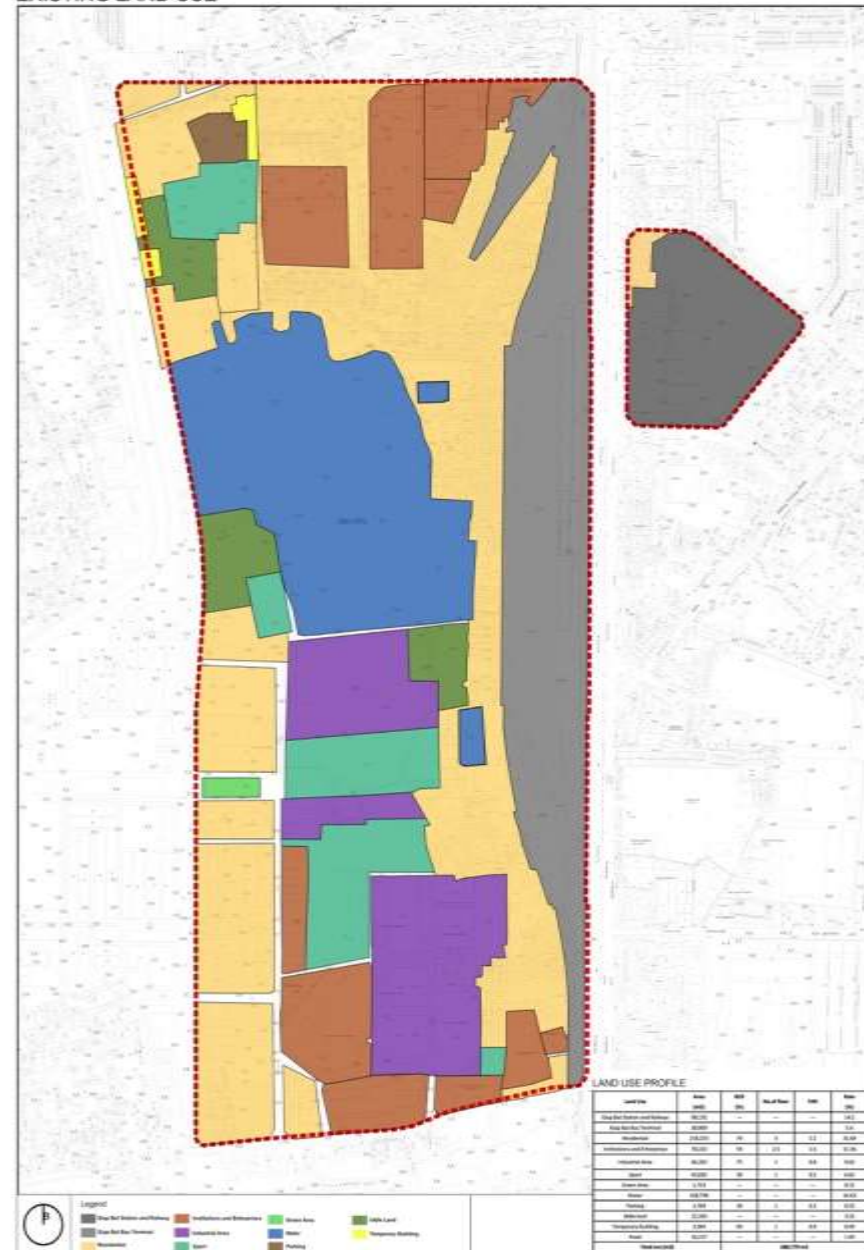


■ Approximate Size of Development

- Population \doteq 15,000
- Employment \doteq 60,000

1 - GIAP BAT Railway Station
 2 - GIAP BAT Bus Station
 3 - General Department of Enforcement & Judicial Support
 4 - Vietnam Ship Building Engineering
 5 - Marine Research Testing Center
 6 - Railway Freight Services Jointstock Company
 7 - Telecommunications Corporation & Railway Signal Jointstock Company
 8 - Giap Bat Forest Products Processing Company
 9 - Hanoi Construction Investment Company
 10 - Industrial Construction Jointstock Company
 11 - Ngoc Linh Company
 12 - Linh Dam Jointstock Company (LIDACO)
 13 - Ha Lam Import & Export Company

EXISTING LAND USE





□ Profile of Project Area

(A) VNR Station Area

- Area: 10.2 ha
- Current population: none
- Landuse: transport (VNR station, depot, factory, etc.)
- Issues: Ineffective landuse with poor infrastructure

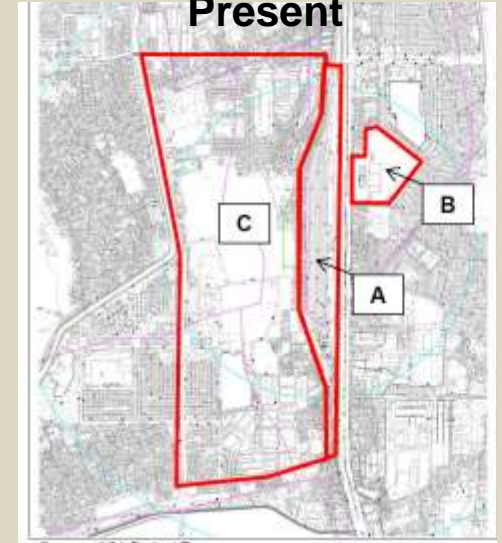
(B) TRANSERCO Bus Terminal Area

- Area: 4.5ha
- Current population: about 500 (140HH)
- Landuse: bus terminal, residential
- Issues: Disordered traffic flow around bus terminal, less use of air right, few urban service facilities

(C) Area in the West of VNR Station

- Area: 65.2ha
- Current population: about 12,000 (3,500HH)
- Landuse: Water space, industrial, residential (detached, apartment), governmental
- Issues: ineffective landuse, traffic congestion, lack of access roads and urban facilities, degraded housings, etc.

Project Location at Present



Project Location in Zone Plan



LAND USE PLAN



LEGEND

- Mix - USE 1 (Transport hub, Commercial, Services)
- Mix - USE 2 (Commercial, Services)
- Mix - USE 3 (Shopping, Services)
- Open Space (Park, Lake)

Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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VNR Station Area Development

Project Components

- **Space inside station and under the viaduct:** For retail, commercial, public service, parking, etc.
- **Station building:** For offices, department store, hotel, public service, etc. above the UMRT station
- **Other VNR land:** road, station plaza, park, other buildings

■ **Investment Cost:** USD 542 million

(including roads and east station plaza)

■ **Potential Revenue:** USD 195 mil/ year by leasing of floors

■ **Expected FIRR:** 17% - 51%

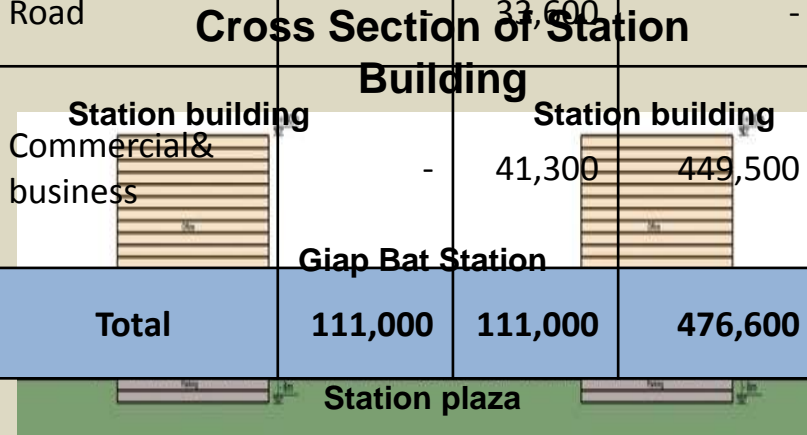
Potential Area for VNR Station Area Development



- Giap Bat Station
- Space inside station (16,200m²)
- Space under viaduct (10,900m²)
- VNR land for development (12,700m²)
- Station Building (13,500m²)

Development Profile

Landuse		Before	After	
		Land (m ²)	Land (m ²)	Floor area (m ²)
Transport	Station	111,000	17,200	16,200
	Others		-	-
	Viaduct	-	18,900	10,900
Road			33,600	-
Building				
Station building				
Commercial & business		-	41,300	449,500
Total		111,000	111,000	476,600



□ TRANSERCO Bus Terminal Area Development

■ Project Components

- **Bus terminal complex with commercial and parking facilities:** Connected with UMRT station via pedestrian deck
- **Apartments:** Floors for resettlement and for sales
- **Infrastructure:** Roads, park, etc.

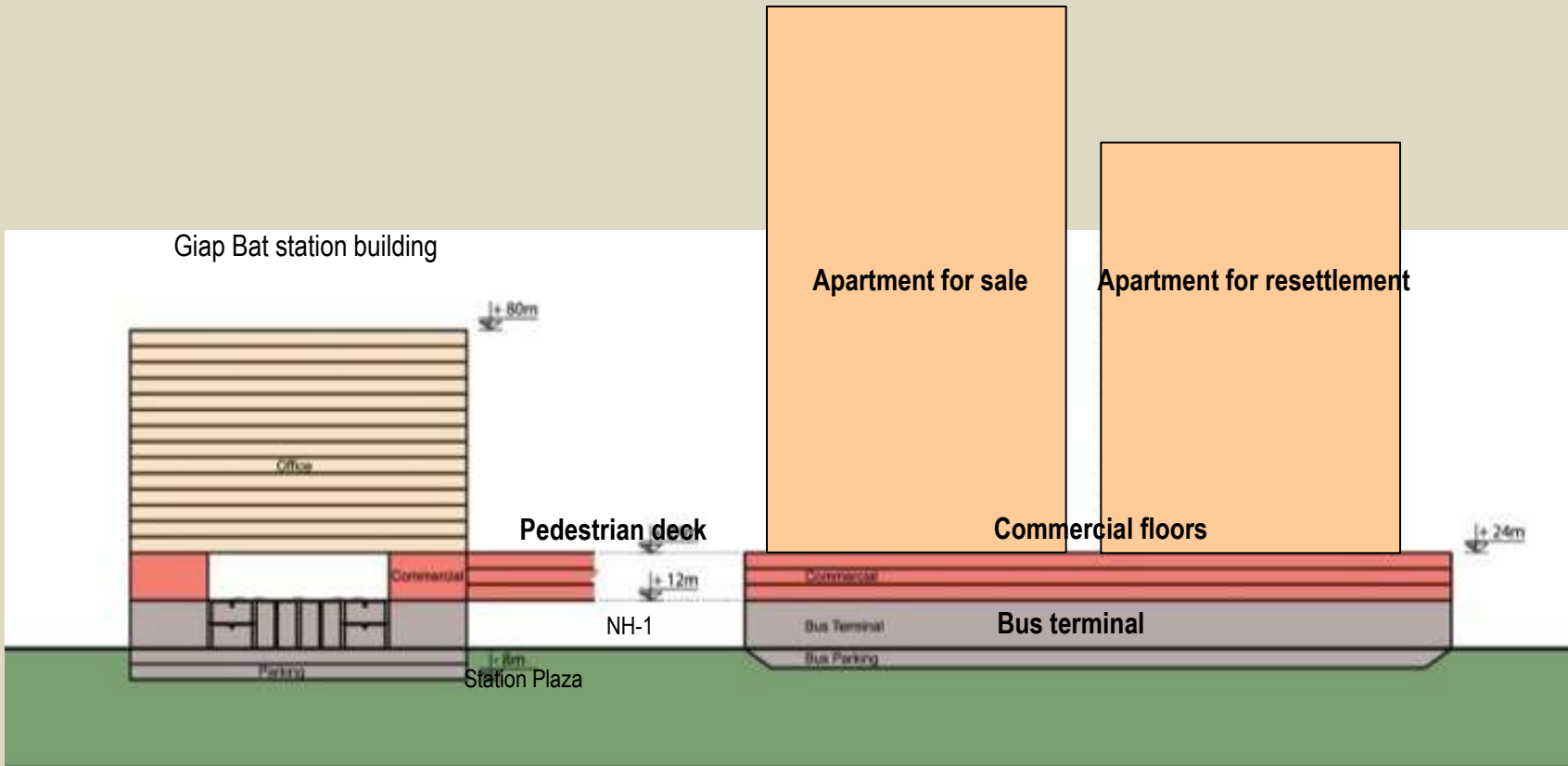
■ **Investment Cost:** USD 114 mil

■ **Potential Revenue:** USD 100 mil by sales of apartment floors

■ **Expected FIRR:** 25.5%

Development Profile

Landuse		Before	After	
		Land (m ²)	Land (m ²)	Floor area (m ²)
Trans-port	Bus terminal	35,000	45,000 ¹⁾	30,000
	Parking	-		
Commercial& business		-		30,000
Residential		10,000		61,000
Total		45,000	45,000	121,000



□ Integrated Redevelopment of West Area

■ Project Components

- **Road and infrastructure:** land rights of unused and public lands are replotted to develop roads and infrastructure
- **Public facilities:** Apartment for resettlement, school, hospital
- **CBD area:** Competitive urban facilities such as commercial, business, residential, amusement are developed in development land.

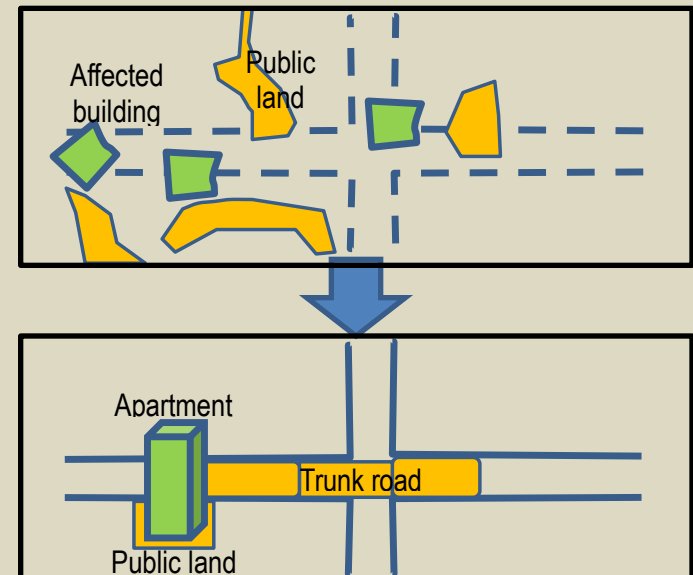
■ **Investment Cost:** USD 321 mil including road, infrastructure, compensation, survey and design cost, etc.

■ **Potential Income:** USD 321 mil including sales of reserved land and subsidy for road development

Development Image



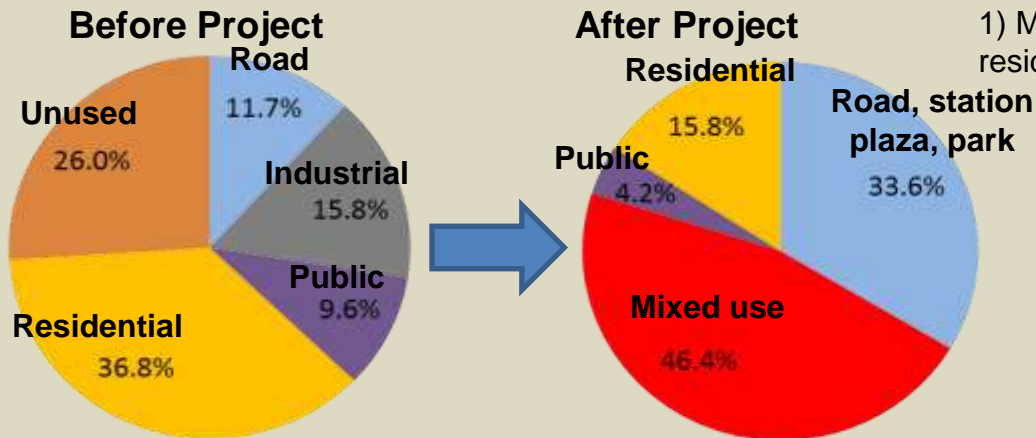
Land Replotting Concept



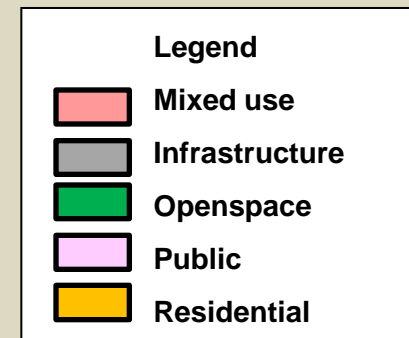
Landuse Plan of West Area

Landuse Plan before and after Project

Landuse	Before (m ²)	After (m ²)
Road	76,600	161,300
Station plaza	-	10,600
Park (including water area)	-	47,000
Mixed use	-	302,300
Industrial	103,000	-
Public& governmental	62,900	27,500
Residential	240,000	103,300
Others (water, unused, etc.)	169,500	-
Total	652,000	652,000

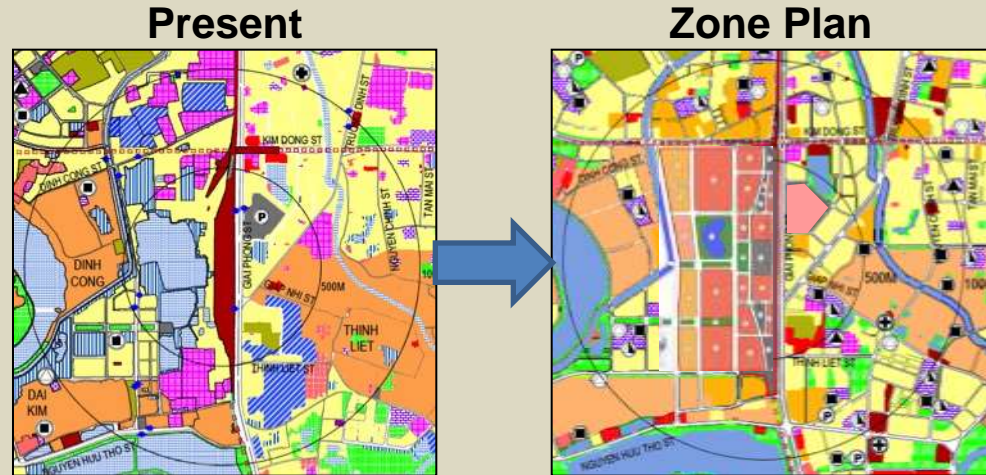


1) Mixed use land includes commercial& business, residential, public.



□ Key Concept of New Approach to Urban Redevelopment

- Desirable landuse (Zone Plan) is realized through investment to infrastructure and public and commercial facilities by various stakeholders.



- Total property value (land& building) will increase.

Future Value

Revenue/ Profit	
Cost& Investm ent	<ul style="list-style-type: none"> • Infrastructure • public facilities • commercial facilities
Present value	

Stakeholders

- Existing property owners
- New investors
- Government
- Others

- Increased property value must be shared equitably among stakeholders.

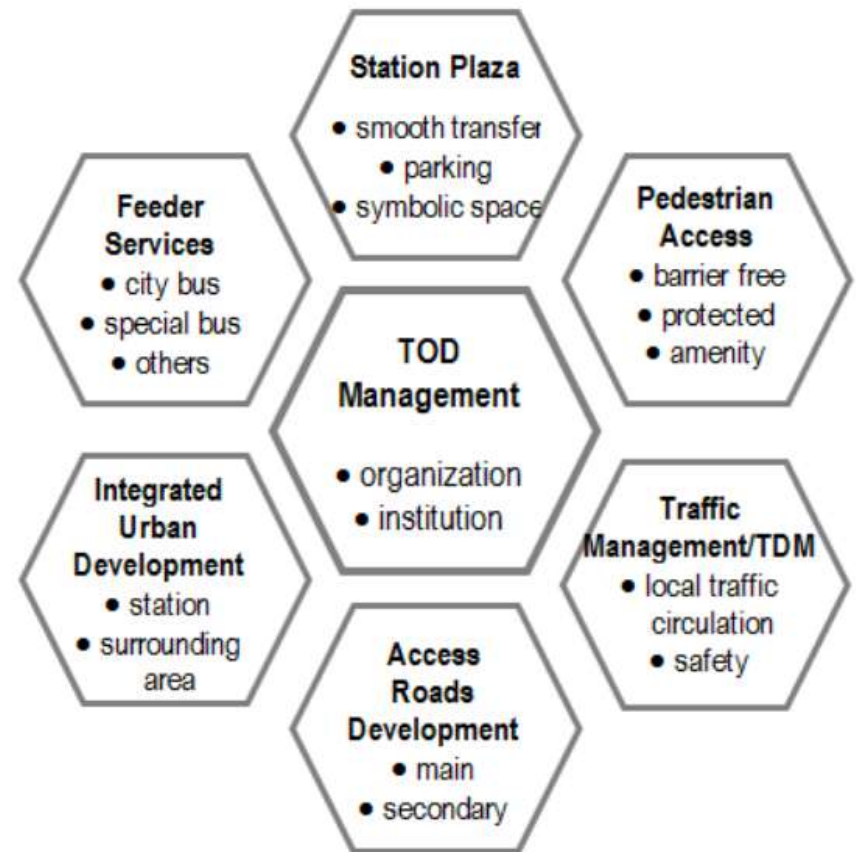
Institutional Arrangement for TOD promotion

- Designated TOD area
- Ensure Principles of Capital gain and sharing
- Mechanism of integrated urban development:
 - Land-readjustment scheme
 - Urban redevelopment scheme
 - Air-right transfer
- Promote the participation of private sector
- Mechanism for consensus buildings or building consensus

Key word for success of TOD: INTEGRATION

- **SECTOR INTEGRATION OF**
 - Urban development/redevelopment
 - Transport improvement
 - Community improvement
- **INSTITUTIONAL INTEGRATION:**
 - Cooperation among public sector
 - Cooperation of public – private – communities
 - Varies implementation schemes: Land readjustment/ Land-Infrastructure exchange: BT/BOT ...
 - Special incentives for TOD area/ Special implementation mechanism with strong roles (supportive/ participative) of public sector

Figure 2.3.4 Main Components of TOD



Project 3. UMRT for Bac Ninh province



Project 4. University villages in Bac Ninh province

University village 1: 30.000 students, 3.000 billion VND

University village 2: 77.000 students, 33.000 Billion VND



Địa chỉ: 15/10 Nguyễn Huệ, Quận 1, TP. HCM
Số điện thoại: 090 123 4567
Website: www.vietnamtour.vn



Tên	Địa điểm	Loại	Thời gian (năm)	Phạm vi (km ²)	Loại
Nghĩa trang số 1	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 2	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 3	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 4	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 5	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 6	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 7	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 8	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại
Nghĩa trang số 9	Quảng Ninh	0	00	Nghĩa trang (km ²)	Loại

TT	Tên nhà máy	Tổng suất (m³/ngày)		
		Năm 2009	Năm 2010	Năm 2011
1	Nhà máy Bùn hoạt tính 1	10000	10000	10000
2	Nhà máy Bùn hoạt tính 2	10000	10000	10000
3	Nhà máy Bùn hoạt tính 3	10000	10000	10000
4	Nhà máy Bùn hoạt tính 4	10000	10000	10000
5	Nhà máy Bùn hoạt tính 5	10000	10000	10000
6	Nhà máy Bùn hoạt tính 6	10000	10000	10000
7	Nhà máy Bùn hoạt tính 7	10000	10000	10000
8	Nhà máy Bùn hoạt tính 8	10000	10000	10000
9	Nhà máy Bùn hoạt tính 9	10000	10000	10000
10	Nhà máy Bùn hoạt tính 10	10000	10000	10000
11	Nhà máy Bùn hoạt tính 11	10000	10000	10000
12	Nhà máy Bùn hoạt tính 12	10000	10000	10000
13	Nhà máy Bùn hoạt tính 13	10000	10000	10000
14	Nhà máy Bùn hoạt tính 14	10000	10000	10000
15	Nhà máy Bùn hoạt tính 15	10000	10000	10000
16	Nhà máy Bùn hoạt tính 16	10000	10000	10000
17	Nhà máy Bùn hoạt tính 17	10000	10000	10000
18	Nhà máy Bùn hoạt tính 18	10000	10000	10000
19	Nhà máy Bùn hoạt tính 19	10000	10000	10000
20	Nhà máy Bùn hoạt tính 20	10000	10000	10000

Tổng hợp	Năm 2019	Năm 2020
Tổng lượng nước thải sinh hoạt	1.200 m ³ /ngày	1.200 m ³ /ngày
Nước thải công nghiệp	1.000 m ³ /ngày	1.000 m ³ /ngày
Nước thải y tế	100 m ³ /ngày	100 m ³ /ngày
Nước thải khác	100 m ³ /ngày	100 m ³ /ngày
Tổng cộng	3.300 m³/ngày	3.300 m³/ngày

Number of M:

<p>Điểm trung bình (GPA) và số tín chỉ:</p> <p>Điểm: và Điểm Đạt</p> <p>Mức: 10 tín chỉ</p> <p>1. Môn năm 2020: 5 học Tín: 100 (đạt)</p> <p>2. Môn năm 2020: 10 học Tín: 200 (đạt)</p>	<p>Ngày học và số tín chỉ:</p> <p>Điểm trung bình và Điểm Đạt</p> <p>Mức: 10 tín chỉ</p> <p>1. Môn năm 2020: 5 học Tín: 100 (đạt)</p> <p>2. Môn năm 2020: 10 học Tín: 200 (đạt)</p>
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