Preliminary Investment Analysis and Feasibility Study on Comprehensive Tract Development Projects

-- Taking a Project in Wucheng District, Jinhua City as an Example

Yangzi Liu[1*], Ailin Li[2]

School of urban and rural construction, Chengdu Agricultural College, Chengdu, Sichuan, 611130, China

email address[1*]: liuyangzi0318@163.com
email address[2]: liailin@163.com

Abstract. In the process of China's urban development, the comprehensive tract development plays an important role, which is highly attractive in the current context and is increasingly becoming an important development mode for promoting new-type urbanization. The operation of comprehensive tract development projects can further promote the sound development of regional economy and raise its development to a higher level. Therefore, the investment and its feasibility analysis and study on comprehensive tract development projects are of great theoretical and practical significance. Based on the counseling practice in the development projects, and taking a project in Wucheng District, Jinhua City as an example, On the Characteristics of the project, Preliminary investment analysis using indicators such as internal rate of return, net present value, and net profit margin.

Keywords: comprehensive tract development, financial analysis, risk analysis

1   Introduction

From the explosive development of characteristic towns and garden complexes to the PPP pattern-dominated comprehensive urban development in various regions, the concept - comprehensive tract development - constantly evolves with the promotion of China's urbanization process. Although the comprehensive tract development is not clearly defined in China's current regulations and policies, With the proposal of "Several Opinions of the General Office of the State Council on Promoting the Reform and Innovative Development of Development Zones" (Guo Ban Fa [2017] No. 7), which proposes to "According to relevant national regulations, invest in the construction and operation of development zones, or trust existing development zones, and enjoy relevant policies of development zones", The comprehensive tract development has been continuously explored and practiced[1]-[3].

In general, the comprehensive tract development refers to the comprehensive development behavior, which covers systematic planning, investment, financing, construction, operation, industrial introduction and development for new towns and new areas in various regions under the premise of conforming to national and local planning. It usually involves land acquisition and demolition, primary and secondary development of land, construction and operation of infrastructure and public service facilities, and related industry introduction services, undertakes the development functions of urban resource management, ecological environment improvement and industrial development, eventually realizes the optimal allocation and integration of multi-factor resources such as policy, land, capital, technology and intelligence, and achieves many comprehensive goals, e.g. industrial agglomeration, functional perfection, economic growth, beautiful ecology and employment increase, to truly realize win-win and sharing of reasonable incomes[4]-[6].

2   Preliminary analysis on the project

Jinhua City, named after Jinhua Mountain, is a prefecture-level city located in the middle of Zhejiang. It adjoins Taizhou to the east, Lishui to the south, Quzhou to the west, and Shaoxing and Hangzhou to the north. It stretches 129 km from north to south and 151 km from west to east, covering an area of 10,942 sq. km. The urban area, located in the junction of Dongyang River, Wuyi River and Jinhua River, covers an area of 2,049 sq. km, including 104.3 sq. km of built-up area. In 2022, the resident population across the city was 7.127 million. According to the data published by the Zhejiang Provincial Bureau of Statistics, the total GDP of Zhejiang in 2022 is 7,771.5 billion yuan, up by 3.1% YoY, ranking the fourth countrywide or 0.1 percentage points higher than the national average growth rate. GDP of Jinhua in 2022 is 556.25 billion yuan, ranking the seventh in Zhejiang, only second to Taizhou and Jiaxing. GDP ranking of Zhejiang in 2022 is shown in Table 1.

Table 1. GDP Ranking of Zhejiang in 2022

Ranking of total GDP	Region	GDP in 2022 (100 million yuan)	GDP in 2021 (100 million yuan)	Increment (100 million yuan)	Growth rate (%)
-	Zhejiang	77,715.0	73,515.8	4,199.2	3.1
1	Hangzhou	18,753.0	18,109.42	643.58	1.5
2	Ningbo	15,704.3	14,594.92	1,109.38	3.5
3	Wenzhou	8,029.8	7,585.02	444.78	3.7
4	Shaoxing	7,351.0	6,795.26	555.74	4.4
5	Jiaxing	6,739.5	6,355.28	384.17	2.5
6	Taizhou	6,040.7	5.786.19	254.53	2.7
7	Jinhua	5,562.5	5,355.44	207.03	2.5
8	Huzhou	3,850.0	3,644.87	205.13	11.3
9	Quzhou	2,003.4	1,875.61	127.83	8.76
10	Zhoushan	1,951.3	1,703.62	247.67	16.75
11	Lishui	1,830.9	1,710.03	120.87	7.28

Data source: Zhejiang Provincial Bureau of Statistics and Bureaus of Statistics of Prefectures

As the main urban district of Jinhua City, Wucheng District had a resident popula-
tion of 970,600 in 2021, ranking the fourth in Jinhua's total population. In 2021, the
annual GDP was 71.953 billion yuan, ranking the fourth in Jinhua City.

This project was developed by the area comprehensive development pattern, for
which the government encouraged adopting the principle of "controlling by the gov-
ernment, orientation by the enterprise, market operation and break-even by the de-
veloper". The project investor introduced a well-known contract construction agent.
The investment promotion commissioner for the project was authorized by the Wu-
cheng District Government and led by the Wucheng District Urban Renewal Center to
publicly select social contributors to implement this project.

3   Preliminary investment analysis and feasibility study on the project

3.1   Project implementation pattern.

The total investment was 13.5 billion yuan, including 8.87 billion yuan of the civil and
erection cost. Through public bidding, the social capital contributors in the business
negotiation of this project. After these contributors won the bid, they established a
project company. As the entity of project financing and implementation, the project
company carried out investment, construction, industry introduction and investment
attraction for this project. The capital source is the transfer fee of publicly auctioned
consolidated land *(1- the proportion of government provision % (about 35%)+the
buy-back money for housing placements, which will be paid through the government's
inclusion in the annual budget. According to the requirements, the social capital must
be paid for land purchase in the process of residential and commercial land transfer
within the scope of project, and the investment partners or other partners must make a
valid offer. This project is a typical "primary and secondary development" project. The
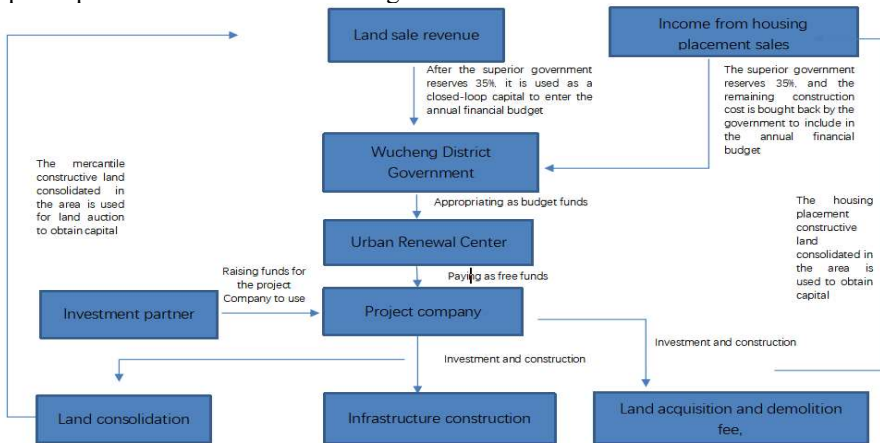capital operation mode is shown in Figure. 1.

Fig. 1. Capital Operation Mode

3.2   Project company composition and investing and funding mode

The project company was established by the investment partners with a registered capital of 100 million yuan. The social capital contributors' ratio of shareholding can be re-negotiated, but the social investors need to be the major shareholder.

For the project company, the capital fund except the registered capital (100 million yuan) should be contributed in full according to the financing needs. The remaining financing funds for the project should be paid in full by the project company gradually, and the government does not provide any guarantee for the project company.

3.3   Cooperation period and implementation scope

The cooperation period is 9 years and the cooperative area range is about 4.4 sq. km, which adjoins Renmin West Road to the north, Zhegan Railway to the west, Wujiang West Road and Jinhua River to the south, and Wuzhou North Street and Changshan Road to the east. The Wucheng District Urban Renewal Center is responsible for the relocation and resettlement in the area. The investment partner ensures the project company to contribute the capital in full in time and assists the project company in money raising and financing. The project company is responsible for the construction project development, industrial development, investment promotion, and handling related approval formalities.

3.4   Total investment and return on investment

The estimated amount for the total investment is 13.5 billion yuan. The data of project economic indicators will be deduced from the two dimensions: investment and income.

(1) Total investment

Total investment = engineering costs, land acquisition, demolition and resettlement compensation costs (including supporting land in the area), contingencies, financial costs, administrative fees, industrial investment promotion fees, and urban operation and promotion fees. Total investment is shown in Table 2

Table 2. Total investment

SN	Item	Amount (10,000 yuan)	Remarks
I	**Engineering investment**	**887,714.00**	
1.1	Moving back to housing placement	254,131.00	
1.2	Planned school	114,688.00	
1.3	Public welfare construction projects	203,127.00	Including parks, police stations and fire brigades
1.4	Infrastructure supporting projects	256,133.00	Including munici-pal roads
1.5	Other expenses for project construc-tion	12,703.00	

1.6	Contingencies	46,932.00
II	Marketing & investment promotion	34,000.00
III.	Administrative fees	22,500.00
IV	Land acquisition and demolition	360,000.00
V	Financial cost	45,788.00
VI		**1,350,002.00**

(2) Return on investment

Return on investment of land auction = the remaining amount after deducting the accrued expenses (35% of land transfer fee) from the land transfer income of each construction land in the cooperation area, that is, 65% of land transfer fee.

Return on investment of housing placements: Phase I, II and III in the western suburbs, calculated according to the capacity area of 1,340 yuan /m2; west of Huancheng West Road, calculated at 2,620 yuan /m2; underground parking space: calculated at 50,000 yuan/parking space.

(3) Project adjustable provisions in the implementation scheme:

① The project company should assume the investment risk: In case of losses caused by the land market, the project company should assume the market risk, other than the Urban Renewal Center.

② Negotiation mechanism for bidding mode of land transfer: In case the project profit is affected by the governmental price limits, the Urban Renewal Center should negotiate with the investor for adjustment.

③ Adjustment mechanism for the project development cost: If the investment is reduced, it needs to be increased. If the investment exceeds the agreed level, it may be suspended or the exceeded part is negotiated to increase income. The detailed rule shall be reached through negotiation between the Urban Renewal Center and the investor. During the negotiation period, the project company shall pay the overrun as usual.

3.5   Financial feasibility analysis

(1) Basic data on project investment and profit

For this project, the total investment covers the planned school, infrastructure construction for the municipal branch roads, as well as the engineering cost for the primary land consolidation and other fees for the construction projects. The total investment of the project cost is temporarily calculated according to the cost mentioned in the government implementation plan.

(2) Project revenue and land auction market operation

The income from this project is closely related to the land auction market quotation. It is investigated that the lowest listing price of second-hand houses near the project is 21,000/m2-23,000/m2. Conservatively, the unit price of futures marketable housing is slightly lower than that of the second-hand houses near the project. Therefore, the land price per floor area is estimated as 10,084 yuan/m2 on average determined by the government. This project is an investment project and its financing cost cannot be determined in initial stage, the profit is estimated on the annualized benchmark yield 6%. The final profit is reflected as follows: Land auction income + housing placement

buyback - land acquisition and demolition fee - engineering cost - financial cost - investment promotion and marketing fee - city promotion fee - administrative fee - tax-contingencies.

(3) Calculation model analysis is shown in Table 3, Table 4

Table 3. Investment model

SN	Item	Quantity (m²)	Base	Unit price (yuan/m²)	Sales revenue (10,000 yuan)
I	Operation revenue				1,733,022.22
1.1	Income from 97 mu chemical fertilizer plant project				45,238.01
	Income from land auction	116,458.20	Capacity building area	8,250.00	96,078.02
	Excluding government purchasing and storage cost				5,335.00
	Excluding government financial cost				267.00
	Net income				90,476.02
	Municipal-level tax retention				45,238.01
1.2	Income from 60 mu Iceman food factory project				17,499.65
	Income from land auction	72,036.00	Capacity building area	8,250.00	59,429.70
	Excluding government purchasing and storage cost				3,300.00
	Excluding government financial cost				165.00
	Subsidy				165.00
	Municipal stipulated fees				20,800.40
	Net income				34,999.31
	Municipal-level tax retention				17,499.65
1.3	Income from 190 mu railway freight yard area project				73,395.68
	Income from land auction	136,868.40	Capacity building area	8,250.00	112,916.43
	Provincial and municipal stipulated fees				39,520.75
	Net income				73,395.68
1.4	Income from the remaining land plots				1,521,093.18
	Income from land auction (less than 10,000)	2,836,537.40	Capacity building area	8,250.00	2,340,143.36

	Income from land auction (more than 10,000)	2,836,537.40	Capacity building area	0.00	0.00
	Minus 35% (less than 10,000)				819,050.17
	Minus 35% (more than 10,000)				0.00
	Net income (less than 10,000)				1,521,093.18
	Net income (more than 10,000)*50%				0.00
1.5	Municipal land purchasing and storage cost				2.70
1.6	Housing placement				75,798.40
	Land sale revenue	224,800.00	Capacity building area	1,500.00	33,720.00
	Deducting 35% of proportion of accrual				11,802.00
	Buyback by Urban Renewal Center	224,800.00		1,980.00	44,510.40
	Parking space buyback	1,874.00		50,000.00	9,370.00
II	Expenditure				1,350,002.00
2.1	Civil and erection cost and equipment cost & other engineering cost				887,714.00
	Moving back to housing placement				254,131.00
	Planned school 1 (36 classes)				23,846.00
	Planned school 2 (66 classes nine-year system)				49,904.00
	Planned school 3 (36 classes)				25,139.00
	Planned school 4 (30 classes)				15,799.00
	Fire-fighting equipment				3,692.00
	Local police station				5,336.00
	Energy Park				14,632.00
	Community hospital				7,400.00
	Community sports center				5,860.00
	Infrastructure for municipal roads				215,771.00
	Water conservancy facilities				22,088.00
	Park building, greening				166,207.00
	Supporting infrastructure costs				18,274.00
	Other expenses for project construction				12,703.00
	Contingencies				46,932.00
	Marketing & investment promotion				34,000.00

	Administrative fees	22,500.00
	Land acquisition and demolition	360,000.00
	Financial cost	45,788.00
III	Value-added tax	34,471.82
IV	Surcharge	2,413.03
V	Total profit	346,135.37
VI	Income tax	86,533.84
VII	Net profit	259,601.53
VIII	Net profit rate	14.98%
IX	IRR	8.53%
X	Net present value (NPV)	67,846.02

Table 4. Cash flow model

Item	2023	2024	2025	2026	2027	2028	2029	2030	2031
Current year net cash flow	-349,132	-220,545	68,301	65,549	68,633	132,056	180,440	189,029	171,058
Cumulative current year cash flow	-349,132	-569,676	-501,376	-435,827	-367,193	-235,138	-54,698	134,331	305,390
NPV net cash flow	-329,369	-196,284	57,347	51,921	51,287	93,094	120,003	118,599	101,249
NPV cumulative net cash flow	-329,369	-525,654	-468,307	-416,386	-365,099	-272,005	-152,002	-33,403	67,846

(4) Result analysis

In summary, the return on investment (ROI) of the project is closely related to the land price per floor area in the land auction market: land price per floor area 10,084 yuan/m2.

Calculate internal rate of return is shown in equation (1):

$$\sum (CI\text{-}Co)_t \times (1+IRR)^{-t}=0 \tag{1}$$

Where:

t—Year t

CI—Cash inflow

CO—Cash outflow

IRR—Internal Rate of Return

Calculate net profit margin is shown in equation (2):

$$NPR= Np/Rev \tag{2}$$

Where:

NPR—Net profit margin

Np—Net profit

Rev—Revenue

Calculate net present value is shown in equation (3):

$$NPV=\sum (CI\text{-}CO)(1+i)^{-t} \tag{3}$$

Where:

NPV—Net present value

CI—Cash inflow

CO—Cash outflow

Internal rate of return (IRR) 8.53%, net profit rate (NPR) 14.98% and NPV 678.46 million yuan. On the premise of ensuring the benchmark yield 6%, the NPV is greater than 0 and the IRR is greater than 8%, so the project is feasible.

3.6   Project risk estimation

3.6.1 Advantages.

(1) This project is located in China's well-developed province with stronger economic vitality than other third-tier cities.

(2) The area development concept and characteristics are clear. The project is not urban construction in remote "new areas" but reconstruction in well-developed areas featuring distinct urban renewal concept.

(3) Including the construction cost of subsequent secondary development, the total contract price can reach 20-30 billion yuan. Since the project scale is large, it is suitable for tract development.

(4) The government and the employer have a clear mind about tract development and have a clear target for planning, which means the future development for the project is continued during tract development.

3.6.2 Existing problems and risks.

(1) The civil and erection cost for primary land consolidation accounts for a small proportion of the total investment. At present, the expended civil and erection cost is about 3.3 billion yuan, plus the demolition cost of 3.6 billion yuan and other expenses of 1.0 billion yuan, the remaining civil and erection cost is 5.6 billion yuan, accounting for 42% of the total investment. Although the income from investment is not affected, the profit from construction is low compared with the development projects in other new tracts.

(2) Uncertainties during land acquisition and demolition. This project is located in the east of Huancheng West Road, where the land acquisition and demolition likelihood is small, but a large area of built-up houses in the west of Huancheng West Road and in the north of the thermal power plant is to be demolished. The demolition difficulty and duration would have a negative influence on the overall advancement of tract development.

(3) Large initial investment. Since there is initial construction cost to be paid, plus the land acquisition and demolition in the early stage, it is expected there would be 5.1 billion yuan of initial cost within 1-2 years, which is adverse to activate the funds.

(4) Opportunity is mingled with risks for final retreat. Final retreat from primary and secondary combined development always occurs in secondary development. The secondary developer has the ability to pay for land purchase for building construction, needs to sell these buildings for profit, and finally retreats from development. After

retreating through land transfer fees during the primary development, whether the immovable property can be successfully sold during secondary development and the whether the sales cycle meets the fund rotation requirements need to be further predicted and judged.

(5) Fixed amount (financial expense & administrative fees). Over the years, there are many uncertainties during land demolition. There is a certain risk of demolition, which leads to the inability of investors to auction land, and then affects their cash flow, including the adjustment of control regulations and the adjustment of land transfer methods, which will affect the time for investors to recover the money and indirectly increase the financial expenses and administrative fees. The fixed amount should be adjusted to a more reasonable way based on the actual amount[7].

4   Conclusion and suggestions

In order to reduce and avoid risks, and provide scientific and objective basis for investment decision, this mode should be further studied to ascertain whether there are hidden debts or whether there are other policy obstacles. Financial institutions, e.g. local banks should be further investigated to know the financing willingness. Feasibility study on the secondary development should be conducted and the local future development of real estate market should be analyzed. Therefore, a good result from investment and good economic benefits can be obtained in the end.

Fund project

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