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Linking Together Independent Sustainable Building Development Plans

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Abstract. The contribution describes two basically independent projects, both claiming to be oriented on sustainable building paradigms. The two projects had investors of two different types – one using public money to the benefit of community, the other was purely private money of a private economic operator. Both investors examined the sustainability in relation to the surrounding conditions and processes, discovered the concurrent existence of the other's investment plans, and determined overlapping areas of interest.

In the article we describe the overlapping areas, variant solutions intended to improve sustainability for lower costs, the pros and cons of the variants, and the harmonization of both investors' requirements. This was used to choose the variant best fitting both investors, and finally modify it slightly.

1. Maxim

It is a bad plan that admits no modification [1].

When things need to happen, the right people are never idle [2].

2. Introduction

The contribution deals with sustainable building development plans of two different investors. Initially, the investors were not aware of each other's plans in spite of, or rather due to, the fact of having approximately simultaneous planning start.

Driven by the maxims above, determining the combined interests of both investors was of serious importance for the prospective cooperation. What interests are in harmony with each other? What interests are in conflict? Such questions were explored during the process of projects' weaknesses identification and harmonized improvements of both projects. These are presented in the respective sections below.

It should be mentioned that the idea of harmonizing two such projects was partly inspired by a similar case developed in another country.

Some of the further mentioned facts first appeared and were handled independently, although both plans are described simultaneously here.

3. Overview of the projects

The land of both owners, as intended for both projects, was preliminary designated as building plots. There was only one restriction imposed on the land, next to property rights limitations – it could not be used for residential housing.



Both investors included sustainable building paradigms, as sustainable building paradigms are widely accepted in the country now. Also, no conflict originated in the field of generally accepted requirements [3]. Both investment plans were being prepared to naturally comply with requirements such as demanded in [4], [5].

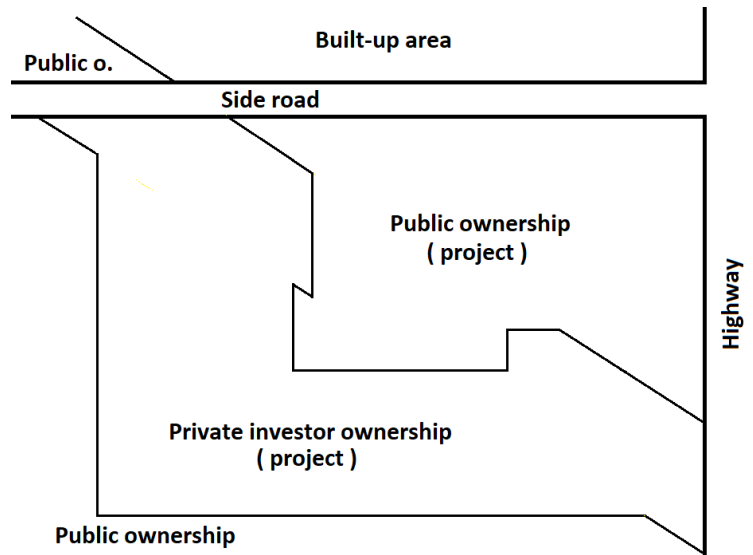


Figure 1. Schematic layout of private and public landholding.

3.1. Private money project

The private money project was a project for a development plan of an area about 47 acres. The investors planned to construct storehouses for middle term storing of large-sized products at natural temperature, such as machinery products, at 15–20 acres. Approximately the same number of acres were planned for construction of warehouses for short or middle term storing of consumer goods, and the rest was intended to host constructions of a frozen foods store.

The general sustainable building paradigm was amended with particular requirements for road flexibility to partial change in use of the various types of stores.

All the constructions and facilities were intended for exploitation by the private investor, yet the eventually unused space could be rented out. Operating the facilities should have no significant impact on neighbourhood or nature, apart from the traffic load.

3.2. Public money project

The public money project was a project for a development plan of an area about 28 acres. The development plan comprised construction of some medical care facilities, and of some buildings for small businesses of chiefly manual production. The large part of the area, however, was planned for public education, sports and leisure facilities, including a school and an exhibition hall.

An important sustainability requirement declared the possibility of future expansion of the facilities.

All these facilities were intended to be governed primarily by the public and local authorities, for private business operations only publicly unusable facilities could be offered.

4. Development plans weaknesses

4.1. Private money project weaknesses

The landholding intended for construction comprises an area of about 47 acres. It is a “distorted” L-shaped area with each of the legs touching communications or other private land, and thus “cornering” the public land between the legs and roads. The actual shape of the landholding forces a higher

proportion to be dedicated to driveways and traffic routes within the planned establishment than would be a usual portion for a 47 acres' land of rectangle shape.

Although the investor's business development plans paradigms allow some changes in the buildings layout and design, the size of transport routes cannot be reduced more than negligibly.

4.2. Public money project weaknesses

The public money development plans' main problem arises from the fact that the landholding intended for construction is surrounded by public roads and landholdings of other private owners. The consequence thereof are highly restricted possibilities of future development extensions and of growth of the facilities, which severely conflicts with the general sustainable building paradigms of the public investor.

Other land in the neighbourhood is of public ownership, too. These landholdings, however, are located "beyond" the private owners' properties, or over the roads. Such property structure disables direct access from the site in the development plan to other close public landholdings. Consequently, the access is somehow inconvenient, viable only through public roads. The need of superfluous adjustments in future projects was recognized as a degradation in public owner's sustainable building concepts in regard to future development of the area, and also forms a degradation in green building concepts.

5. Exploring the plans to improve them

We believe that the best solutions are born through collaboration [6].

Both of the investors inspected the surrounding conditions and discovered the other investor's plans being concurrently under development. This enabled them to compare and coordinate paradigms of their plans, and to construct and use syntagms that were impossible to construct in any of the two individual plans.

The syntagms construction was executed in two steps. First, each of the investors modified their development plan as if it could use an area of the original size but could locate it anywhere on building site of any of the two investors. Second, joint syntagms were deduced and agreed upon (e.g. a joint gatehouse was determined as a preferred option, and a joint gateway was strongly supported), and the two development plans' paradigms were combined into single joint plan paradigms in a way compliant to both investors requirements.

5.1. Improving the private project

The main advantage for the private project is the possibility of swapping parts of the landholdings making their projects more economical. This is due to lesser routes extent and to more efficient site layout according to the joint-project syntagms.

The new site layout of the private money project enabled exploitation of such design of the store-buildings that lessened rebuilding needs and future expenses when changing individual store buildings usage.

The increased variability in building design and usage thereof added to their sustainability – by lessening the future need or frequency of modification, demanding less money for future modifications, yet without actual costs increase. For example, appropriate alternative entrances to the store buildings could be added in several cases, thus eliminating much of the stores re-building for another usage in the future. The expected environmental impacts were also reduced as a direct consequence of adopted sustainability measures (pre-emptive actions).

5.2. Improving the public project

Extending the available area over the neighbouring project area enables a direct access to other public landholdings for future exploitation. Also, some of the difficult to use areas in the current public project landholding could be neglected.

This approach also enables to extend contiguously the areas for planned facilities in the future. Mainly the educational and medical facilities had priority in preparing for possible future contiguous

expansions while business and sport-and-leisure facilities expansion demands could be satisfied by path and road connections to the newly added installations.

5.3. *Improvements in both project*

The above changes in both projects lessened the environment impacts by decreasing the necessary amount of paths and routes on the projects' grounds. The new syntagms exploiting joint building usage further lessened the environment impacts by saving land usage amount.

The joint building exploitation exhibited more extensive benefits than just decreasing land demands. For instance, energy supply installations or security installations and services, if contracted and managed together, reduced one of the ubiquitous problem, the problem of manpower demand – having been joined they needed less manpower and thus better followed sustainable building concepts.

6. Some details on planning and design changes

6.1. *Original variants of the projects*

The two areas intended for the two (private and public) projects had atypical shapes. The shapes were a consequence of the permanent drying of an intermittent or ephemeral (temporary) streamlet some 200 years ago, followed by landscaping, land adjustments and alterations in ownership.

There were two variants (of building layouts) proposed for the original public project, located on the public landholding (**Figure 1**). Both variants were about evenly (un)satisfactory, both suffered from alike or the same drawbacks and imperfections. None of the project parts – school, hospital, health-care facilities or sport-and-leisure facility – could be expanded in the future. The neighbouring main road was a disadvantage for any of the planned facility if located close to it.

There were three variants prepared for the private project, none of them very satisfactory from the point of storage area / landholding area ratio (or storage area / transport area ratio). There was a restricted availability for entry/exit where the private project landholdings neighboured the highway, thus the projects disregarded it and planned a common entry/exit at the side road. Related drawback thereof was the need of turns for supplier/customer trucks and a corresponding layout of roads and storehouses within the area. Thus the general available layout was store-road-store-(back-)road-store along the axis of the area which limited the size (depth) of the storehouses. Another available layout was store-broad road-store along the axis, and an appropriate extra ground for turnaround. Next to this, greenery consisting of trees and bush was planned along part of the border of the area. This was to comply with “non-interference and non-degradation standards”, imposed by district planning authorities to protect neighbouring ownership rights.

6.2. *Joint project modified design*

The two joint areas were divided into two new parts, both of almost a rectangular shape. The new area for the public project was located on the left portion of the joint area (compare scheme in **Figure 1**) while the right portion of the joint area was allocated for the private project.

Then the public project area (**Figure 2**) could locate the facilities with most probable and expectable need for future expansion on the edge of unused public landholding – namely school, some sport and leisure facilities, health-care/medical facilities and the hospital area. Enclosed spaces planned for small businesses and enclosed spaces for sport and leisure activities were located so as to be accessible for the customers through the gateway, shared with the private storehouses project. Some medical facilities and the hospital area were separated by ribbon of greenery – trees and bushes – from the storehouses in the private project area.

The private project on the other hand could exploit the favourable shape of the newly allocated area (**Figure 2**). Greenery ribbons along the rectangle, followed inward by a strip of storehouses. Roads for delivery and take away, circling the whole area. And storehouses in the centre with flexible design – ready for drive-through if desirable, and cutting routes convertible to storehouse area.

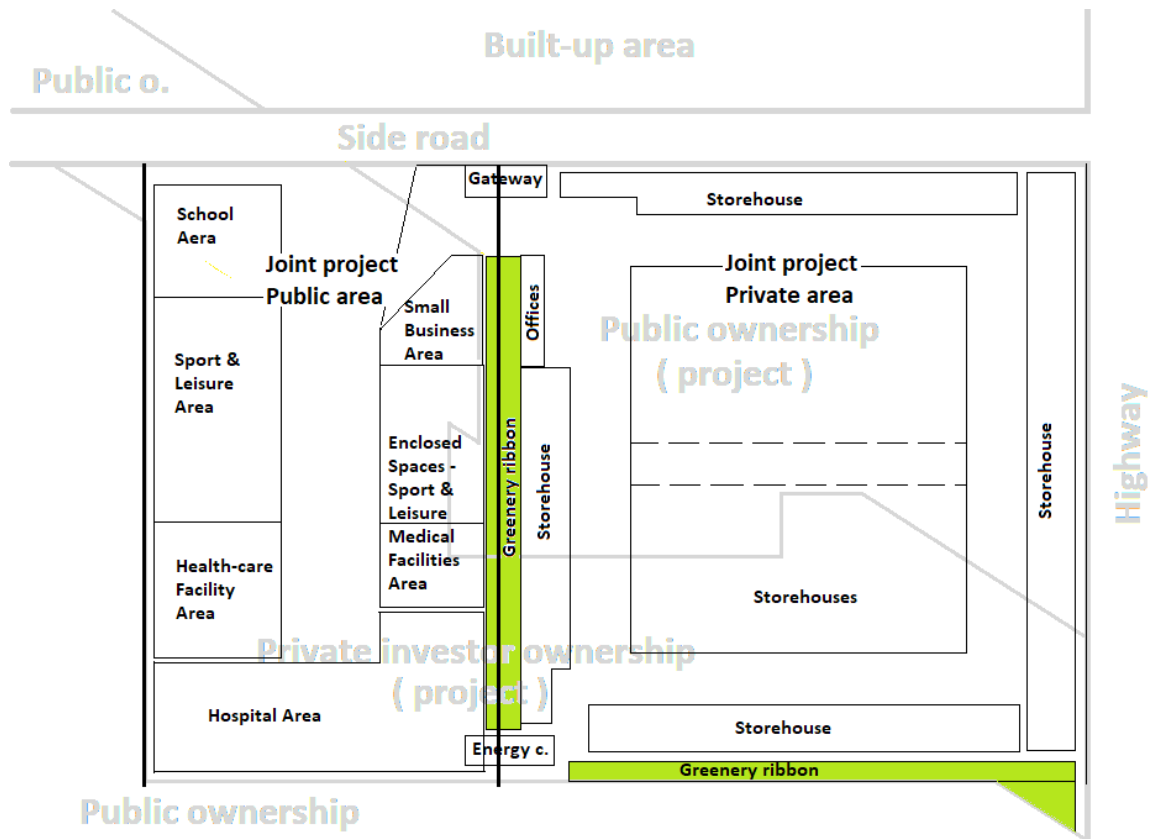


Figure 2. Scheme of the general design. Joint project

6.3. Public opinion and attitude, to the joint project's modifications

The public project assumed that public be addressed and asked to give their opinion on changes due to joining the two projects. However, only a negligible number of responses were obtained, often containing hesitant or unassertive opinions, or openly biased statements. Thus, assessing the public opinion and its changes had to be resigned, and neither any relevant data on direct public opinion in the preparatory stage of the project nor the corresponding assessment can be presented.

7. Evaluation

Both investors, the private as well as the public one, had to defend the improved plans, the land swapping, creation of combined ownership and other features of their re-designed projects in a way similar to public-private partnership projects.

The private investor concentrated primarily on cost–yield relations throughout the life cycle.

The public redesigned project was a little more difficult task. Although the redesigned project showed better cost–yield relations, the uninformed public always raises questions like “Why these modifications? Isn't it too expensive?”. Next to explaining the improvements of cost–yield relations during the life cycle, the public authorities had to take into consideration public attitudes to changes in the project and public concern for efficient usage of the public property and about (dis)advantages of the new buildings and areas dislocation.

7.1. Financial evaluation

Directly quantifiable savings resulting from the implementation of the joint project instead of two separate projects are summarized in Table 1.

Table 1. Financial evaluation of the joint project. Prices converted to US\$

Project part or Object	Savings (–) or Additional costs (+)
Road land requirements (decreased) Est. 2700 m ² à 18 USD/m ²	– 48,000 USD
Other land requirements (decreased) Est. 1950 m ² à 18 USD/m ²	– 35,100 USD
Energy centre(s)	– 305,000 USD
Energy consumption, monthly expenses	– 12,000 USD
Gatehouse	– 532,000 USD
Gateway and gate	– 52,000 USD
Security service, monthly expenses ^a	– 9,500 USD + 5,000 USD

^a The monthly expenses for security service would be higher, for the private investor project, as the public project investor discontinues using security services for part of their project.

7.2. Non-financial benefits and losses

Table 2 summarizes identified non-financial impacts resulting from the implementation of the joint project instead of two separate projects. These impacts are specific and limited to the public project. The evaluation was performed by the public authorities means and data.

A positive change was rated by up to 3 “+” signs, a negative change by up to 3 “–” signs, and 0 was used for no significant change.

Table 2. Non-financial impact of joining the projects, on public project parameters.

Project part or Object	Project status change
Public attitude	(+) Improvement
Public traffic availability	+ Improvement
Maintenance	+ Improvement
Future expansion of the project	+++ Improvement
Future additional land requirements	0 Neutral
Independency of future changes	– Degradation
Intra-premises transport and connections	++ Improvement

The private project investors didn’t provide all their data for obvious reasons. On the other hand, the public project investors requested some \$ estimates for non-financial impacts. The estimate was performed where practicable with approximate results:

- public attitude – this estimate was “quasi”-financial, it was estimated that it might add a few percent in popularity for those who can convince the public effectively about his/her own merits on the project. Actual financial impact might only emerge subsequently from the election results. On the other hand, the popularity of responsible persons would decrease if the public attitude turned out to be negative towards the joint project;
- public traffic availability – 0-5% savings, it is calculated according to the time saved by customers and employees;

- maintenance – up to 4% savings;
- intra-premises transport and connections – can save up to 10%, this number includes maintenance and repairs of the roads and paths.

These are highly gross estimates, containing potentially a big error. The public project investors were aware of that it should be taken rather as a guesstimate and not as a ground for any major or important decisions.

7.3. Real estate value benefits

Reorganizing the project areas, swapping the land property, created more compact landholding areas, which increased the value of the (particularly private investor's) property – though in the case only that the private investor abandoned the project and sold the new landholding.

Financial calculation of the real estate value benefits for the public investor project (after joining the two projects) is questionable. The public investor's intended benefits consisted primarily of the ease of future expansion of the individual facilities and future benefits thereof. The original area was surrounded ("cornered") by roads and private land property, disabling any future expansion. In the joined project, the estimation was that the rental value was unchanged for the rentable facilities. The sale price was estimated to be unaffected as well, unless the buyer intended to expand the facility at the same time and paid higher price for that opportunity. No facility, however, was currently intended to be sold. In the future, though, the expected expansion to the neighbouring area would increase the rent.

The private investor's intention was to benefit and actually benefitted from the joined project immediately. The net storage area was able to be increased by 16% at least, depending on the original variant it compared to, and on whether all the additional storages were really built. This additional 16% storage capacity benefit corresponds to the increase in tangible property volume. The financial equivalent of the 16% increase of the real estate volume is partially speculative. There would be a 16% increase in rental income or value only if additional 16% store capacity be successfully rented out. The private investor expected the increase by 11% minimum. In case of selling the storehouses property (not planned currently), the additional real estate volume benefit converts into financial value/benefit – and may be substantially either decreased or increased over the 16% – the market and market values are volatile, and business is risky [7], [8].

A community inconvenience has to be mentioned – the original private landholding area had longer border line with more obligatory greenery along it. In the joint project, however, the private investor was obliged to use more land for greenery than was the obligatory minimum.

8. Public transport service

Services of public transport operators are important for both employees and customers. The selected variant, following the syntagms jointly for both redesigned projects, produced a minor convenience – a single public transport stop was optimal due to a common gateway [9]. However, financial evaluation of this feature is not included in the financial outline.

9. Conclusions

Collaborating in projects is generally beneficial, and the common practise is to organize projects in a cooperative manner if the cooperating parties can share their interests. It is often an easy issue to do so if the cooperating parties have sufficient information from the beginning of the project. The presented case differed in this point, the two projects started independently, without original information of each other. This was partially due to their building sites being submitted to different administrative units. The investors of both the projects early arrived to the conclusion that addressing the other investor and cooperating would be in the interests of both parties. The above evaluations confirm the impression that *intentionally* searching for more cooperation may lead to improvements and financial benefits.

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