BROMONT SCIENTIFIC PARK

MICROELECTRONIC AND ADVANCED MANUFACTURING™

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Science Parks shaping cities

A City's point of view

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Executive summary

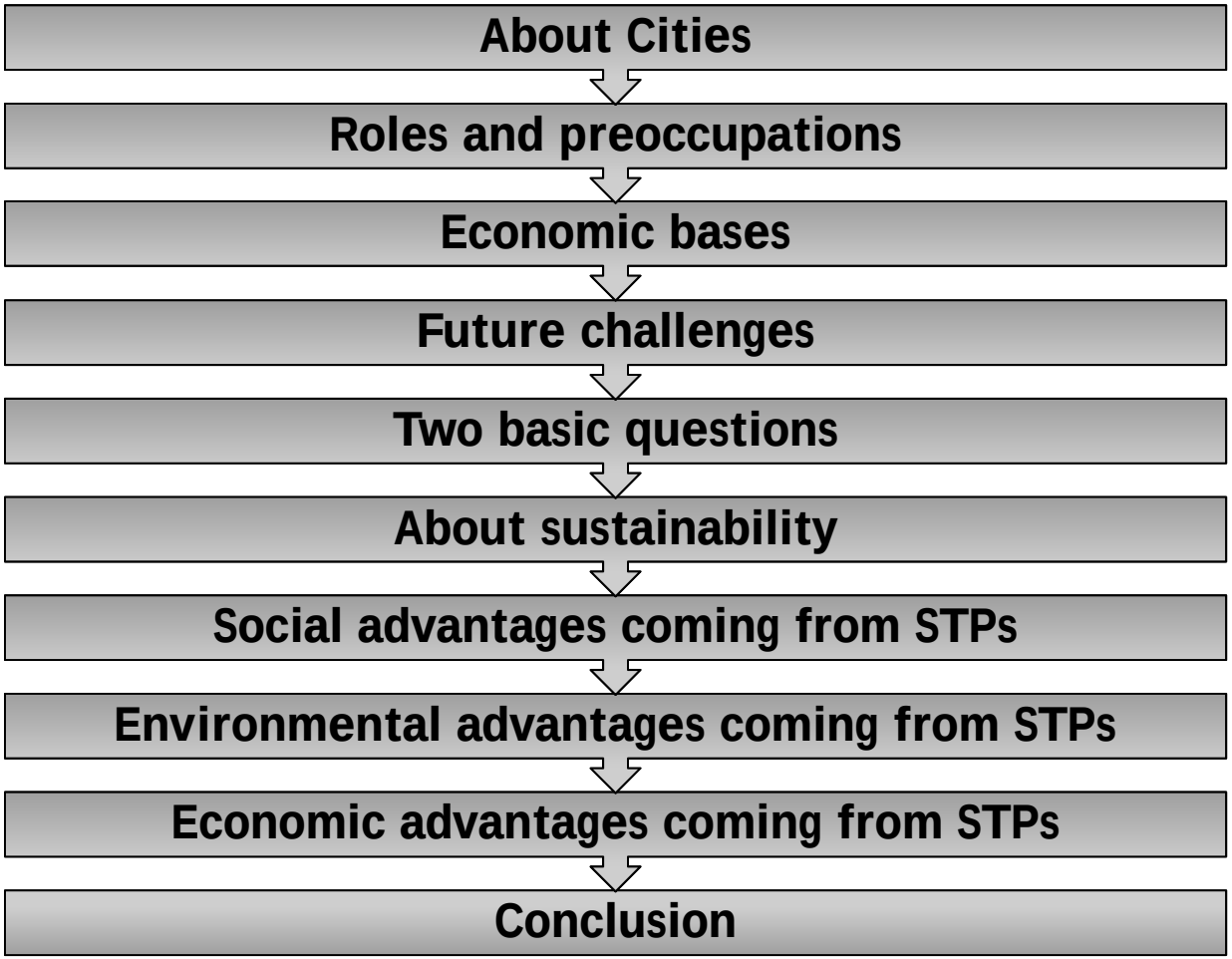
Cities throughout the world are at the front line in economic development. The purpose of this paper is to provide the audience with a clear view of what a city is expecting of STPs on its territory and at the same time, on the way in which STPs are able to influence and shape cities.

This paper will point out the nature of cities' responsibilities and obligations. It will also describe the extent to which cities' activities are confronted with when having to respond to never-ending demands of all sorts. The audience will understand the major preoccupation of cities to constantly find ways to afford the services that they are providing.

Finally, where do STPs fit in the operations of cities, as partners, shapers and influential assets?

We truly believe that if STPs want to be partners with cities, they have to understand what drives them, their concerns, and their capabilities to coordinate the whole.

Content



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About cities

With an estimated one million people worldwide moving into cities each week, experts predict global urban population to double by 2050 to 6,4 billion, making 70% of the total world population.

It is now clear that the future of cities is the future of the planet.

It is therefore essential that solutions that embrace profitability, efficiency, and quality of life be found.

« John Longbottom IBM »

Roles and preoccupations

- Providing services in an environment of ever-growing demands (three kind of services: essential, necessary, and useful)
- Territorial planning in a complex legal environment
- Financial stability in a fast growing cost environment
- Economic growth in a competitive worldwide context
- Social development in a diversified and changing world
- Environmental development in a green surrounding world
- Climatic changes
- Human resource development in an eager search for a better quality of life
- Asset management in large-scale ownership
- Debt in managing the known and the unknown
- Political concerns which may change situations and conditions
- Repeated negotiations and agreements
- Controlling expenses
- Assuring revenues depending on potential activities
- Borrowing to grow

Economical bases

Assessment	• Defined by the total amount produced by the overall evaluation of buildings coming from either residential, commercial, and industrial development
Tax rate	• Defined by the rate resulting from the overall assessment divided by the total expenses encountered by a city
Rates (user's fees)	• Defined by specific expenses divided by the number of users
Grants	• Incoming revenues from other levels of government
Outside servicing	• Incoming revenues generated from selling services outside of the city

Future challenges

- Infrastructure backlog (billions$)
- Growing and aging population
- Increasing demand for services, facilities and infrastructure
- Climatic changes
- Complexity of legislature
- Environmental concern and awareness
- Unstable economy and funding

Two basic questions

Having a Science Park in a city, a major asset or not?

- Any city can count on four different major sources of revenue: residential, commercial, industrial and touristic development. Will the industrial development play a substantial role on the growth of cities? Will it be dealt with vision and patience?

What's in it for the City?

- Every city in the world wants to have some advantages coming from industrial development. Will Science Parks bring any kind of return to their hosting city?

About sustainability

We have to consider the actual trends related to the concept of sustainability. To be sustainable, one must consider three different components that must be in balance one with the other: the social, the environmental and the economic approach. Cities favour activities that are sustainable.

It is at the **advantage of Science Parks** to have proposals aimed to enrich cities. We will then approach this situation by the sustainable concept.

Image courtesy of njaj/www.freedigitalphotos.net

The social component

How do Science Parks affect their social environment? City's point of view with regards to this component takes into consideration :

- By the **branding** it provides to the hosting city
- By the **quality profile** of the future residents employed in the Science Park, more educated.
- By the **quality of the commercial development** emerging from the new residential development
- **Pride** brought upon the community by the presence of a Science Park

The environmental component

How do Science Parks affect their environment? City's point of view with regards to this component takes into consideration:

- The quality of **"leed" buildings** (residential and industrial)
- The clean air and **environmental concern** of the plants established in the Science Park
- The emphasis put on the **green spaces** surrounding the plants and the natural aspect of the land

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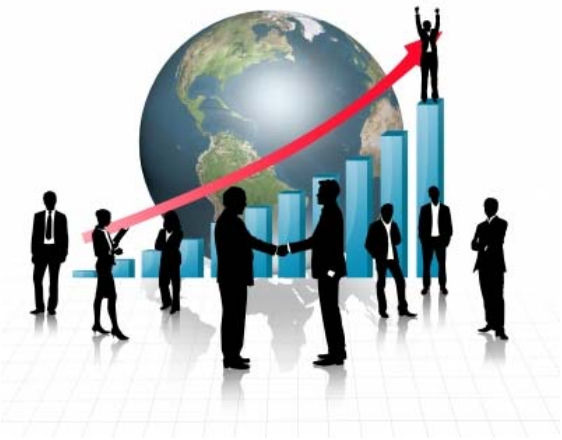
The economic component

How does Science Parks affect its economic environment?

This aspect represents a city's most important concern. The Science Park must prove that it enriches the city and that it is a major player in generating new revenues. Each city uses a different approach in measuring the return on investment created by the construction of a new industrial building. One such method consists of the NPV approach where the city will calculate the cost of installing a road with infrastructures (water, sewer, asphalt, lighting and hydrants), the amount of revenues it will generate on the long term (20 years), and if all of the latter will result in a profit.



The economic component (continued)

There are many ways that a City can evaluate the feasibility of a project. The NPV (Net Present Value) method is one of many but in finance it truly represent a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows of the same entity.

In the case when all future cash flows are incoming (such as residential and industrial taxes) and the outflow of cash (loans, option fees, incentives, etc…), the NPV is simply the PV of future cash flows (outflows and inflows). NPV is a central tool in discounted cash flow (DCF) analysis and is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting and widely used throughout economics, finance, and accounting, it measures the excess or shortfall of cash flows, in present value terms, above the cost of funds.

The economic component (continued)

NPV can be described as the "difference amount" between the sums of discounted: cash inflows and cash outflows. It compares the present value of money today to the present value of money in the future, taking inflation and returns into account

Each cash inflow/outflow is discounted back to its present value (PV). Then they are summed. Therefore NPV is the sum of all terms,

$$\frac{R_t}{(1+i)^t}$$

where

- the time of the cash flow
- the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk.); the opportunity cost of capital
- the net cash flow i.e. cash inflow – cash outflow, at time t . For educational purposes, is commonly placed to the left of the sum to emphasize its role as (minus) the investment.

The economic component (continued)

Given the (period, cash flow) pairs (,) where is the total number of periods, the net present value is given by:

$$\mathrm{NPV}(i,N) = \sum_{t=0}^{N} \frac{R_t}{(1+i)^t}$$

To illustrate this, we have produced an example of the return on investment and calculated the NPV according to an optimistic, realistic and pessimistic hypothesis.

A Science Park growing at the following rate:

a) One building being implanted each year with 50 new high rated workers
b) Each building evaluated at 10M$
c) 20% of workers will be residing in the Science Park City host
d) The costs of the infrastructure (3 km) are evaluated at 12M$
e) The loan is for 20 years
f) The interests are composed of a base rate added to an inflation rate and a risk rate.
g) The city owns the water and sewer treatment plants and is responsible to construct and pay for the infrastructures.

Scenarios

SCENARIOS	OPTIMISTIC	REALISTIC	PESSIMISTIC
Total cost of investment (20 years)	(4 000 000,00) $	(4 000 000,00) $	(4 000 000,00) $
Total rate of added value	9%	9%	13%
Industrial building evaluation	10 000 000,00 $	6 000 000,00 $	4 000 000,00 $
NPV after 20 years	16 824 108,16 $	9 892 349,93 $	3 366 954,15 $
RESULTS	CITY GETS RICHER	CITY GETS RICHER	CITY GETS POORER

Results

Results are as follows:

The first scenario (Optimistic) indicates that if the City chooses to invest 4M$ to put up the road and the Science Park is able to attract buildings having an average evaluation of 10M$ it will enriches the City four times the value of its investment (16M$).

The second scenario (Realistic) indicates that if the City still chooses to invest 4M$ to put up the road and the Science Park attract buildings having an average evaluation of 6M$ it will enriches the City more than two times the value of its investment (9M$)

The third scenario (Pessimistic) is bases on a much higher rate of interest and a low buildings average evaluation (4M$). The results are that the City will get poorer.

Conclusion

It is obvious that a Science Park is a most valuable asset for a city and that the partnership remains essential. The city (calculating the NPV) must not only be proud of having such facility on its territory but it must also invest to allow and ensure the prosperity of its Science Park.

The agency must first understand the city's concerns, obligations, and needs, so that it will be able to define the right approach that will lead to a successful and profitable partnership.

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