An Analysis of Mexico's Critical Strategic Resources: A Future Perspective

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Abstract: Mexico has always been a country full of diversity. Any opinion about its future would be daring. Instead of giving an opinion on Mexico's future, we identify critical strategic resources that leaders would have to manage to achieve the country's global goal, which we propose is improving the average quality of life per resident. To accomplish this task, a high-level system dynamics model will be used to guide the identification, definition, interpretation and interrelation of the strategic resources. We are aware that there are experts that dedicate their careers to the analysis of just one of these resources or even a part of one of them. That is why we decided to leave the resource detail to the experts and dedicate this work to the identification of critical strategic resources for Mexico. The objective is to identify the strategic resources and understand how they interrelate in order to gain clarity about their impact on the behavior of the global goal, the unintended consequences, and to provide a tool to help to build a shared vision for decision-making.

Keywords: Mexico, Social systems, Quality of life, Strategic resources, Public sector, System Dynamics.

The paper has three sections: global goal, strategic resources and strategic resource dynamics.

Mexico's Global Goal

Identifying the global goal is one of the most important steps in constructing the model, as it defines the system's purpose or the manager's problem in focusing on a more specific issue. This logic follows the system dynamics paradigm of modeling problems not systems. To define the global goal for the Mexico model we asked, "What would be the best indicator, at the country level?" We propose that is *the average quality of life per resident*. That indicator includes the economic and social situation of each person in our country. A word of caution – this indicator does not reflect whether the wealth distribution is fair or unfair. We will get to this later. If most of the people in the country have a relatively comfortable life, the indicator is high, regardless if one part of the population living in extreme poverty.

Once the global goal of the model is identified, we ask, "which resources directly influence the average quality of life in Mexico?" We identified five: *ecosystem*, *average governmental services*, *average consumption of basic goods*, *average consumption of luxury goods* and *violent events*. These resources correspond to the success indicators for the three major stakeholders in the system: the ecology, government and residents. Let's delve deeper.

Strategic Resources of the Quality of Life in Mexico

Ecosystem condition
Three items define the resource:

1. Air, water and earth condition – refer to the quality of the natural resources. High pollution will likely lead to present or future harm to the population.
2. Natural renewable resources usage – refers to the ecological impact of the utilization of natural resources to fulfill human needs.
3. Ecosystem/Human balance – refers to how balanced the Mexican lifestyle is with nature.

The *ecosystem* outflow (see "Eroding NR" in figure 1) represents the utilization of natural resources by the population to produce goods or to use for daily living. The inflow represents the governmental plans that are meant to regenerate the *ecosystem* (reforestation, water treatment plants, in addition to others).
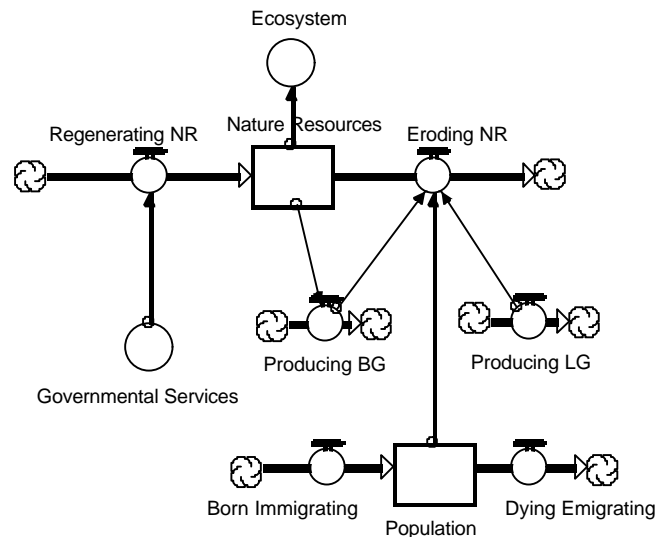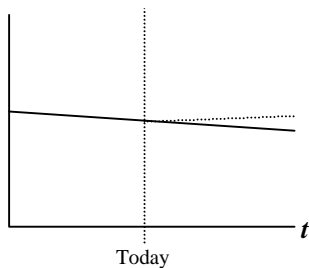

Figure 1. Ecosystem

Figure 2. Ecosystem behavior

Over time the *ecosystem* has been eroding, despite the government's restoration programs. Those programs and the rate at which nature renews resources are not sufficient to replenish what is being utilized every period to produce goods and to satisfy population needs. The desired behavior (dotted line in figure 2) is to maintain or improve the *ecosystem* condition.

Governmental Services per Resident
This resource refers to: (1) Health programs that look to preserve human health; (2) Ecology programs to safeguard nature; and (3) Public services such as water, electricity,

housing, gas, transportation, and safety among others, which raise the average quality of life of the population.

Population and total government services determine this resource (see figure 3). The budget that the government assigns to provide governmental services comes from tax collection and export income. Public debt is not included, even though we know that the government could borrow money to build infrastructure to provide more services and implement health and ecology programs.
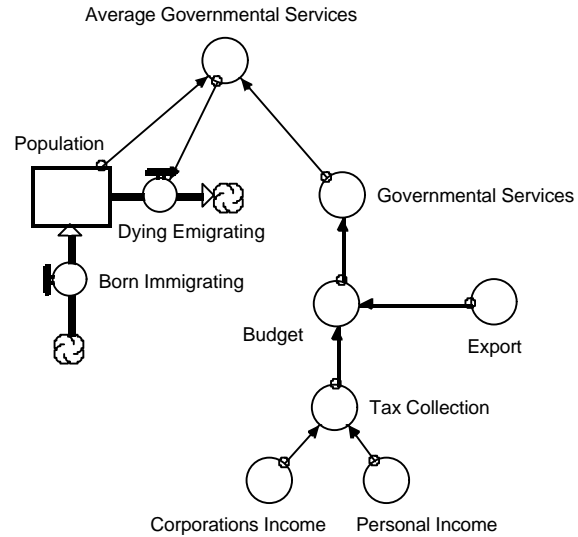
Historically, *governmental services* have grown over time to cover population needs. Globalization encourages foreign and national investment in the country, which generates more taxes and exports, possibly increasing the budget assigned to these
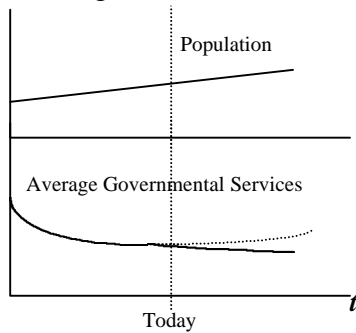

Figure 3. Governmental services

issues. However, current behavior shows that the population has grown faster than government investments to increase services (see figure 4).

The desired behavior (dotted line in figure 4) for this resource is to create enough services to satisfy population needs. To meet *governmental services* demand, services would need to grow at the same

Figure 4. Services vs Population behavior

rate as the population.

Consumption of Basic and Luxury Goods

This variable refers to the average purchasing power of the population. The *consumption of basic goods* per resident reflects whether the population, in general, can acquire the minimum supplies to survive, such as food, clothes and housing. The *consumption of luxury goods* per resident reflects whether the population can buy goods for making their lives easier and more comfortable.
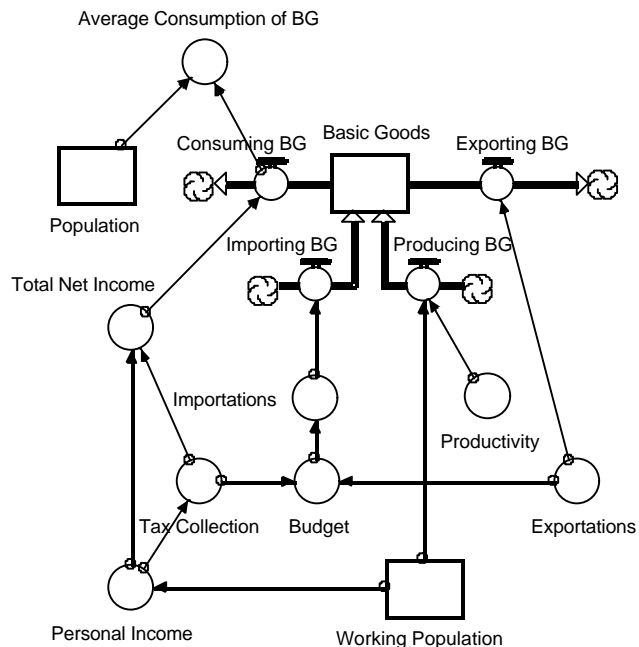
Figure 5. Basic goods consumption

Production/Importing and Consumption/Exporting rates influence this resource. These rates depend on the working and total population levels. Import and export rates will affect the level of goods available in the market (see figure 5).
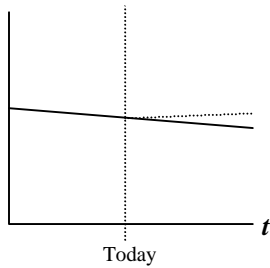

Figure 6. Consumption of basic goods behavior

Uncontrolled population growth has aggravated the decreasing tendency of *average consumption of basic goods* (see figure 6). The income per person has been decreasing over time, limiting consumption. The future is not very promising. Unemployment is high. Sometimes, even well skilled people cannot find an adequate job and are forced to do lower skilled work. Moreover, external factors such as economic crisis and technological advancement provoke some people to lose their jobs. Even when new jobs are generated, it is insufficient to meet the demand, which is often linked to the violence in th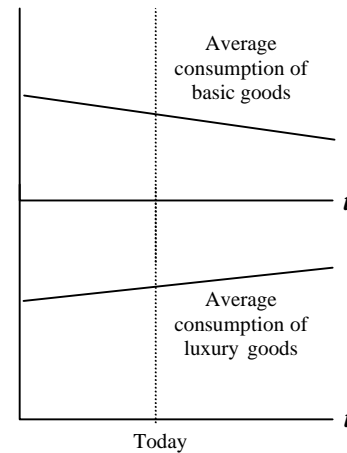e streets and the strong informal economy. The desired behavior (dotted line in figure 6) is an increase in *average consumption of basic goods*.

The behavior of *average consumption of luxury goods* is not clear. Apparently, the rich are getting richer. The *consumption of luxury goods* is going up or at least remaining stable. An increase in the *consumption of luxury goods* means that the average quality of life has increased. However, comparing the consumption of basic and luxury goods, we can see whether wealth is being distributed fairly. If the distribution of wealth is unfair, luxury goods consumption will increase more than basic goods consumption, which may be stable or even losing ground (see figure 7).

Figure 7. Basic vs Luxury goods (Wealth distribution indicator)

Violent Events per Resident
This variable refers to assaults, assassinations, robberies and other events that are not exclusive of big cities like rebellions, revolts, and paybacks. These events directly influence the sense of physical integrity of residents as well as the tranquility and peace of the population.

Social issues such as unemployment, hunger and poverty affect this resource. Average consumption of basic goods per resident and the lack of governmental services are indicators of hunger and poverty (see figure 8). Uncontrolled population growth in Mexico has resulted in a decrease in the *average quality of life*, increasing the factors that trigger violence.

Violence can be fought back with short-term solutions such as training high-quality and competent public security forces, or by long-term solutions such as ensuring that the population has their basic needs fulfilled. The long-term solutions require two things: (1) a level of education high enough to get a well-paid job, and (2) enough jobs should be generated to meet this demand. Otherwise, Mexico will continue to be a manufacturing country with high unemployment. Educational level is one of the strongest impact strategic resources of the success indicators identified.

Historical behavior shows a considerable increase in *violent events*, not just within the cities but also in the small towns where the people write their own laws and in the indigenous and native communities. While social inequity continues to grow and crime keeps on being a "better paid job", this indicator will not decrease, and most likely will grow exponentially. It is time to act on the fundamental solutions and to stop attacking symptoms.
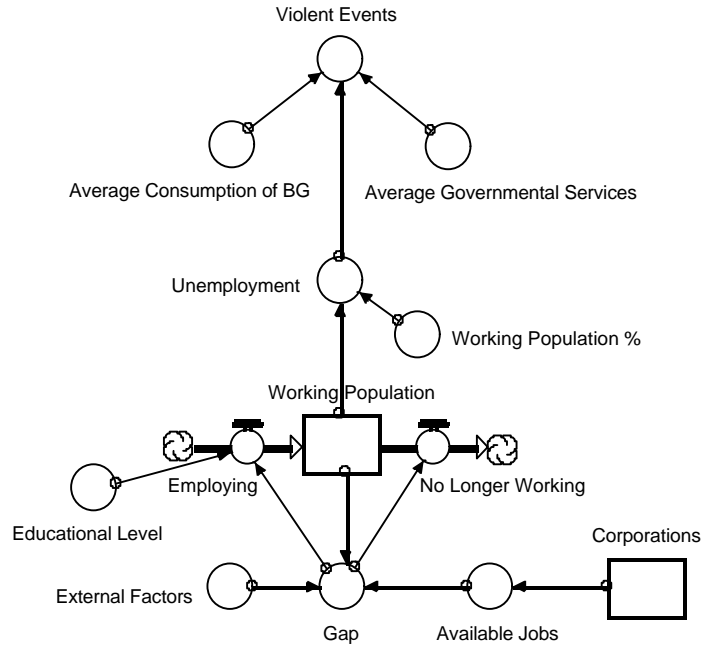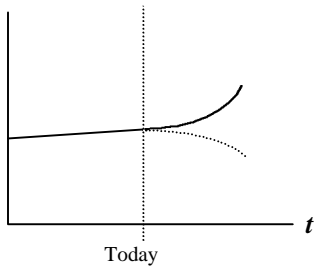

Figure 8. Violent Events

Figure 9. Violent Events Behavior

An improvement in the police department might provide some time to put into practice a more fundamental solution, such as a considerable improvement in the average educational level of the population. The desired behavior (dotted line in figure 9) is a major reduction of violent events.

Recapping what we have seen so far, there are five main strategic resources: *ecosystem*, *average governmental services*, *average consumption of basic goods*, *average consumption of luxury goods* and *violent events*. As we can see in figure 10, the behavior of each one is not helping to achieve the global goal.
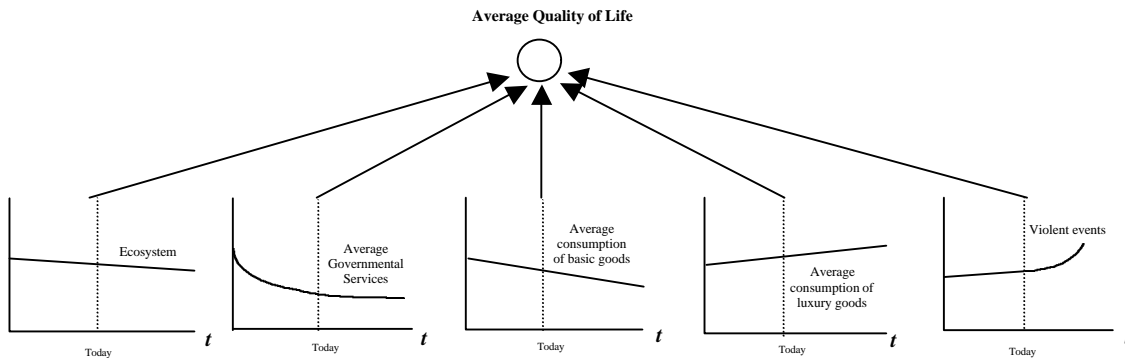

Figure 10. Strategic Resources and Global Goal

With these tendencies we can only expect continued lifestyle deterioration, unless the government and people living in Mexico start doing something as soon as possible to stop the tendencies or even try to reverse them in the long term.

Now, let us look at the dynamics.

Dynamics

In the process of identifying relationships among these resources, some interesting dynamics were identified.

Reinforcing Loops
There are three main reinforcing loops in the model:
1. Goods consumption loop,
2. Governmental services loop, and
3. Violence loop.

In the *goods consumption loop*, we found that an increase in net income increases the average quality of life, due to the extra money available to buy more basic and luxury goods. As a result, the attractiveness index increases and more foreign and national investment come into the country to create more companies, making more jobs available for the unemployed fraction of the population. Finally, this increases personal income, starting all over again (see figure 11).
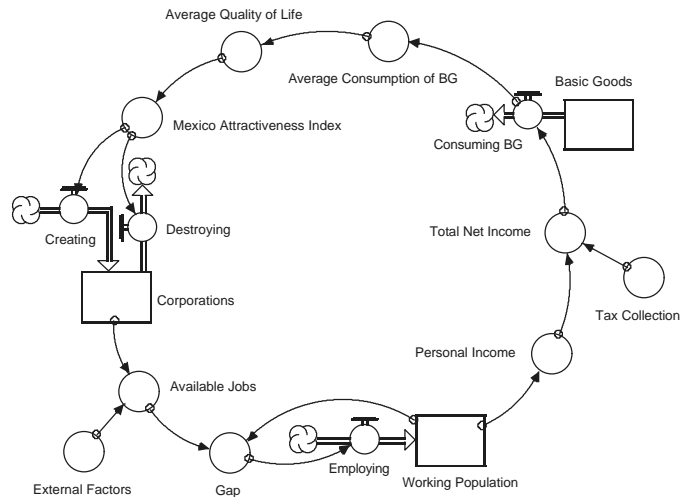

Figure 11. Goods consumption loop

The *governmental services loop* behaves similar to the previous one. Higher tax collection leads to a larger budget for providing services. As a consequence, this increases the average life style and attracts more companies, which generates more taxes on two fronts: personal taxes and corporate taxes (see
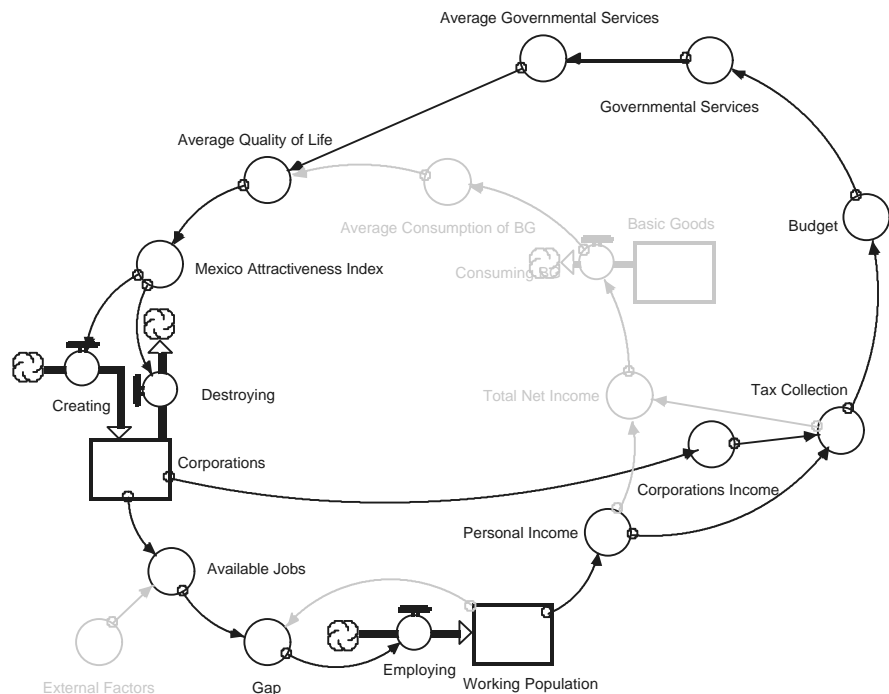

Figure 12. Governmental services loop

figure 12). Efficient tax collection requires less corruption and motivation of the population to pay instead of evade taxes.
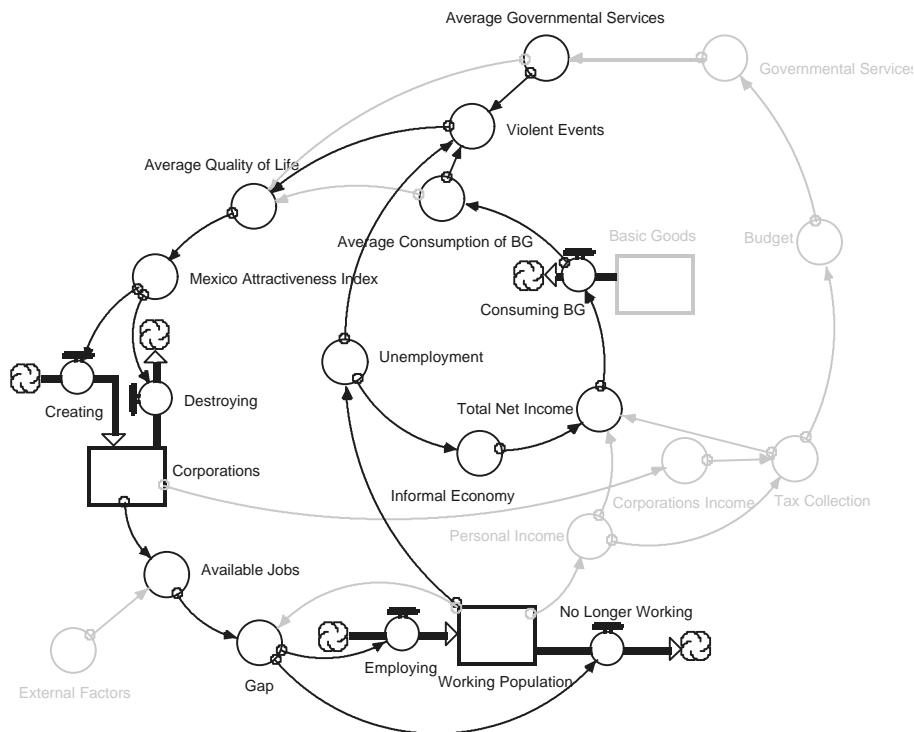

Finally, the *violence loop*. An increase in violent events lowers the life style, increasing the fear of living in a specific city or town. This makes the country less attractive, leading to fewer companies willing to invest in Mexico, which increases unemployment (see Figure 13).

Figure 13. Violence loop

Unemployment has three major consequences:
1. More violence
2. Informal economy, which raises the total net income but not taxes, thus limiting governmental budget in security programs or public services.
3. Lower average income per resident causes hunger and poverty.

Compensating Loops
Two main compensating loops were identified: 1. Production of goods loop and 2. Population growth loop.

In the *production of goods loop,* we found that higher production depletes natural resources. In the near future, this could limit raw materials. The use of natural resources deteriorates the ecosystem, diminishing the average quality of life because it is more difficult to find a place with clean air, enough water and non-polluted land. Therefore, the country is less attractive to investors (see figure 14).
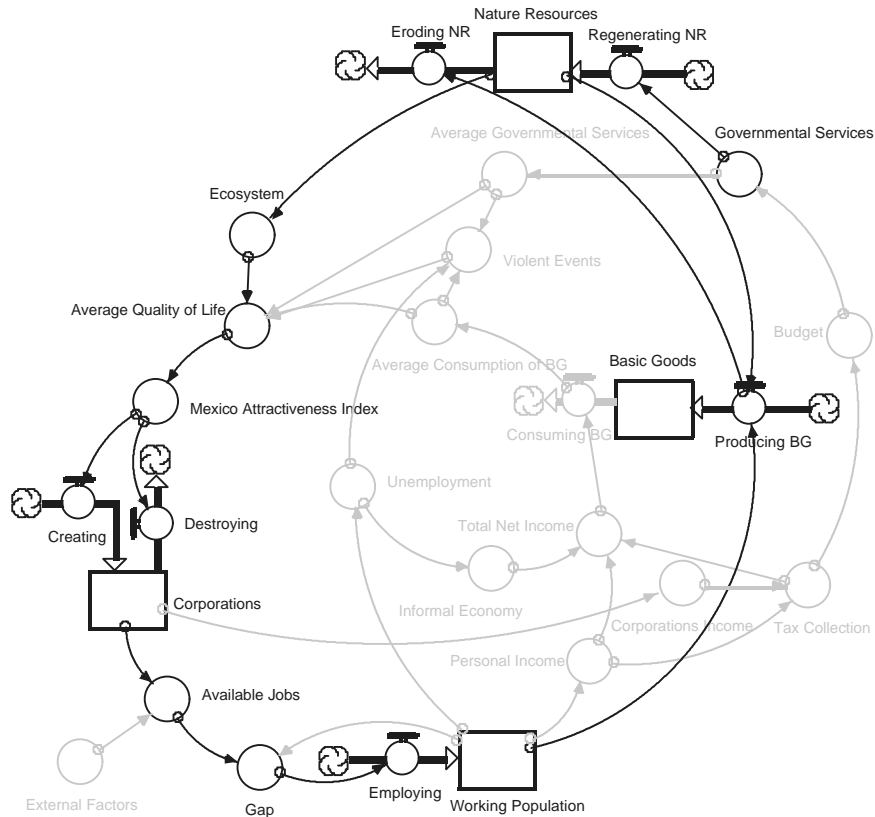
Figure 14. Production of goods loop

Finally, let's see the impact of the major constraint of the system: population. Uncontrolled population growth results in (see figure 15):

1. Quality of life decrease. Governmental services, consumption and production of goods have to grow to a higher rate each year to keep pace with population growth; otherwise, the desired quality of life will never be achieved.
2. Unemployment increase. Population growth worsens unemployment due to the increase in demand for jobs and the lack of offer. Thus, crime rate and informal economy will rise along with tax evasion.
3. Ecosystem erosion. The more people living in the country, the more natural resources will be needed to live (water, land, air), thus erosion will increase at a higher rate.

Figure 15. Population loops

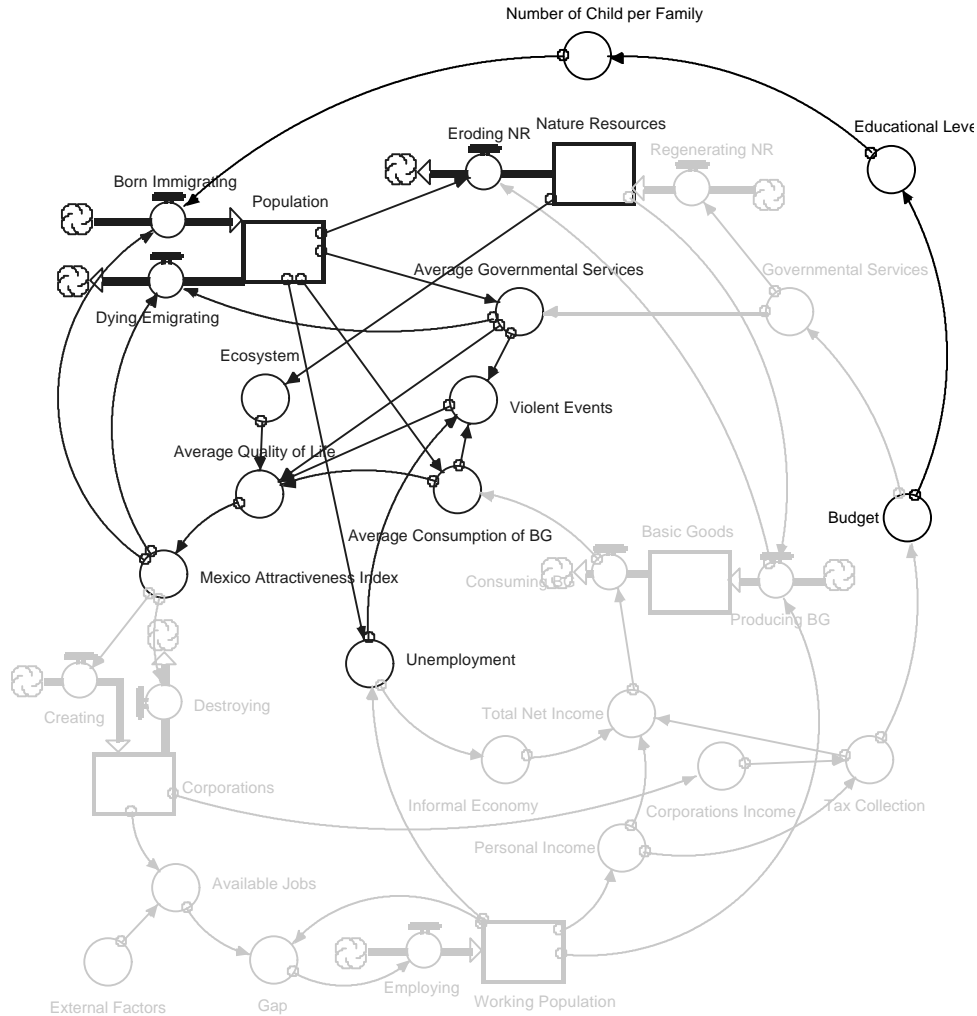Education has a high impact on the number of child per family, population with higher education tend to have smaller families decreasing the birth rate considerably. Population is not only affected by the birth rate. There are other significant rates:

- The immigration rate. With an increasing average quality of life, the country will attract not only new companies within the cities or investment in the countryside but new people looking for opportunities. However, this increment will bring in the need to generate more services, produce more food and goods for the new citizens. Insufficient goods could even revert economical growth.
- Mortality rate. Curiously, if governmental services and programs lead to good results, the mortality rate will decrease as a result of better health services. This will increase the population, worsening the situation (you can find the integrated dynamics of the model in the appendix A, appendix B is the same model from the GRASP perspective which allows to see the Goal, Resources and Actions clearer).

Delays

Most of the delays in the model are very long and the loops have worked for a long time. This means that it would be extremely difficult to turn around the trends, and for the moment, trends are moving to the opposite direction we would like it to go.

Main delays in the model are:

Very slow (20 to 30 years) - Ecological regeneration by the earth and by governmental service policies, perception of ecological erosion, governmental services such as highways to connect big cities (this can be a slow or a very slow delay depending on financial resources, distance and time invested).

Slow (3 to 5 years) - Some of the governmental services such as running water and electricity, plants for water treatment, health assistance infrastructure, and perception of quality of life. The last one could be slow or medium, if the perception is high. On the other hand, if it is low, it will take a lot of effort and years to rise enough to make Mexico attractive to foreigners.

Medium (1 or 2 years) – Creation of new companies, some of the governmental services and budget allocation (usually once a year).

As we said before, the trend is not as good as we would like. Governmental services construction, nature resources regeneration and consumption of goods are falling behind population growth and its increasing demand on these resources. Government has failed to sustainably lower violent events. The reason, long delays to see results and faster output rates.

Final words

As a conclusion, let's revisit the phrase used at the beginning of the article, "Mexico has always been a country of diversity." Looking at this phrase, we reflect that despite this diversity, critical strategic resources will be the same for all the cases. The behavior of the strategic resources and the global goal will be different depending on if we are talking about urban or rural Mexico, rich or poor Mexico, or globalizing or protectionist Mexico. For that reason, this paper focuses on identifying the common resources as an initial point for future dialog. This approach can be used to see how the decision makers are interacting by identifying who is responsible for which resource, always considering the consequences of the decision makers' actions in Mexico. They have a big task to solve in their hands.

APENDIX A
The dynamics of the model structure

Global Goal

Stakeholder resources

Value driving resources

Enabling resources

Actions

Average Quality of Life

Ecosystem

Nature Resources

Average Governmental Services

Violent Events

Average Consumption of BG

Average Consumption of Luxury Goods

Regenerating NR

Eroding NR

Producing BG

Population

Consuming BG

Consuming LG

Governmental Services

Producing LG

Unemployment

Productivity

Exporting BG

Luxury Goods

Exporting LG

Population

Basic Goods

Importing BG

Importing LG

Budget Allocation in GS %

Budget

Dying Emigrating

Active Population %

Born Immigrating

Informal Economy

Producing LG

Mexico Attractiveness Index

Total Net Income

Number of Child per Family

Personal Income

Corporations

Tax Collection

Budget

Educational Level

Employing

No Longer Working

Productivity

Corporations Income

Working Population

Creating

Destroying

Tax rate

Average income

Importations

Gap

Exportations

Budget Allocation in GS %

Available Jobs

External Factors