Polycentric north coast of Suriname

to generate the emerging development
Economical viable, Social stimulating and Environmental friendly

MSC4 _ SPACELAB _ PERICA _ SURINAME_
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A.G. Vollebregt _ M.J. van Dorst _ M.W.M. van den Toorn _ 2007/08
PREFACE

Polycentric development of Suriname to generate the emerging development of the country is the title of my graduation project, which I have been working on from the 1st February 2007 until the 1st of April 2008. We started the project in a group of four students and the first half year we made a catalogue, in September we divided the projects in four different scales. I looked at the largest scale, which means a polycentric strategy plan for the northern coast of Suriname. Using polycentralisation to generate the development of Suriname. The other students Arjen Spijkerman, Katita Chrysanthopoulou and Christina Ampatzidou zoomed in and looked at the Marowijne and Perica scale more in detail.

Perica was actually the starting point of this project; the Prosperity Project Perica is a foundation that asks us, students from the TU Delft, faculty of Bouwkunde and the Haagse Hogeschool to help them to develop their village.

In this report you can see what I have done and learnt in the final year of my study Bouwkunde. I participated in the graduation lab of SPACELAB and my mentors were A.G. Vollebregt, 1st mentor (urban renewal and management), M.J. van Dorst, 2nd mentor (environmental design) and M.W.M. van den Toorn, 3rd mentor (Technical ecology and methodology).

I would like express gratitude to all the people that helped me to realise this project. I learned a lot about sustainability and environmental projects. In addition, I learnt a lot about strategic thinking and designing.

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The first two parts of the report show a summary of the first half year, for more details I want to refer to the catalogue “Prosperity village Perica; New Urban Ecology”.

The third part introduces the project and explains the methodology and the concept used for the strategy and structure plan. The plans are based on the vision made by the analyses of the country.

Two main projects are shown more in detail because they enhance the concept and finally I conclude with a reflection about the project and the process. If you are interested I will occasionally refer to the appendix were you can find detailed information.

The image shows the methodology used during the second part of my graduation project. I assumed that polycentralisation is the best solution for the emerging development of Suriname. This is coming from the input of the analyses, my theory research and the focus of the government. Therefore I looked at the site potentials to look at the diversities and identities of Suriname and created spatial conditions. Finally I reflect on the assumed polycentralisation.
Prosperity Village Perica workshop

Schemtic working diagramme

 brainstrom

March

April

May

2 schematic working diagramme
SURINAME OUTSIDE

We started the project Prosperity village Perica without knowing anything about the place and knowing a few from Suriname. We started to make an analysis of the country and gathered everything that had to do with Suriname. In addition we looked at some specific case studies. My case studies were about small self-sustainable villages in Mexico and Peru that rely on ecotourism. (for further information see appendix A) I learned that prosperity is not always welfare. For the theory we divided in four different subjects and my focus was sustainability. Here I realised that the world was most of the time is focussing on economy and leaving social and environment outside. Nevertheless, slowly people start to realise that projects are more sustainable if you look for the balance between economy, social and environmental aspects. (for the entire essay see appendix A) Furthermore we organised a workshop to brainstorm about Perica and we participated in a workshop “moving in Free zones” in Rotterdam. Here we learnt how to present to people who are really involved in the project, so the locals. Everything together made our group research from the outside. For the complete version I want to refer to the catalogue “Prosperity village Perica; New Urban Ecology” and for a compact version you can take a look at the appendix A.
In June we went to the location and with the knowledge we had everything came together. We visited touristichotspots, interviewed people from the ministry, foundations and entrepreneurs. We stayed for 5 days with a family in Suriname, located in Perica. After 3 weeks of research from the inside we ended our visit with a presentation for inhabitants, tourists and people from the foundation. It was fruitful, we learnt to present careful to involved people and we gained new information for the project. For the interviews, places we visit and conclusions from the trip you can have a look at the catalogue ““Prosperity village Perica; New Urban Ecology” and for a compact version see appendix B.

For the project we used an interdisciplinary approach that for the first half year was focussed on Suriname from the outside and after the visite (Suriname from the inside) we started to look at the specific goals and aims more in detail.
Suriname is a country that lies in SA and used to be a colony of the Netherlands. In 1975 the country became independent. Suriname is 3.95x bigger than the Netherlands and has a population that is 34.7% smaller than the Netherlands. There are 2.9 people living on one square kilometre, which means that the country is, really low dense.

Due to the colonisation and since the independency in 1975 many Suriname people are living in the Netherlands. In total there are 328,300 people living in the Netherlands. So this is 70% off all people living in Suriname. So the total Surinamese population is around 799,028.

70% of Suri lives in NL
2% of Dutch is Suri

70% of inhabitants of Suriname life in the Netherlands:

328.300
799.028

3 country size
368 x 398 km (163.820km²)
145 x 275 km (41.538km²)

4 demography
470.728 inh (2,9/km²)
16,370,000 inh (394/km²)
introduction
Most people know Suriname for the December killings with Brunswijk and Bouterse that took place in 1982 as well as its drugsmuggling with the balloon swallow- ers. Furthermore Suriname is known for its nature, the enjoyable hospitality and its nice food like the nice roti.

www.schooltv.nl
www.abop-suriname.net
www.chalinga.nl
www.afimo.nl
www.gezond.amsterdam.nl
www.surinaams.caribiana.nl
introduction

SURINAME IN THE GUYANAS
But Suriname is more, that will be explained in this report about the emerging development of Suriname. Suriname lies in the Guyanas. The Guyanas consists of three countries and all of them were former colonies. Guyana was part of the English colony, Suriname was part of the Dutch empire and French-Guyana still belongs to the French. French-Guyana is still a department of France, so Suriname is connected to Europe directly.

Suriname is divided in provinces and looking at the urban densities there are some special areas to look at more in detail. These are Nickerie that lies on the border with Guyana, Marowijne that lies on the border with French Guyana and Paramaribo in the middle. The country is 368 by 398 km. Suriname is fighting over the borders with both the Guyanas.
outside paramaribo
Suriname nowadays is a centralised country everything is focussed on Paramaribo the main city of the country. Inhabitant, economics, networks and tourists are all focused on Paramaribo. This results in monocentric development and leads to shrinking areas in the rest of the country. Paramaribo is an attracting magnet, attacking all the activities.

This monocentric development is holding back the development of the rest of the country. For example if you look at the square in Paramaribo or the one outside Paramaribo the first one looks stately and the second one is derelict. The same counts for the housing and jobs which means people exodus from the surrounding regions to look for a better living in Paramaribo. In the picture you see an old cinema in Albina and an empty market in Moengo. People go to Paramaribo to sell their goods in the market or on an alternative way, just open the back of the car and sell their good.

The image shows a schematic simplified image of the map from page 33. The main urbanised areas are shown as well as the two dotted areas this are small villages but have the potential to emerge in the future.

The main road of the country is going from east to west and is connecting Nickerie with Paramaribo and Marowijne. There are some spines going inland to connect to Zanderij the international airport or to access the bauxite areas.
Ministry of Transport, Communication and Tourism (TCT) strives for a tourism growth of 50% a year. Thereby it wants to create an awakening of the environment as a consequence of the growing tourism sector. So the ministry of TCT wants to focus on ecotourism.

http://www.mintct.sr/beleid.htm

This monocentric development is attracting everything to Paramaribo and is holding back the development for the rest country in spite of the potentials of the surrounding regions. As well as Paramaribo who can’t handle the physical growth, which leads to overcrowded neighbourhoods and many traffic problems.

The government of Suriname starts to realise this problem and started a decentralisation policy and wants to focus on ecotourism. Because of the recognition of the government and the diversities and potentials of the country I see a polycentric model emerging for the north coast of Suriname.
The government of Suriname is centralised and has limited capacity. Old systems of patronage and ethnic loyalty undermine the government effectiveness. The reform of the civil service has not yet got off the ground. The same applies to the process of decentralisation. Encouraging progress has been made in the shape of a new steering group on Public Sector Reform headed by the Vice-President, but more needs to be done.

11-01-2008 Henk Hendriks

...The Suriname regions are on their way to autonomy, by using the decentralisation policy. But this process is going extremely slowly...The 10th of January 2008 a meeting was organised for the districtsmembers and the governances about the decentralisation which for years already plays a role in the Surinamese policy. The meeting was organised by the ministry of Regional development, Society of dutch regions and the Surinamese Policy Documentation Centre...

Further information can be found in the report of Decentralization and Local Government Strengthening Program DLGP:


http://surinaams.caribiana.nl/onderwerpenuitsuriname/car20080111_toolkit
http://www.minbuza.nl/en/developmentcooperation/PartnersAZ.suriname.html
What is polycentralisation? Polycentralisation can be seen as different cores that complement each other functionally. So for example people go to one place to get goods and to another region for leisure. So the different cores need to be connected by a network. It can be seen as sustainable concentrated deconcentration, which creates corridors and clusters of development. So it’s important to create relations and activities between the clusters and that the regions are part of a bigger network.

Why polycentralisation should be a potential for Suriname? To my opinion this is because Suriname is a diverse country and each area has got its own identity, qualities and potentials. In the monocentric model this identity is disturbing. Thereby the government proposed a decentralisation policy and you see already a polycentric system emerging for the north coast of Suriname looking at the projective future development that is proposed outside of Paramaribo.

**Sustainable concentrated deconcentration creates corridors and clusters of development**  
(Hall, Pain 2006)
Stronger development opportunities for Suriname because of the diverse identities of the regions
Suriname

Randstad

Ruhrarea

Veneto

Vlamish Diamond
To gain more knowledge about polycentrification I looked at some existing polycentric urban models in Europe, and reflect them on Suriname. This image shows the scale difference between the four models and Suriname, the scale is not comparable but there are aspects from the models that I used for the project. More pictures can be found in appendix C.

First of all the Randstad, with the four main cities Amsterdam, The Hague, Rotterdam and Utrecht in it. The concept of the Randstad model is compact development with a green area, the greenheart to preserve the cities from growing. However, nowadays slowly the greenheart is eating by the cities. My lesson for Suriname is to give an identity and purpose to the environmental friendly spaces to make them possible to last.

Secondly the Vlamish diamond, consisting of Antwerp, Brussels, Gent and Leuven. The Government started a decentralisation policy because of all the ribbon development that emerged in the area. This ribbon development hampers the tense of the road. The road network needed to be extended, but this was not possible due to all the development along the road. In Suriname the government started a decentralisation policy to extend the potentials of the country, but at the same time can avoid the treat of ribbon development.

The Ruhrarea was before the polycentrification known for its blurred development. Every city, town and village had the same size and the infrastructure did not have any hierarchy. Therefore, by creating identities and distinction the urbanised areas could complement each other. Thereby the Ruhrarea is an industrialised area, with many factory leftovers, they made nice parks and musea from the historical buildings. This could be a potential for Suriname, for the Moengo area, this is the area were the bauxite was collected.

Finally I looked at Veneto, an area in Italy with Venetia, Mestre, Padua, Vicenzia and Trevisio. The area used to have an equal network and development. This created the same problems as in the Ruhrarea. By distinction in infrastructure and hierarchy in urban areas they created an area that complements instead of competes. For Suriname it is important to create hierarchy in the infrastructure and areas, thereby the areas need to complement each other.
VISION
To look at the diversities and identities in the different regions this chapter shows a summary of the analyses made from a social, economical, historical and environmental perspective and will conclude a vision for the north coast of Suriname. The focus will be on different scales effecting the diversity and identities of the different regions of Suriname. These diversities create conditions for the future development and strategy for Suriname.

HISTORY
First of all the historical conditions of the country. There are two main events shown from the past. First of all the colonisation with the plantations and forts as spatial leftovers and secondly the inland war that started in 1986 and ended in 1992 with Bouterse and Brunswijk.

As you can see the plantations are gathered around Paramaribo, Communwijnje and Marowijne. The grey colour shows the gradient of areas affected by the war in 1986 as you can see the Marowijnje area is the most effected area. Especially Moiwana and Albina suffered from the war. The two villages totally collapsed. Furthermore you see the cordon path, a military path used during the plantation time as a defend. And in the war as a hiding route.
Suriname is a country that for 80% consist of rainforest, the other 20% is a mix of landscape. Like mangrove, swamps and cultivated land.

The higher areas are covered with rainforest and the coastal area is diverse by its landscape. Especially in the west of Suriname. Here the landscape types are more diverse, there are more preserved natural parks and all type of landscape exciting in the area are present in the small strip. So Marowijne and Commowijne are more diverse by its landscape and exist of small-scale landscape types.

Looking at the soil there are four important types to be recognised and the preserved parks. First the savannah areas, this type has got a sandy underlayer. Cities build on this type of sedimentation and some areas are named after this type, referring to the name Zanderij. The savannah is dangerous for deforestation because of the erosion problems. Secondly the dunes, in Suriname called Schelpenritsen. This is were the cities and roads are build on because of the stable and higher ground. For this type of the landscape erosion is a threat as well as the water erosion that damages the road or entire pieces of land. In between the schelpenritsen is were the lagoons are situated which created the swamp by sludge and this are the areas used for the plantations. The swamps can be seen as a potential for the areas to generate rice or palm plantations. And last the mangrove at the coast, they are holding the sludge between the beet and this makes the mouth of the river going to the west. The mangrove in Suriname is from a growing mangrove family.

For more landscape information I want to refer to the appendix D.
POTENTIAL

paramaribo
Marowijne
Commowijne
Coronie
Saramacca
Para
Sipaliwini
Brokopondo

rain forest
protected areas
cultivated land
savanne
swamp
forest
As told before Suriname has got a east-west connection. The road is of a bad condition, but comparing to the inland it is rather good. To x-border you need to take a ferry. There is a lot of water used for different purpose of transport.

For the mobile vision first the water use of cruise lines and cargo is explained. Nowadays the Caribbean is cruise area number 1 and it can be a potential in the future to combine the white beaches of Curacao with the adventures from the inland nature of Suriname. The same is already happening in the Guyana. For the cargo transport in Suriname now a few ships are connected to the USA, Europe and Brazil to export especially rice and bauxite. In the future the government wants the port to move to Nickerie and that leaves a cruise terminal potential for Paramaribo. Paramaribo is the place for the cruise terminal because here you can visit the UNESCO world heritage city for a few days and then go directly inland by riverboat to enjoy the adventure and nature. Paramaribo doesn’t have the potential to become a homeport in the future because in the surroundings are already some homeports, like Trinidad and Barbados that are central in the Caribbean. These homeport bring a lot of activities and asks for a lot facilities. Because of the proposed polycentralisation in Suriname people will move on to the south. Paramaribo thereby only functions as a cruise terminal.
23,507,000 INHABITANTS
CROSSAMERICAN ROAD

51,917,000 INHABITANTS
COASTAMERICAN ROAD

POPULATION ALONG NORTH-SOUTH AMERICAN ROAD

mobile vision
For the road network on an international level there is a crossamerican road going from Venezuela to Sao Paolo going to the Amazon. Along this road 23,507,000 people are living. Secondly there is an Coastamerican road going from Sao Paolo to the borders of Brazil and maybe in the future all the way to Venezuela, now already 51,917,000 people are living along this road. Third a Panamerican highway is proposed going from Venezuela to the south of Brazil and thereby passing through Suriname. Nowadays this areas is inhabit by 22,531,000 people.
5 transport travel-time table
Looking at the economics and along the roads you see that the Crossamerican road mostly consists of trade, agriculture and industry.

The same counts for the Panamerican road but here we can add the ports that are lying between Venezuela and Sao Paolo.

The Coastamerican road mostly consists of tourism activities especially in Brazil and thereby in the future could be a potential to move from the sunny beaches in Brazil to the inland activities in Suriname. This road can be a touristic route.

The Crossamerican road is a cargo route but in the future the Panamerican road can become an interesting route for cargo. The Crossamerican road is going through the Amazon and the Andes mountains. Nowadays this route is the shortest route but if in the future the Panamerican road will be constructed the new road will be the shortest route and you don’t have to cross the Amazon and the Andes that means preserving the Amazon and saving a lot of time.
South America
Missing connections
and bridges

Mobile vision

PANAMERICAN ROUTE MAP

500km

South America
Missing connections
and bridges
To create the Panamerican route some parts that need to be constructed and some bridges are necessary to built. The Guyana's are already planning to build the bridges and to construct the roads so it will happen eventually. If the intercontinental road is finished its is going to be an agricultural, mining route especially for cargo. In the future the road will bring a lot of urban growth and trade potentials to the areas. Because the Guyanas are rich of resources it is an interesting condition for the countries to build the road.
mobile vision

USE OF WATERWAYS
Zooming in you see the use of the water network in the three Guyanas. The waterways are spreading people and goods around the countries for all types of use. Especially for the leisure use. In Suriname the water network is distributing from three main areas, Nickerie, Paramaribo and Marowijne.

Looking at the road network the intensity of the use of the road for leisure, industry and private use are shown. A lot of traffic is passing along this road and with the future perspective of the international road it will be more stressed. You can conclude that nowadays already a lot is happening along the east-west connection and around Paramaribo. It is a big attracting line making some nodes were lines are gathering and were the economic urban zones are situated. You can see it as a contributing backbone with some spines going inland.
So looking at the urbanised areas and the network use you see some important nodes emerging with network spines going inland. For Suriname you see three important areas the left at the border consisting of Nickerie, Wageningen and Corriverton were around the 30,000 people are living.

The middle Paramaribo, Lelystad, Paranam and Onverwacht with 280,000 people and the third as well at the border consist of Moengo, Alibina and St. Laurent with around 38,000 people.

They are all connected to a road and a water system. For detailed information about density and the mobile network of air you can look at appendix E.
URBAN GROWTH

TILL 1920'S

INDUSTRIALISATION

WAR 1986-1992

MOENGO-ALBINA
NODE

NICKERIE
NODE

PARAMARIBO
NODE

MOENG-ALBINA
NODE

10,200

30,400

26,800

60,000

23,000

12,600
Zooming in on these three nodes you see how they’ve grown from the past till now and even a perspective for the future. First the west node with Nickerie that due to the industrialisation grew rapidly and people came to live and work in Nickerie. Nickerie even build cinemas and had a lot of future plans. Than the war came Nickerie didn’t suffered that much from the war, but due to the war People went to Paramaribo and the flourishing time was gone. Nowadays people are still moving to Paramaribo and to Guyana to find a job.

Paramaribo started as a small village along the river and was located on the highest part of the river near fort Zeelandia. Paramaribo is the biggest node with 280,000 inhabitants and has always been a growing city. And is still growing as you can see at the spines and the Wijdenbosch Bridge.

Finally the east node of Suriname, here you can see Moengo and Albina from the 1920s till now. Both areas were isolated and were only connected by the water. Albina used to be an old residential place and Moengo started as a bauxite city. The time of industrialisation had a positive effect on both areas, people came to look for work in the bauxite industry and because of the road to Paramaribo they weren’t isolated anymore and both areas grew in this period. Because of the war, which effected the Marowijne area the most a lot of villages were demolished and people were killed or left the area. They went to French Guyana or Paramaribo. The cities are shrinking. Nowadays the cities are rebuild but still facing the problems of the war, officially they are still in the state of emergence and this is holding back development. People still move to Paramaribo or French Guyana to look for a better job or living.

So the two nodes at the borders are shrinking and Paramaribo in the middle is a growing area. In the fu-
SOCIAL

Socially Suriname is very diverse. Especially in Paramaribo a lot of communities are living with or next to each other. In the rest of the country they’re mixed as well but each area has got their own main ethnic group.

This image shows the population density of the three Guyanas divided by ethnic groups. All urban areas with 1000 people or more are shown in this image. Half of the population lives in Paramaribo and 70% of all people live in the coastal areas. The image shows a very mixed and diverse scheme. Socially, you see that the Hindu group is the biggest group and that they are mostly situated in the west of the country and even in the Guyanas.
social vision

G hindu model Suriname

H chinese model Suriname

PLANTATIONS

HORECA
The Hindus are gathered mostly around Nickerie this is because of their history, during the plantation time the first Hindus settled in this area. The Hindus are known for their trade and agriculture. They invest in big projects like rice and oilpalm plantations. The Chinese came to Suriname to work in the Horeca, 70% of all provision shops in Suriname are from Chinese. As well as the Hindus they invest in big projects like mining and infrastructural and tourism projects. Both ethnic groups entered the country as a unity, which created solidarity in the communities. The maroons and creoles are gathered around Marowijne area because they came as slaves from Africa to work on the plantations in the east. They were the first people working on the plantations, but many people escaped to the inland and the Marowijne area. The Maroons and Creole people are living from small agriculture and they invest in short term investment because of their insecure future perspective from the past war and slavery periods. Thereby these ethnic group don’t have any unity they came from different regions of Africa and could not understand each other in any kind of way. For the precise native location of all the inhabitants of Suriname see appendix F
ECONOMY

The main economics of Suriname are the bauxite mining, tourism, agriculture and the private economy. People who are living along the road selling products and trade with other countries. Referring to the 400.000 people moving from French Guyana to Suriname to sell their goods.

I divided the Guyanas in specific economic zones, its not the only economic activity that is taking place in the area but it can be seen as the main activity that can be come the polycentric cluster Looking at the Suriname scale their are the same economic clusters to been shown. First the intensive industry situated in Nickerie were the Hindus are the biggest group. The bauxite will move from the east to the west because the bauxite is finished in the east this will offer jobs as well as the potential agricultural swamps of Nickerie. The port has got a big potential to become an important hub to export bauxite and rice straight away. The ecological zone to stop the tense of the urban growth and thereby I propose energy sources in this area to make it environmental stimulating. The collector of Suriname is the area around Paramaribo and it will stay an attractive business administrative zone in the future. Because of the plausible emerging polycentralisation I propose the port and intensive industry to move to the east and that leaves a cruise port potential for the Paramaribo harbour. The south area could be an potential area to become a leisure/ tourism hotspot hub. Nowadays tourist are moving a long this road and because of the emerging network it has a potential to become a hub. Finally the east node because of the movement of the bauxite their will be a demand for new employment. I see this area as a educational tourism hub, combining agrotourism, education, agriculture and research in this area because of the diversities and the potentials in the area. It is diverse by it landscape and there by area is perfect for small-scale investment. Moengo can become the agrihub with a tax free zone, Albina can become a residential place for tourism, shopping and relaxing.

Again you see the three nodes and their contributing and distributing relations you see the three Suriname nodes are connecting different economic clusters.
paramaribo
Nickerie
Marowijne

56
economic vision

SOCIAL ECONOMIC MAP PRESENT
These images show the social-economical map of Suriname. It shows the differences between the present and the future social-economical developments. As told before the Hindus and the Chinese invest in big projects and the Creole and the Maroons invest short term. You see that the bauxite is moving to Nickerie, that leaves a potential for Para and Marowijne, and it is clear that different ethnic groups have different ways of living.
These images show the conclusions from the analyses, which will eventually create the vision. First you see that the historical values are gathered around Marowijne and Commowijne because of the plantation time and the war period. So this is where I propose historical educational development.

For the landscape I want to create corridors to preserve the flora and fauna to keep the ecology in balance and preserve the landscape. The corridors are connected to preserve parks. You see to small corridors on the east proposed and one big at the west. The swamps can be used for energy generation. (give a purpose to the environmental areas to make them sustainable) For the development it is important to take the erosion threat into account.

With the polycentralisation I want the people to move to the east and west node and this is possible due to the potential SA road, the secondary road and the proposed harbour in the east.

Each ethnic group has its own culture and way of living. This makes it important were projects and economics are emerging and from which scale. So the big scale development is proposed were the Hindus are living (Nickerie) and the small-scale investments are proposed on the east. This is because of the way of living of these ethnic groups.
For the economic vision you see three urban nodes that complement each other economically. And again the big scale intensive industry on the east and the small-scale investments on the west. These investments have a social-economic value that creates different identities. It can be seen as an economical-social node.

The short-term investments as well have a political aspect. Officially Marowijne is still in the state of emerge and thereby it is hard to invest in long term.
vision for suriname north coast
Finally you see all the analyses parts together in the final vision for the north coast of Suriname. You clearly see the big scale investments in the west and the small scale in the east. In addition, the economic clusters that complement each other and how the clusters are linked by an active network. The black arrows show the relations between the different areas.
how?
This image shows a diagram for the strategic plan necessary for the future development of the country. For each development, it explains why and how this development could emerge. I will focus on two development projects and explain them more in detail.

First, the Nickerie agrihub is a potential for large-scale agriculture, as we saw in the vision. All products from the west can be gathered in Nickerie and exported elsewhere. Before this is possible, you have to improve the secondary road and create sustainable flexible agriculture.

Secondly, the Zanderij tourism hub in the Middle of Suriname is a slowly emerging area that has the potential to become a tourism hub because of the network and activities. Why this area can become a tourism hub, because this is the place were people arrive by airplane and it has the potential to become an emerging tourism network. Thereby the government wants to promote ecotourism in Suriname. Zanderij can be promoted as a versatile tourism area. How this can be realised? People should invest in sustainable tourism villages and this can happen with separate strategic projects that might include residential, tourism, adventure and recreation.
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</tr>
<tr>
<td>Nickerie</td>
<td>Projects</td>
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Example: palm oil / Jatropha - Bauxite mining rehabilitation plantations tourism energy production.
Once again you see the vision as well as the phasing timetable. It shows from every intervention when the first phase is starting, how many phases the development is going to take and when the development is finished. For example the agricultural hub in Nickerie. That will start in the first phase with cleaning the land for agricultural use. In the second phase it is possible to start planting and in the third phase the first goods can be exported.

On the next page all phases are shown in a map, it is the strategy that shows how polycentrism is slowly emerging.
The first phases of the developments are shown by dotted lines, the second/third/... phase by a solid line and when the development is finished the area is coloured. Than the development can be active and that makes relations and activities possible.

The first phase starts with the cleaning of the agricultural land for jatropha and palm oil in the west, the improvement of the Nickerie-Paramaribo road and the ring road. The start investigation of the bauxite area. In the east the rehabilitation of the mining starts to take place, as well as the small agricultural projects.

In the second phase the agricultural land starts planting and the Nickerie-Paramaribo connection is upgraded. The Albina recreation hub and Moengo agricultural hub can start the first phase.

In the third phase the agriculture is starting to produce and so the company is possible to export their first oil palm or jatropha. This is why the port can start its first phase. Second the Zanderij hub can start because of the emerging network. The
In the fourth phase the activities (arrows) start to take place around the agricultural plantations. And the energy parks starting their first phase to generate environmental friendly energy. The Zanderijhub is getting more accessible due to the upgraded network system.

In the fifth phase Nickerie Harbour is rounding up the harbour activities and the cruise terminal in Paramaribo can start its first face as well as the start of the bridge connection with the Guyana.

In the sixth phase Zanderij is ready to expect their first costumers, you see the accessibility that is created by upgrading the network, now it is possible to make a round tour. And in this phase the port in Nickerie is ready to export their first cargo to Brazil.

In the seventh phase the cruise terminal can welcome their first tourist and send them to the inland to enjoy the nature and adventure of the jungle. Hereby Zanderij is accessible by road, water and air.

In the eight phase the international connection is completed with two bridges at the borders.
Before the structure plan I will first show the structure plan in different layers. About the economy, urban growth, networks and environment. This image shows the existing situation at the bottom, the new interventions at the top and in the middle the combined new situation. The lines show the important crossings.

This view shows the differences between the existing and the new economic areas in the country. In the existing situation you see a mix of economics and in the new economy you see that the economic activities are clustered and complements each other. In the existing situation you see as well the polycentric clusters as well as the small-scale development in the east and big scale development in the west.
Nowadays the Surinamese economy is focussed on the export of Bauxite, 70% of all export comes from bauxite and gold mining and 15% from aluminia production, made from bauxite. Locals are working in these kind of industries, but only the foreign companies benefit from this economy. Agriculture is the second large economy and dominated by the rice and shrimp industry. The three Guyanas have a similar economy focussed on mining and agriculture.

In the future tourism will grow in Suriname, because of the proposed growth of the ministry of TCT and the booming tourism industry, the TCT is expecting a growth of 50% a year. Therefore, tourism will become the second economy and has a lot potentials for the country.
Tourism has emerged as one of the world's largest industries. Ecotourism in hotspots and high-biodiversity wilderness areas can be both a sustainable economic alternative and a successful conservation strategy. Ecotourism creates jobs in food service, accommodation, transportation and other industries. Because it relies on healthy ecosystems, ecotourism provides a powerful tool to protect the environment. People who earn their living from ecotourism are more likely to protect local natural resources and support conservation efforts. So create an economy that protects the environment instead of the bauxite and wood industry that is treating the environment and only the foreign companies benefit.
For the urban growth the new proposed urban areas are proposed on specific locations because of the soil and the emerging network. I divided the urban growth in the densifying of urbanised areas and the emerging new urbanised areas, especially along the road.
The political and economical situation caused a decline in Suriname population, people moved to the neighbouring countries or even to the Netherlands to find a better job or living.

The netto migration rate is still negative but nowadays people are moving back again, every year 4000 people move back to Suriname. They are called Bounty's (Black on the outside, white on the inside). These Bounty's are most of the time well educated and helping the economy of Suriname to flourish again.

The densities of the provinces are put in order, you can see that Paramaribo is the smallest province and most densed. Second and third are the surrounded provinces of Paramaribo, Paramaribo is extending to the other provinces. Fourth and fifth are the bordering provinces, Nickerie and Marowijne.
For the network you see the upgrading of main road with the proposed bridges it creates an international connection, the Panamerican road. You see the ring road around Paramaribo as well as the emerging network around Zanderij.
SURINAME

163.820 km²
470.728 inh (2,9)
ROAD 386 KM

SARAWAK, MALEISIE

124.450 km²
2.376.800 inh (19,10)
ROAD 670KM

CASE STUDIES ROAD NETWORK
I looked at some case studies to know more about the infrastructure and networks of Suriname. I looked at Sarawak, Maleisie more in detailed, because in this case we deal with a high populated area that has one main road with some spines, the same is happening in Suriname. (for further details you can look at appendix E)

Secondly I observed at the Western Sahara and Iceland to compare Suriname with a parallel network, which means a main road with a secondary road.

Finally I focussed on the route 66 to compare with the proposed Panamerican road. I concluded that a secondary road was great to destressing of the mainroad and it made it possible to make a round tour, for example in the east of Suriname.

www.ipec.com.sg
www.borneo.com.au
www.route66search.com
www.blog.cardomain.com
In the new situation of the environmental structure plan you see the small-scale corridor on the east and the big scale corridor on the west as well as the energy parks that are proposed to produce energy.

The new ecological zoning is connecting the existing types of landscape and preserved parks to keep the ecology in balance.
Finally you see everything put together in the map. It shows the different between small scale and big scale development on the east and west.

The ecological zoning and the proposed urban growth. For the polycentralisation you see the economic clusters that complement each other and the improved network to connect the regions and activities.
Nickerie Agricultural Project
I will now zoom in on two important projects for my polycentric strategy. The first project is important because it comes from investors. There are people who want to invest in land to use for agricultural purpose. Secondly the Zanderij tourismhub, that is different from the agricultural plantation project because it is not forced by investors. The Zanderij tourismhub is a project that has the potential to become a tourismhub because of the emerging network and tourism node.
urban projects

Nickerie

Brokopondo

Sipaliwini

40 KM BY 20 KM
(18000-97000)

5 KM BY 10 KM
(1000-10000ha)
Suriname gaat voor grootschalige biobrandstofproductie
PARAMARIBO — Suriname voert serieuze gesprekken met twee Indiase multinationals voor de grootschalige productie van biobrandstof als alternatieve energiebron. De bedrijven hebben in totaal 90.000 hectare grond aangevraagd waar zowel oliepalm als jatropha (giftige struik waarvan uit de zaden door veresteren biodiesel kan worden verkregen, red.) zullen worden verbouwd. Minister Kermecend Raghoebarsing van Landbouw, Veeteelt en Visserij (LVV), kan de precieze hoogte van de investering nog niet aangeven. Hij praat wel van een lucratieve investeringsontwikkeling voor de Surinaamse gemeenschap.

“Wij zijn gezegend met veel landbouwgrond en kunnen een deel daarvan zeker benutten voor alternatieve energieopwekking in Suriname”, zegt de bewindsman aan dWT. Het plan is al besproken door de ministeries van LVV, Ruimtelijke ordening, Grond- en Bosbeheer (RGB) en Natuurlijke Hulpbronnen (NH). Het gaat om de bedrijven Food Fats and Fertilisers Limited (FFF), een oliepalmbedrijf opgericht in 1962, en Enhanced Biofuels and Technology Private Limited (EBT). Dit tweede bedrijf zal gebruikmaken van het gewas jatropha....

First I will explain the Plantation project, there already is a Hindustani company EBT that wants to invest in Palm oil and Jatropha plantations and they are looking at different areas to put their plantations. They are planning to realise this in the areas Brokopondo, Sipiliwani, Marowijne and the south of Nickerie. According to my project there are two regions proposed for special agricultural development. The Marowijne area with small-scale agriculture and Nickerie with the intensive agriculture. These different areas ask for different type of investment and spatial design. Therefore, the 90.000ha that EBT wants to invest can be divided in a big plantation area in the west and a small plantation area in the east.
MONOCULTURE

DEFORESTATION + EROSION

FLEXIBLE PLANTATION

CLEANING THE LAND

FIRST YEAR
When companies start to build plantations they normally start cleaning the land, than they plant the bushes and in the second year they are ready to collect the seeds. From the seeds they produce crude oil, the compost can be used by the locals. From the crude oil they make biodiesel this can be transported and a part can be used by the locals. Normally these kind of plantations are monoculture and thereby enforce the deforestation and the erosion. If a landowner got broke down the land is left over and that causes a lot of erosion problems. So I propose the plantations to be flexible.
FLEXIBLE PLANTATIONS: 25 KM BY 10 KM (5000-22500 HA)

FLEXIBLE ROADSTRUCTURE CONNECTED TO THE MAIN

RAINFOREST

SMALL

40 KM BY 20 KM (18000-97000)
So how to make the plantations flexible. Hereby I propose to put the plantations in strips so you create a framework of jatropha. A strip consists of rows of plants with a possible road in the middle to make the plantations and the in between activities accessible. For the big scale I propose wider stripes than the small-scale plantations. These strips will reduce the erosion problems and will make the area more sustainable.

It will only need at least one third more surface. A flexible plantation of for example 25 by 10 meter can handle between 5000-23.000 ha of palmoil or jatropha. This can varied because of the flexibility of the plantation. Because the plantations are only placed in strips the in between zone can be free for every kind of activity like agriculture or leisure and can even stay in its original nature. The plantation is more sustainable because it can adapt to the landscape, it is possible to make use of the existing structure. The strip prevents erosion especially when the plantation owner got broke down, which happens a lot, than it is not that the entire land is demolished. The only thing, it takes more space and spatial designing but I think that is worth because the flexible plantation searches for quality instead of quantity (see article).

Reformation of the agricultural policy
The policy started with the principles: “more produced, more money received”. This approach results in enormous surpluses. In 1990 MacSharry from the EU started with the reforms. Production and subsidy were detached.
In stead of money by means of quota farmers are paid by quality. The subsidy is only accessible if farmers produce environmental friendly, needs to go along with the qualitydemands and need to take care of the environment as well as innovation. This approach will continue at least till 2013.
To in lead the rural development into good channels farmers can get extra money if they construct more green and possession less animals a hectare. And take care of the environment and the surroundings. Safe the historical structure and characterizes, keep the ecology in balance. So Quality in stead of Quantity!!

http://www.europa-nu.nl/9353000/1/j9vvh6nf08temv0/
3 km by 1 km plantations and 3 by 0.8 km agriculture: leads to a production of 2,811,000 litre biodiesel.

2.5 km by 0.8 km plantations and leads to a production of 1,874,000 litre biodiesel manufacturing options and ........
The stripes of 9m and squares of 25 by 25 m. So 1 square takes 0.6ha and the plantations make 10.307 crudge oil (1.1ha).

The difference between the large and the small plantations are shown on these pages. The big scale plantations proposed in Nickerie have a larger surface area than the small scale plantations in Marowijne. The images show examples of possible plantation structures. The first plantation contains 3 by 1 km jatropha and 3 by 0.8km of agricultural land. This jatropha field leads to 2.811.000 litre of biodiesel a year. In this example the agriculture and jatropha are seperated and could have to landowners. The biodiesel can be manufactured on location. The second large scale image shows a plantation of 2,5km by 0.8km of jatropha this results in 1.874.000 litre of biodiesel a year. Here the factory is isolated from the road and from this road as well the agricultural land has access. In this model it could be possible that the landowner is producing biodiesel as well as for example rice.

The stripes are 9m wide instead of 16m for the big scale plantations. The stripes create squares that are 25 metre squared. That means one square is around 0.6ha, which can be used for all kind of purpose. Agriculture, leisure, research or forest. Both images show a different kind of plantation with the 25 squared dimensions, eventually every kind of realization is possible. The second image has as well a 12,5 by 25m option. The third image contains 1,1 ha of jatropha, which means 100.000 crudge oil and the fourth image is 0,94ha and theryby can produce 89,000 crudge oil. The small scale plantation can’t manufacture the crude oil, it has to be transported to a manufacture in the neighborhood.
40 KM BY 20 KM (18000-97000HA)

urban projects
Looking at the intensive big scale plantations. You see the strips, the accommodations necessary to make the biodiesel and the road and water network. You can see it in the plan and in the section. The in between area can be filled with all kinds of activities, but in this example of big scale investment I propose to put more jatropha combined with agriculture as showed on the previous page.

For the small-scale investment you see as well the stripes and its framework, the in between areas are a lot smaller, that makes it possible for people to use for agriculture, tourism or research. Especially in the east a lot of people have small ground which they are using to produce small agricultural goods. Furthermore people are looking for ground to produce goods. These plantations could be a solution. It can be seen as allotment gardens.

An image of the small agricultural plantation is shown, the stripes with road and the agricultural land on the left are visible.
Nickerie Agricultural Project
The second project that is looked at more in detail is a project that comes from the emerging network and tourism activities in the neighbourhood as well as the spear point of the government to invest in tourism.
TOURISM ACTIVITIES GUYANAS
The map shows the intensity of tourism hotspots in the Guyanas, most tourist activity is happening in the three capitals. Guyana has as well a tourism hotspot in the jungle, this is the Kaieteur Falls. Most tourism attractions are gathered around Paramaribo and when you move south till Brokopondo.
17 stay in capital (a) and outside the capital (b)

18 cruise tourists

19 cruiseships entering Curacao
Within a network, a hub is an interesting phenomenon.

A hub could be defined as a node that is important to the network because of its number of connections. It is a Central point for the collection, sorting, transshipment and distribution of goods or people for a particular area. This concept comes from a term used in air transport for passengers as well as freight. It describes collection and distribution through a single point (“Hub and Spoke” concept see L).

A hub can also be seen as a node, this is the place where everything comes together, the connections between the nodes as well as the contents of the nodes themselves are of importance to a polycentric network.

Hubs, as a network structure, allow a greater flexibility within the transport system, through a concentration of flows.

Activities of scale at the hubs, enabling the potential development of an efficient distribution system since the hubs handle larger quantities of traffic.

http://communitydesignnet.com

Nowadays people stay 70% off their journey in Paramaribo, but in other countries this is mostly around 30%. (17) To my opinion people come to Suriname to enjoy the nature, but they stay most of the time in Paramaribo. Why?

This is because the options to go elsewhere are limited. The organisations have got a monopoly and the prices are expensive because of the low capacity of accommodation and tours. Trends in tourism are group travel, because of the aging population and the Chinese people. Secondly the cruise holiday is a trend, 2% of all Dutch people cruised once and 40% of all American cruised once. 85% of all people that cruised are recruisers. This means people who will cruise again. Thereby the business of cruise holidays is growing with 30% a year!! (18) Both group travelling and cruise holidays are big potentials for Suriname.

It could be a great opportunity to combine a cruise to the Curacao beaches with the Suriname jungle. Because the cruise activities in Curacao are declining (19) and the demand for adventure-beach cruises are increasing especially for the youth. It’s like backpacking but every night in the same hostel.
Looking at the tourism hub are the first image showing the road and the water network in the area, the second image showing the activities that are taking place along this network and finally the tourism attractions in the neighbourhood and the Zanderij airport close by and the proposed economic activities in the neighbourhood.
EMERGING TOURSIM HUB

FASE 1
NETWORK CONNECTIONS
EMERGING CENTRE

FASE 2
CRUISE TERMINAL
RESIDENTIAL IN CENTRE

urban projects
So for the future, Zanderij has the conditions to become a tourism hub because of the airport, attractions and networks going through the areas. It has the potential to become a small city with tourism accommodations and can send the tourist all over the country.

If you look at the phasing of the plan you see the first phase with the existing tourism activity of the Jodensavanne and the Zanderij airport.

The 2nd phase shows the first residential centre emerging at the crossing and the connection from Paramaribo to the river. So a Zanderij terminal has to be constructed. At the terminal there will be activities like lodges and a tourism office. In the middle a centralised service hub is already emerging and eventually will attract more services, people and economy, which will create a tourism hub. As you see in the plan.
The maps show the present travel flows of tourist visiting Suriname and the expected future travel flows because of the emerging tourism hub in Zanderij.

In the present situation you see that people enter Zanderij airport and move directly to Paramaribo, stay there 70% of their time and from this location they make a one-two- or more days tour. Most tourist visiting Suriname stay for over 15 days, that makes a trip of several days possible.

In the future I see the Zanderij tourism hub emerging with a cruiseline and the option to go from Zanderij straight to the tourism hub. From the hub people can make small trips or move to Albina, Moengo and Paramaribo. This makes the options more flexible for the tourists and they are possible to make around tour. The tourists eventually have to traverse less kilometres to see the highlights and diversity of the country.
urban projects
This image shows how Zanderij tourism-hub can look like. You can enter the area by boat and stay the night in the lodges..
...after a long trip from Curacao I finally arrived in Paramaribo. Now I have 2 days to visite the city and tomorrow I will go inland...

...What a nice nature and view from this riverboat, I can’t wait to enter the Zanderij resort...

...Next station is going to be albina, from there I’m going to visite Galibi and Fort Buku...

...Fort Buku...
...Two days in these nice cabines, I’m going to look at the tourism office what they have to offer...

...Heading back home, what a great holliday, 7 days of relaxing on the beach and 7 days adventure and culture...

This cartoon shows a short trip of a tourist.

After a week of white beaches in curacao the tourist is entering Suriname by cruiseship in Paramaribo, visits the city for one day and then leaves the next day by riverboat to go to Zanderij tourismhub and stays their for a few days to enjoy the nature and make some trails. He eventually hires a car at the tourismoffice near his lodge and continues his journey by car to visit Albina and fort Buku after this historical and cultural experience he drives back to Paramaribo were it is possible to hand in the car and after a two great weeks of variation he takes the cruise to go home.
ECONOMIC EXISTING

INTENSIVE INDUSTRY

TOURISM

SERVICES/BUSINESS

RESEARCH
**REFLECTION**

To summarize I created a strategy plan in which the network combines the social economical zones and creates imaginary conditions that are not threatening the environment and could possibly happen and enhance new type of development.

Looking at the polycentralisation and the existing and the future economics you see that Paramaribo used to be the main attractor for all types of economy. Intensive industry, tourism, business and research, but if you look at the future perspective proposing polycentralisation you see that all areas have got their own quality and identity. So they complement each other Nickerie becomes the intensive industry region, Zanderij the place for adventure, nature tourism and Marowijne the educultural research and leisure zone. Paramaribo becomes the administrative business Capital.
ROAD SYSTEM EXCISTING

WATER SYSTEM EXCISTING

reflection
Important for polycentrization is the network relations between the areas. If you look at the existing road situation and the proposed future road network you see the international scale is including Suriname so the polycentric region is part of a bigger network and there are more connections possible on the smaller scales, looking at the ring road and the secondary road connection. Suriname becomes active on more and different scales.

If you look at the existing and future proposed water network you see that Nickerie is taking part on the international scale and that the small national scale.
FASE 1
SEPERATED NETWORK ACTIVITIES BECAUSE OF CLUSTERING

FASE 2
DESTRESSING OF THE MAINROAD BECAUSE OF SECONDARY ROAD AND HARBOE EXPORT

FASE 3
PRIVATE USE, NATURAL DESTRESSING

This image shows the destressing of the road. The first image shows the differentiation because of the economic activities in the east, the tourism activities and in the west the industrial activities. In the future the industry can be directly exported to other countries or the companies can use the secondary road to transport the crude bauxite to Paranam to produce aluminia this means destressing of the main road, which is necessities with the future perspective of the Panamerican road. For tourism people can make a round tour, which means again destressing of the main road and a versatile holiday option. About the private use we can be short, because it is not possible to take control of these movements. But because of the growing regions and thereby activities and services people can go to the surrounding regions instead of Paramaribo, which means natural destressing of the main road.

Is polycentrization the best option? I think for sure the polycentrization creates a better opportunity for the surrounding regions of Paramaribo to grow and to participate in the development of Suriname. Thereby polycentrization is more flexible than a monocentric model, it has the possibilities to adapt and it spreads the risks because the social economic clusters are complementair interdependent in stead of dependent.
RECOMMENDATION

If I would have had an other year to work on the project I would like to look at the polycentric possibilities for the three Guyanas. Because of the international road that is passing the three countries. And because the three countries have got a similarity in economy, social structure and their environment. In this image you see once again the structure plan for Suriname proposing polycentralisation only now on the Guyanas scale. Because I think in the future the secondary road of from Zanderij tourismhub to Nickerie can be extend to Linden in Guyana. This town is al well as Nickerie focussed on bauxite mining. Furthermore I’m really curious about the investors that are acting in Suriname and I would really want to force the Suriname government to be careful with all kind of investments and please let them look at a economical viable, social stimulating and environment friendly way to invest, referring to the flexible plantations and ecotourism projects.

Process

This report, accompanied by my public presentation on the 1st of April 2008 finalizes a graduation period. I would like to reflect on three main topics, Process, Contents and Presentation.

First of all my explanation of my choice for Spacelab and Suriname. To my opinion my graduation project needed to be an extension of my knowledge. So I wanted to focus on research and strategy something I didn’t learnt much in my master of Urbanism and my second reason is about the future. In the future I want to work in an office and according to my experience there is not much time for research available. So I took my graduation project as an opportunity to do research and learn about strategies. In February 2007 we started this project in a group of four students, not knowing about Suriname, the country in which the project took place. We started with the outside-inside method, which was new for me. We began to analyse the entire country on all kind of topics and looked at the local, national, international and global scale. Parallel to this project we made a theory essay and we participated in some workshops.
After a period of analyses we gathered everything in the catalogue “Prosperity village Perica; New Urban Ecology”. When it was finished we went to the site and with all the information we gathered we already knew a lot and looked more specific at the country. We visit a lot of people and we interviewed the people. We visited a Surinamese family and made some touristic trips to experience the country as much as possible in three weeks. After the trip we divided the project into four different projects and started individually but still kept in contact to interchange our projects.

I started my individual project in September only knowing I wanted to do something on the large scale, so create a strategy. So I started to look at the entire Suriname. And took as an important fact that the government started a decentralisation policy. I saw my task as a student from urbanism to make this decentralisation spatial and took polycentrization as a case. Then I looked at the potentials of the country and developed a strategy for the country by looking at polycentrization. Thereby I designed new interventions for two types of development. First of all the development that is happening because of investors and secondly development that is emerging because of networks, actors and activities. During my P3 I was still searching for a clear story and thereby used too much of abstraction. Actually between the P3 and the P4 finally everything came together and it was clear which projects I had to work out to make my strategy stronger. To my opinion this is quite in a late state, but because I was searching al ready the entire process I had a lot information to put everything together at once. Overall I struggled a lot to make a clear line in my story and had a hard time to visualize my thoughts. After all I really see a strong process during my last year and learnt a lot from my three mentors about howtovisualiseandstructuremyideasanddesigns.
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Perica is a small village of 1500 citizens, located in the Marowijne district, of north-east Suriname. The settlement is situated along the national paved road running from the border of French Guiana to Paramaribo and further to the border of British Guyana.

Since the inland war the village Perica and the district Marowijne has been neglected, and therefore the development of the area is on a standstill. There are very few facilities providing electricity and water to the area, and no social organizations or tourism facilities. Because of the lack of investment in structural industrial activities the rate of unemployment and crime is high and because the current inhabitants don’t have any future perspectives, they are forced to leave the area.

A foundation has been brought to life in order to create a new community model for Perica and the surrounding area, according to a holistic principle; a model where man and nature are equally on focus, under which social and environmental objectives can be connected. At the same moment it is very important that economic potentials remain also a focal point in order to facilitate development.

- preservation present biodiversity in relationship with diversity of inhabitants
- prosperity and environment
- development tourism and employment
- innovation and professionalisation of organization and project content

During the Msc 3 an Atlas is made about Suriname and its position within the worldwide context. In Msc4 a spatial development plan will be proposed for the Marowijne district. It will be worked with a bottom up approach where diverse strategic projects will create diverse spin-offs.
introduction of the workshop

introduction of Perica

4Ps to maintain in balance
People
Pleasure
Planet
Profit

urban assemblage
the use of diagrams

Materials cardboard
nothing the boundary
(layers)
recycling = downcycling

cultural knowledge
perception of the urban

14th May Prosperity Village Perica workshop
introduction of the workshop

introduction of Perica

4 Ps to maintain in balance

People

Pleasure

Planet

Profit

urban assemblage

the use of diagrams

cultural knowledge

perception of the urban

Vitale Cities

& Urban Life

technical space / time

not virgin environment

hybrid ecology

city hybrid thinking

Suriname from an outsider point of view

environmental biology

eco tourism

introduction of individual fields of studies and interests

Robert Barnstone

Stephen Read

HAASE Students

TU Delft Students

Laurens Gomez
The southern part of Rotterdam is under development. Especially Charlois will go through a substantial transformation in the upcoming 10 years. The City of Rotterdam, the housing corporations and the national government are generating plans to revitalize the area both on a local and urban scale. The residential areas are implanted with new housing projects to counter an aging population in the borough and to bring about an increase in the average spending power. In this area several programs of redevelopment are already activated.

As starting point of the developments there is an interest to stimulate new, and embrace the existing creative industry. The area needs therefore attention, to be inquired and investigated in-depth by means of a scientific and cultural approach, in order to produce new visions and to open up further perspectives. The redevelopment of Charlois has to be a long-term process in which the inhabitants have a primary role, by stirring up a wider consensus and awareness amongst the community and by triggering a strong sense of social participation.

Accordingly iStrike in collaboration with Spacelab/Urban Body of TU Delft is developing the Mfzworkshop which is conceived as a research phase with a long-term perspective. The idea of Mfz is to explore Charlois, an area with a lot of potential, where there is still free space to work on and to move through, where it is still possible to envisage opportunities to develop further. The intention, on the one hand, is to produce visual contents, ideas and concepts which might facilitate the process of development and, on the other hand, is to trigger a debate on Charlois and create public awareness amongst its inhabitants.
AMANTANI _ PERU

Amantaní is an island on the Peruvian side of Lake Titicaca. According to a 1988 census, it has a population of 3,663 Aymara Quechua speakers divided among about 800 families. (1)

There are two mountain peaks on the island, Pachatata (Father Earth) and Pachamama (Mother Earth), with ancient Inca and Tiwanaku ruins on top of both. The hillsides, which are mostly worked by hand, are terraced with stone walls and planted with wheat, quinoa, potatoes, and other vegetables. Livestock, including alpaca, also graze the slopes.

Similar to the Taquileos, the inhabitants of Amantaní are also known for their textiles, as well as their ceramics. (2) Most of the inhabitants live in houses of adobe. (3)

There is a small health clinic and school on Amantaní, and, while there are no hotels, some families offer meals and overnight lodging to tourists. The island has no cars and is powered for only a few hours a day by a generator.

Tourism is an important source of income, tourists sleep and life like the inhabitants of the island. The island also has a fair-regulation-system of tourists staying at families. The money is gathered for development of the island, like agricultural equipment or needs for school.
Location: Titicaca lake, Peru

Altitude: 3800 m.s.n.m.
Area: 8x8 km2
Inhabitants: 3663 (800 families)
Languages: Quechua

SELFREGULATING SYSTEM

Tourist are only accessible by boat and the tourist stays in a local house. The money the people receive from tourism is collected and will be used for agriculture and education. So the money stays on the island and is fairly regulated between the inhabitants.

http://nl.wikipedia.org/wiki/Amantani
http://www.punored.com/titicaca/amantani/
Maruata is a village of 1500 or so on a south-facing beach two hours south on a winding road from Tecoman. There has only been a road in this area since the mid seventies what is currently the relation between ancient ways of life and modern influences. Electricity is there since the early nineties. There’s one cell phone but it’s generally broken.

The economy is based on subsistence agriculture, fishing, small scale logging and tourism. The Pomaro Indians are a splinter tribe of Aztecs who still speak Nahuatl.

The case study is about a private funded ecological design program in the Pomaro territory.

The aims are:
- Safeguard the existing ecology and culture, including traditional systems appropriate for low population density.
- Encourage the development of sustainable, low systems development of sanitary local sources for drinking water, improvement of the Maruata piped water supply and fruit trees to improve nutrition.

Turtles
The development of Maruata has been on the back of the turtle. Prior to the arrival of the road, there were thousands upon thousands of turtles. The road enabled the meat and eggs to get to markets as far away as Japan. In the ensuing “gold rush” decade the turtle population declined by 90% while the human population increased by a factor of ten.
The Pomaro indigenous community in Maruata, Michoacán, like many small, low-income communities in North America, is faced with municipal planning choices that will have profound influences on its development and the health of its residents. Maruata is poised to grow considerably, as construction of a deep well, the installation of piped water, and the development of its first tourism facilities are in progress. It is critical to build local capacity to monitor changes as development proceeds and respond to health and environmental needs with infrastructure and policy changes.

The challenge is to build local capacity to understand what the choices are, which are in the communities’ best interest, and how to implement them. In collaboration with the Boston University School of Public Health [BUSPH], the community will develop its capacity for monitoring and assessing the watershed, freshwater sources, water delivery systems, water quality, human and animal excreta management, wastewater management and community health conditions with the premise that an understanding of the current status of water and waste management and how best to monitor their status will help people determine which community-level interventions will make a difference in public health and environmental protection.

http://www.oasisdesign.net/design/examples/maruata/index.htm
appendix A _ suriname outside _ theory

Sustainable

INTRODUCTION

brundlandt rapport

DEFINITION

issd/ iied/ ausaid

SUSTAINABLE DEVELOPMENT

Urban model

INTRODUCTION

Finger city
Policentric model

Network city
Segment City

Organic city
Edge City

books

2.2

2.3

2.1

1

3

2.4

5.4

conclusion
Preface

This essay is the product of an assignment made for a msc 3 theory course, the task was to build a theoretical framework that relates to my graduation themes and objectives.

The starting point for my graduation project is Perica in Suriname, the task is to make an environmental stimulating, social viable and economically sound strategy about how an area can develop in a sustainable way. Suriname is now threatened by a cancerous urban sprawl. The cause of this sprawl is a lack of urban planning and as a result an inefficient urban pattern is realised as well as unnecessary exploiting of the natural landscape.

Content

preface 2
Introduction 2
1 Sustainable development 3
2 Practice sustainable development 9
3 Conclusion 10
4 Link to graduation project 12

Bibliography 13

Introduction

In this essay I will seek for the definition and practice of sustainable development. What is sustainable development, is it a trend word or is it something that has to take into account by strategic planners? Therefore I will look at the definition of sustainable development and concluded with an overall view of the definition. Then I will show some practical examples of sustainable development and why they succeed or why they didn’t. Then I looked at some critics about sustainable development, is sustainable development the solution? And finally I will conclude with my interpretation of sustainable development by looking at my graduation project and what I learned during my Master of Science semester 3.

1 Sustainable development

The world is urbanizing, by 2050 over 6 billion people, two thirds of humanity, will be living in towns and cities. Urbanization maybe the best solution for the future generation, it is probable the best way to handle the massive population increase. Whether a large metropolis or a small village, each urban environment has an identifiable system of components that constantly changes and interacts. The answer for the urbanization could be sustainable development. Sustainable development, “meets the needs of the present without compromising the ability of future generations to meet their own needs.” It also, “requires meeting the basic needs of all peoples and extending to them the opportunity to fulfill their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes.”

There are many definitions about what constitutes sustainable development, is sustainable development a ‘trend word’ or is it a concept or strategy that can be useful for designing an area?

Sustainable development is a socio-ecological process characterized by the fulfillment of human needs maintaining the quality of the natural environment indefinitely. The linkage between environment and development was globally recognized in 1980 when the International Union for the Conversation of Nature published the World Conservation Strategy and used the term: Sustainable Development. The concept was first used by the Brundtland Commission and their definition of sustainable development is the most often quoted definition. (fig.1)

Although it is the most used definition, there are a lot of remarks for this definition. Sustainable Development is such a broad concept, a wide array of views fall under its umbrella. Remains the concept weakly defined, so that everyone can interpret the concept the way it suits them best?

A lot of organizations and people have tried to measure what they consider to be sustainable development. I will show some examples of the ISSD, IIED and explain more explicidy the brundtland definition.

According to the Brundtland report sustainable development contains two main aspects. First of all the concept of needs, in particular the essential needs of the world’s poor. And secondly the idea of limitations imposed by the state or social organization for economic development to meet the present and future needs.

Sustainable development requires that societies meet human needs both by increasing productive potential and by ensuring equitable opportunities for all.

An expansion in numbers can increase the pressure on resources and slow the rise in living standards in areas. The issue is not merely one of population size but of the distribution of resources.

In essence sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation social development are all in harmony and enhance both current and future potential to meet human needs and aspirations. The world must quickly design strategies that will allow nations to
move from their present, often destructive, processes of growth and development to a sustainable development approach. This will require policy changes in all countries. The strategy for sustainable development needs to aim and promote harmony among human beings and between human and nature. In the specific context of development and environment.

Looking at the second box, you see that ISSD is quoted as the most effective sustainable development research organisation in the world. But in which way are they using the definition sustainable development.

IISD believes that the most effective actions for sustainable development are those that promote economic stability, enhance social equity and complement other environmental initiatives.

IISD’s work on trade and sustainable development began in 1991. It seeks to identify areas of conflict among the three policy spheres, environmental, social and economic and tries to minimize them. Reducing poverty and fostering human development are fundamental pre-requisites for achieving sustainable development. We will need to move away from conventional responses relying on the fruits of economic growth trickling down to the impoverished, to policy responses that embrace broader participation, greater opportunities and more freedoms by the poor in their own development processes. Through innovative research and strong partnerships, IISD promotes effective policymaking imbued with this spirit.

The third definition of sustainable development is used by the IIED, the IIED is an international policy research institute set up in 1971, just before the first UN Earth Summit. IIED provides cutting-edge ideas to push policy forward. IIED provides expertise in achieving sustainable development at local, national, and global levels. They want to create a future that ends global poverty and ensures fair and sound management of the world’s resources by looking at the social, economical and environmental development.

Go Harlem brundtland: “sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It relates to the continuity of economic, social, institutional and environmental aspects of human society, as well as the non-human environment.”

Source: wikipedia.com

The International Institute for Sustainable Development, IISD is ranked by sustainability experts as the most effective sustainable development research organization in the world.

“IISD has gained a well-deserved global reputation for a soundly thought out, constructive and practical approach to sustainable development issues. This allows the institute to work all around the world with governments, business and other civil society organizations towards practical solutions which balance the needs of the different players, with the institute often supplying the fundamental thinking and analysis.”


“The world is becoming less and less sustainable - the continuous rise in global greenhouse gases and biodiversity loss in oceans and forests, are major threats to environmental sustainability. Increased poverty and growing inequity remain a shameful reminder of the lack of fairness guiding political and economic systems, both nationally and worldwide.”

(Source: wikipedia.com )
IIED wants to demonstrate how a better understanding of power relations at local and national levels and their impact on property rights is essential to secure rights for local groups. Decentralised structures, locally designed rules and local governance provide a greater chance of equitable access and sustainable development in land. National policy needs to devolve powers and responsibilities to lower levels through legislation which strengthens local capacity.

The organisations all have a different focus but generally in all definitions the need of economic, social and environmental development is to be recognised. The Brundtland definition focus is about the harmony of all types of development and the present and future perspective. The ISSD says that creating sustainable development is possible by research and policymaking. Reducing poverty and promoting human development is fundamental. The special point of attraction for sustainable development by IIED is acting on different levels. So looking at a local, national and international level. Achieving sustainable development by creating decentralised structures, more responsibilities for local governance.

The three main divisions; social, economic and environmental are used very often and therefore I want to look at the next images. They all use the three spear points in their definition of sustainable development. What can be conclude from these models and how can they be interpret?

The first image shows what generally makes a development sustainable. When a development is focused on social and environmental development than it’s only bearable. Social and economic development is only equitable and environmental and economical development leads to viable development. Development is sustainable if all three spear points have been taken into account. It shows the most general definition which everyone can interpret their own way. With bearable they mean tolerable, liveable, and endurable. Equitable means union of actors to get fair play. Viable can be seen as feasible.

The second image talks about ecological, economic and community development. In this case ecological means environmental friendly, resource conservatism. Community means a social group sharing an environment with basic needs and equity. Economic development ask for economic growth. Economic and ecological together they call deep ecology which means processes in nature that establish environmental and green movements. This image explains the three spear points more explicit and divides them in ecological development, economic development and community development. In this case again the combination of the three types of development lead to sustainable development.

The third image talks about equitable, liveable and viable. Equitable means again social and economic development together. Liveable means social and environment, it’s an other word for bearable. And viable means environmental and economical development. So it’s the same model as the general first image. They used the same terms but reflected them on their own policies.

The company uses resources to apply and manage sustainable development, including cooperating and partnering with its stakeholders.

Sustainable is in their opinion, environmental studies and measures. Agreements with communities and energy efficiency.

The fourth image is different from the others because it doesn’t introduce the combinations of two types of development. They only talk about the sustainable development as a total there is no in between option. The sustainable development can be accomplished by using natural resources and protection the environment for environmental sustainability and the maintance of economic growth for economic prosperity and finally enhance the social progress and needs of everyone for social equity.

The image shows again the three circles but divides them in different themes, taking environment, economy and social again as the main spear points. But divides it specific in flourishing environment, with healthy ecosystems and supportive built environments. Vibrant and Society accomplished by supportive social networks and cultural values, education and a high literacy rate. The third is Prosperous Economy, reduced impact of diseases and injury. Increased emergency preparedness and response. Reduces pressure on the health care system. Social and environmental make the quality of life. Environment and Economy make healthy environments. Social and Environment make a better quality of life. All three together makes a healthy and sustainable community.

The agency includes the health aspect in the sustainable development definition. They believe that public health supports sustainable development and their economy contains only health aspects. Thereby it is a public health agency who believes that sustainable development is the best way to develop their health policies.

The triangle shows a gradient of the development types. It says that for sustainable development it needs to be in balance. Too much of an environmental approach will lead to less social and economic focus. The balance leads to sustainable development, thereby the image shows three types of process. For social equity negotiation processes are necessary, economic growth ask for a materialization processes and environmental sustainability ask for management processes.

So looking at the different images you can conclude that all organisations use the general definition and interpret them individually and add some specific attraction points. Like the health aspect or the resources and management. There a two images that have a different approach, first the image that doesn’t talk about the in between options, it only talks about sustainable development. I think that’s an important different, because in this image there is only satisfaction if sustainable development is achieved. And in the other images there are other options to achieve besides sustainable
development. Second the triangle image. It talks as well about the three spear points but adds an extra dimension: its focus on the harmony between the social, economic and environment aspect. Thereby I think it suits the best to my definition of sustainable development. I will explain that more in detail in the next chapter.
2 Practice examples of sustainable development

In order to create sustainable development the government, locals and organisations have to look at the entire framework of social, economic and environmental development and thereby paying close attention to the bigger picture, including the future generation.

As mentioned before sustainable development has three divisions, economic, environmental, and social. If sustainability is to occur it must meet these three divisions.

I will look at some examples of development and concluded if they are sustainable. First of all an area in the Philippines, commercial farming and logging of a forest were the main economic drivers for the government. They promoted farming and logging, but forgot to look at the bigger picture, the social and environmental aspect. The environmental degradation led to floods in 1991, normally the forest would have stopped the water. The social aspect was tremendous, the lives of thousand were destroyed. So this example shows that an economic growth vision only eventually leads eventually to economic decrease, because the land wasn’t able to use anymore and the people moved out.

In Madagascar the same was happening, people were cutting the forest to plant rice and cassava. The government noticed and came to the conclusion that something needed to be done. They have implemented a plan to “protect and improve the environment while working for sustainable development”. Socially a local education programme was introduced, why people shouldn’t cut the forest. Environmentally, they introduced national parks, tourist had to pay entrance and the locals work in the park, the money went to development projects for the community. So the environmentally introduced parks help the people socially and economically. In this case they looked at the future generation, by stopping deforestation and gaining job in the tourism branch.

An other example of ignoring sustainable development over the economic growth took place in Rusland. In the northern area were locals lived from fishing and haunting based on sustainable collective farming the government found oil. The government forced the locals to go to state schools and taught them to work on the oil fields. They lost their traditional way of living and were suddenly confronted with the pollution of the industry. So in this case people lost their social life and the industry caused environmental pollution all because of the economic aspect.

In Alaska they also found an oil field but for sustainable development this is a better example, here the resources were also found in places were locals were living. The people were living from haunting and fishing in the largest possible oil field of North America. The US made a native land settlements claim act that meant that native groups had a say in the possible land uses. The locals taxed all the oil made in the area and the companies made it possible for the locals to live in their traditional way. The locals as well made rules to control the pollution. In this example the social aspect was remained and the environmental aspect was in control. Economically everyone was profiting. But the future perspective of the locals is to be doubted, the industry can affect the future social life if they’re not careful and due to the prosperity probable people will join the industry or move to find a better living.

In every successful case of sustainable development the three aspects were met, economical, environmental, and social. In every failed project at least one or more aspects were missing. In the case of Alaska I miss the adaptation possibilities for the future generation, as an important ingredient for sustainable development.

3 Conclusion

Creating sustainable development generally is about considering different needs, which means creating a harmony between all types of development and thereby look at the present and future perspective. The three main types of development that need to be in harmony are social, economic and environmental. If one aspect is lacking the development is not sustainable.

Many people criticize the term sustainable development, because they claim that economic strategies based on concepts of growth will always lead to decreasing of resources and thereby never creates sustainable development. Other criticize the concept of sustainable development they say it implies limitations imposed by the present state of social and environmental resources and the future perspective. Other criticise the overuse of the word. (see textbox)

In my opinion the word sustainable development is used too often, it is indeed a trend word. Because a lot of organisations, governments want to create sustainable development, but actually they talk about it and still create “unsustainable development” not taking into account the future perspective or look at the harmonious of the developments. Of course creating an new urban area will lead to degradation of the environment, but its a need for the future as well. I think it is really hard to create real sustainable development, but it is really important to create a strategy or concept that looks at the harmony and different needs of the present and the future.
Sustainable development can be seen as a process of change in which the exploitation of resources and the orientation of development are made consistent with the future as well as the present needs. Of course, everything must rest on political will, but this creates a new discussion.

So sustainable development is a strategy to create sustainable urban areas, these areas should have adaptation possibilities, that functions efficient in a social, economic and environmental way on local and global level and has a friendly relationship with its surroundings.

I will explain this more in detail. Sustainable development is a strategy to create sustainable urban areas, these areas should have adaptation possibilities. So the areas have possibilities to change but the change has no consequences for future generations. In other words, an area that can change but maintains constancy in certain aspects. So the area is dynamic and stable! For example, you have a stone, a stressball and a ball of clay. First you take the stone and grip it in your hand. The shape won’t change. If you take the clay and grip it in your hand, it will never take its old shape back. And if you take the stressball and grip it than the shape will change but when you open your hand it will always take back its original shape. (see image)

This example shows a simplified explanation of a stable and dynamic urban area. The stone is stable but isn’t dynamic. The clay is dynamic but isn’t stable and the stressball is stable and at the same time dynamic. In other words in the example of the stress ball the development in harmony and looks at the future perspective!
For my graduation project I looked at the potentials and consequences of small scale development, which are developing nowadays. One (a) due to the cause of tourism, and the second (b) due to the government who implemented a road as well development by tourism.

In the first case (a) the tourists are only accessible by boat and to have to stay with a local family. The money gathered by the people is collected and will be used for agriculture and education purpose only. So the money stays on the island and is fairly regulated between the inhabitants, all inhabitants profit from the tourism and it gives the community the opportunity to develop in a sustainable way. Because the economic, social and environmental developments are in harmony, the community is dynamic and stable, self-sufficient, acting on a global and local level and the community looks at the future generation.

The latter (b), shows an example of an urban area made accessible by road, this road had many consequences for the area and its surroundings. Tourism easily entered the place and the trade of turtle eggs was possible due to the new infrastructure. Tourism and trade meant money and economical prosperity, which caused population increase and organisations came in for better housing and water systems. On the other hand these prosperity threatened the turtle population and caused deforestation in the area. So development is accelerating the process of degradation from the environment. This project looked like a sustainable model but because of the negative relationships with the surroundings the environmental aspect isn’t in harmony.

So finally I want to conclude that for developing an area you need to look for the potentials of an area, the require and desire of inhabitants and always keep in mind the interest of the locals. You can say that the area has to become a multidisciplinary area that is dynamic and stable, creates development that is in harmony and will act on a local and global scale and handles the environment with care and not specific at the term: SUSTAINABLE DEVELOPMENT.

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New Amsterdam is an historical site from the colonial era.
Taking a close look at the remains of a very important part of Suriname's history.

Afobaka Dam was made to provide the bauxite mining sites with energy.
Visiting one of the biggest technological achievements in Suriname.

Brownsberg is the centre of a preserved area, and a STINASU base to experience the Suriname's nature.
Experiencing the tropical forest and an important touristlodge made with an ecological perspective.

Brownsberg is the centre of a preserved area, and a STINASU base to experience the Suriname's nature.
Experiencing the tropical forest and an important touristlodge made with an ecological perspective.

Big Sand is a small shrimpfishermen village on the Atlantic coast.
Understanding life in rural Suriname, examining coastal development.

Poelwijk was a cocoa plantation, where the remains of the plantation era are still visible.
Possible connection to the Perica development, interesting area for historical reasons.

Perica is a small village located on the axis connecting the three Guineas.
Examining the main focus point on our research, talking to people, looking for opportunities.

Parabello is a mining site in rehabilitation state.
Looking for ideas and ways of living on a brown water kreek.

Moengo is the central city in Marowijne.
Interviewing people in important positions for the area's development.

Paramaribo is the capital of Suriname.
Living in the centre of all development and action, meeting people that hold strategic places.

Albina is the border city with French Guyana.
Understanding the flow of people and goods and how things work between the two countries.

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Moengo is the central city in Marowijne.
Interviewing people in important positions for the area's development.
Parakreek 1/2

Poelwijk 1/2

Perica

Big Sand 1/2

Afobaka Dam 1/2

New Amsterdam 1/2

Brownsberg 2

Moengo 1/2

Albina

St. Laurent 1/2

Galibi 1

Paramaribo 9

Poelwijk was a cocoa plantation, where the remains of the plantation era are still visible. Possible connection to the Perica development, interesting area for historical reasons.

Moengo is the central city in Marowijne. Interviewing people in important positions for the area’s development.

Afobaka Dam was made to provide the bauxite mining sites with energy. Visiting one of the biggest technological achievements in Suriname.

Brownsberg is the centre of a preserved area, and a STINASU base to experience the Suriname’s nature. Experiencing the tropical forest and an important tourist lodge made with an ecological perspective.

Albina is the border city with French Guyana. Understanding the flow of people and goods and how things work between the two countries.

St. Laurent is the border city with Suriname from the French side, it is European territory. Taking an idea on how is the situation at the other side, looking for possibilities.

Perica is a small village located on the axis connecting the three Guineas. Examining the main focus point on our research, talking to people, looking for opportunities.

Big Sand is a small shrimp fishermen village on the Atlantic coast. Understanding life in rural Suriname, examining coastal development.

New Amsterdam is an historical site from the colonial era. Taking a close look at the remains of a very important part of Suriname’s history.

Galibi is an Indian village on Marowijne River and the Atlantic where the leatherback turtles lay their eggs every year. Examining a successful example of both tourism and traditional living.

2-6 hours

5-10 days

2-3 days

6-12 hours

place + time spent in days
Suriname
Suriname
Suriname
Veneto
URBAN MODELS

The google images show images of the European models compared with Suriname pictures.

First the Randstad model, with the Green Heart compared with Suriname.

Second Suriname compared with the Ribbon development of the Vlaminh Diamond.

The bauxite leftovers in Moengo compared with the factory leftovers of the Ruhrarea.

And fourth the swampy areas in Suriname and the swampy areas in Veneto.
Hights of the Guyanas, the coastal areas are the lowestest areas. This is were the most people are living.

The Guyanas together create the Guyanashield, this shield formed the hilly areas.

Extra explanation can be found in the Catalogue, “Prosperith Village Perica; Urban Ecology”. 
Appendix E_urbanised areas

INHABITANTS GUYANA (>1000)

PARAMARIBO

LELYDORP

OVERWACHT

PARANAM

BROWNSBERG

LELYDORP

NEW AMSTERDAM

TAMAREDJ

NEW AMSTERDAM

GRONINGEN

WAGENINGEN

NICKERIE

CORRIVERTON

APOERA

ROSE HALL

NEW AMSTERDAM

GEORGE TOWN

KURUPUKARI

BARTICA

ITUNI

LINDEN

ITUNI

INHABITANTS GUYANA (>1000)
urbanised areas Of the Guianas, only areas populated by 1000 or more are shown.
Appendix E_population

INHABITANTS GUYANA (>1000)

250.000

2.500

4.700

15.000

29.000

250.000

15.000

2.500

6.000

11.000

12.000

6.000

1.800

2.500

1.800

15.000

2.500

12.000

5.000

7.000

1.200
Populated areas of the Guyanas, only areas populated by 1000 or more are shown.
Appendix E: Population Suriname

INHABITANTS SURINAME (>1000)
Populated areas of Suriname, only areas populated by 1000 or more are shown.
SOCIAL ECONOMICAL NODES
ACTIVITIES

The left images show the networks and the hubs in a scheme. You see the social economic clusters and the contributing and distributing nodes.

The image on the right shows an intervention possibility of the Dalian. Which is a Chinese company that wants to invest in the infrastructure of Suriname. They propose to upgrade 500km of the Surinamese network.

Because of the importance of the east-west connection and the connection with Zanderij and Paranam, I suppose these roads are going to be renewed first.
In the booklet the main east west connection was drawn as one big line. In this image you see how the main road is used.
There used to be two train tracks in Suriname. One going from Brokopondo to Onverwacht. This used to be for transporting bauxite, but is not in use anymore.

The second train track was built as well for the bauxite industry, but was never used.
USE AIR NETWORK

The air use of the three Guyanas. All three have a flight connection to Europe.

It is typical that all the countries have got the most connections with a country with the same spoken language. These connections refer to the colonisation period.

French-Guyana has got frequently flights with France. The country is still a department of France and is exporting a lot of goods to French Guyana. It is possible to eat an entrecote with French Fries in the country.
FLIGHTS INSIDE GUYANAS
The flight connections for the Guyanas. There are flights going from Suriname to Guyana and French Guyana. Both three times a week.

Guyana has got two important airports one near Georgetown, the capital and one in the inland. The first is for tourism and cargo, the second is mostly for touristic purpose.
Appendix E: Mobile Vision

Flights Inside Suriname
USE AIR NETWORK

Suriname has got one international airport, one national airport and 33 airstrips.

The two main airports are Zanderij International Airport, that is situated South of Paramaribo. This is the area where all international goods and tourists entering the country.

The second is Zorg en Hoop, which is situated in a neighborhood of Paramaribo. It is a small airport especially used to transport tourists all over the country.
appendix F_ social vision
country of origin inhabitants suriname
NATIVE LOCATION OF THE INHABITANTS

Suriname is a mix of all kind of ethnic groups. Because of the plantation period a lot of slaves from Africa entered the country and stayed.

After the slavery period the Javanese and Hindustanic people went to Suriname to work on the plantations.
Guyana GDP per capita: $4,600
Suriname GDP per capita: $5,683
French Guyana GDP per capita: $8,500
Suriname GDP 2005: $2.898 billion
Netherlands GDP 2005: $503.394 billion
French Guyana GDP per capita: $8.500
road conditions
ROAD CONDITIONS

Impression of the different types of roads and road conditions in Suriname. As well as the water and air traffic.
SARAWAK, MALAYSIA
124,450 km²
2,376,800 inh (19.1)
670 km

WESTERN SAHARA
266,000 km²
386,617 inh (1.4)
300 km

appendix G: structure plan
I looked at some case studies to know more about the infrastructure and networks of Suriname. I looked at Sarawak, Maleisie more in detailed, because in this case we deal with a high populated area that has one main road with some spines, the same is happening in Suriname.

Secondly I observed at the Western Sahara and Iceland to compare Suriname with a parallel network, which means a main road with a secondary road.

Finally I focussed on the route 66 to compare with the proposed Panamerican road. I concluded that a secondary road was great to destressing of the mainroad and it made it possible to make a roundtour, for example in the east of Suriname.
CASE SARAWAK, MALEISIE

KUCHING 882.700
SIBU 228.700
BINTULU 100.000
MIRI 300.400

appendix G_structure plan

192
I chose Sarawak to look at more in detail, because the area is highly populated and has only one main road going through the country and some spines going inland.

I looked at the types of landscape and concluded that the same is happening as in Suriname. The lowest part are more diverse by its landscape and this is as well the areas were the most people are living.

In Sarawak a lot of oil palm plantations are realised, I looked at the examples and concluded that all plantations were monoplantations, this is why I wanted the Suriname plantations to be different.

The roadnetwork in Sarawak works because all the cities along the road have got their own identity. It is a polycentric lineair system.
POLYCENTRIC NORTH COAST OF SURINAME

A graduation report about polycentric development in Suriname to generate the emerging development of the country.

The first two parts of the report show a summary of the first half year, for more details you can look at the catalogue “Prosperity village Perica; New Urban Ecology”.

The third part introduces the project and explains the methodology and the concept that are used to design the strategy and the structure plan. The plans are based on the vision made by the analyses of the country.

Two main projects are shown more in detail because they enhance the concept. The first project is about plantations and their investors. How you can implement them sustainable and secondly the tourism hub Zanderij, an emerging hub because of the networks. Finally the report concludes with a reflection about the project and the process.

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