DBSA Knowledge Week: Jozi Transport goes green

13 Oct 2011

Norman Qobolo
On the Menu

- The City’s Integrated Transport Plan
- COJ Transport’s approach to Climate Change (GDS on Transport)
- Matrix of green transport initiatives
- Green Fuels for consideration
- Summary on Rea Vaya BRT Project and its contribution to carbon emissions
Seven Regions with a population of more than 4 million people
Figure 78: CO2 emissions by energy end-users for 2007 (State of Energy Report, 2008)
COJ Integrated Transport Plan
“A safe and efficient transportation system, with a public transport focus, that will support a world class City; connecting businesses, people and places in a sustainable and cost effective manner and through this, improve the standard of living and quality of life of all the City’s inhabitants and the overall competitiveness and growth of the City’s economy.”
“A safe and efficient transportation system, with a public transport focus, that will support a world class City; connecting businesses, people and places in a sustainable and cost effective manner and through this, improve the standard of living and quality of life of all the City’s inhabitants and the overall competitiveness and growth of the City’s economy.”
Modes of land transport

- Public Transport
  - Public Passenger Transport
  - Minibus Taxis
  - Maxi Taxis
  - Buses
  - Rail – Gautrain, Metrorail
  - NMT Cycling and Walking

- Commercial Transport / Freight
  - Rail – Prasa
  - Heavy Commercial – Bulk Goods Transfer
  - Light Commercial – Small Parcels and Mail
COJ ITP Considerations on public transport

- Affordability – keeping public transport costs to households
- Convenience – accessible within 15 minutes walking distance and frequency
- Safety – a transport system with reduced crime, collision, injury, fatality and property loss rates
- Comfort
- Choice – a transport system that provides for choice in transport services
COJ Growth and Development Strategy (GDS)

Output 1: Sustainable and integrated delivery of water, sanitation, energy and waste.

Output 2: Eco-Mobility

Outcome 2: Provide a resilient, liveable, sustainable urban environment - underpinned by infrastructure supportive of a low carbon economy.

Output 3: Sustainable human settlements

Output 4: Climate change resilience and environmental protection
Programme 1: Public transport, walking and cycling
- Roll out of Rea Vaya BRT
- Walking and cycling (non-motorised transport)
- Travel demand management
- Integrated and transformed mass-transit systems (GCR) implications

Programme 2: Transport infrastructure and movement
- Freight / logistics management
- Implementation of “Complete Streets”
- Congestion management
- Transport infrastructure construction, upgrading and maintenance
- Intelligent transport systems
- Road safety

Outcome 2: Provide a resilient, liveable, sustainable urban environment - underpinned by infrastructure supportive of a low carbon economy
Lessons from the Transport GDS

- Considering a ‘green fleeting programme’ across the City (Metrobus, Rea Vaya, city fleet and possibly taxi industry) that can in an organised way relate industry players
- Integrated approach to green transport initiatives
  - Minerals and Energy - Regulatory framework
  - DTI Industrialisation Programme
  - Funding co ordination (Grants and debt funding)
  - Environmental Affairs - National Climate Change Committee
  - Economic Development – Enterprise and Skills Development
  - Business and Professional Associations
  - Labour
  - Cycle promotion programme
  - Disability
We believe that we should focus on a multi pronged approach to green fuels which should seek to optimally balance different sources of green fuels and transport. Eg

<table>
<thead>
<tr>
<th>FUEL/ENERGY TYPE</th>
<th>VEHICLE/INFRASTRUCTURE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio Ethanol, Bio Diesel</td>
<td>Eg Freight, buses (heavy vehicles)</td>
</tr>
<tr>
<td>Biogas</td>
<td>Minibuses, COJ Fleet</td>
</tr>
<tr>
<td>Electricity</td>
<td>Maxi Taxis</td>
</tr>
<tr>
<td>Solar</td>
<td>Traffic and Street Lighting</td>
</tr>
</tbody>
</table>
Biogas harvesting cycle

“Gas chain” from landfill site to gas pumps

- Landfill
- Capping
- Extraction
- Purification/filtration
- Compression
- Flaring
- Dispensing
- Transport

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Vehicle conversion to alternative fuels such as:

- LPG
- CNG
- LNG
- Bio ethanol
- Bio diesel
- Electricity

Gautrain
COJ Transportation initiatives

- Facilitate the establishment of local bus manufacture
- Approximately a fleet of 134 BRT buses and 25 metrobuses with CO2 emissions used in the evaluation criteria
- KFW COJ project to establish cycle lanes in Orlando
- Sidewalks in Ivory Park and Diepsloot to encourage walking amongst the community
- Solar Traffic Lights
- Possibility of solar operated bus shelters – 1400 bus shelters
- Solar operated street lights
- Using City Waste to generate biogas and use it for City Fleet
- Minibus Taxi conversions to Biogas
- Bio Ethanol/Diesel for buses and other heavy duty vehicles
Considerations for using green fuels

- Security of fuel supply – multiple supply points and possibility of additional backup of pipeline gas supply
- Reliability, efficiency and performance
- Excellent economics for vehicle owners
- Lower cost fuel for public transport – +ve impact on subsidies, ticket prices, improved service levels
- Excellent economics for the fuel producer with limited government subsidies
- Significant reduction in congested traffic pollution – dramatic reduction in more toxic pollutants (e.g. particulates, NOx and SO2) and associated illnesses
- Greenhouse gas emissions – CNG from renewable sources reduces GHG emissions by some 85%
A safe and efficient transportation system, with a public transport focus, that will support a world class City; connecting businesses, people and places in a sustainable and cost-effective manner and through this, improve the standard of living and quality of life of all the City’s inhabitants and the overall competitiveness and growth of the City’s economy.”
BRT works as a system with following key inter related components and assumptions:

- Dedicated lanes on significant sections of the network
- Clean high quality buses with high floor
- Automatic fare collection
- Private ownership of buses by public transport operators affected by introduction of BRT
- City to pay determined fee per km for determined number of kms
Rea Vaya and the Carbon Market

- Largest public transport project undertaken by the City
- Plan is to “roll out 122 km mainline BRT corridors served by 150 stations and 250 km formal feeder-routes...enabling access to 80% of City’s residents”.

- Voluntary market – VCS
- Over 380,000 CO$_2$e p/a
Full BRT network for Johannesburg approved by Council in November 2006

**Full Phase 1:**
122 km route
150 Stations
805 Buses
434,000 passengers per day

**Phase 1A:**
25.5 km trunk
27 Stations
143 Buses
70,000 Passengers per day
Phase 1A Soweto Feeder and Complementary Services
CBD distribution service

CBD DISTRIBUTION SERVICE VIA WITS, BRAAMFONTEIN AND HILLBROW
From March, increased the service offering to include:

- **Feeder Services**: Protea Glen and Naledi via Thokoza Park Station; Eldorado Park and Jabavu via Lake View Station and Mofolo via Boomtown Station
- **Complementary Services**: Dobsonville to CBD and CBD distribution Service

Services from 04:50 to 21:30 weekdays and 05:00 to 16:30 Saturdays. No Sunday and late night services.

- 38 articulated and 80 complementary buses in use
- Increased fees:
  - Trunk route moved from R5 to R6
  - To use feeder and trunk: R9.50,
  - CBD Distribution service: R3.50

- From 11 800 passengers per day to current 50 000 per day
- More than 900 trips per day
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Some important facts

- 100% Taxi owned service through Piotrans the Bus Operating Company (BOC)
- 322 Shareholders who were previously taxi operators
- BOC has 585 issued shares at R54,000 per share
- Over 200 drivers all previously taxi drivers
- Carries about 50,000 passengers per day
- Ticket price varies from R9.50 for longest distance to R3,50 for the Inner City route
- More than 900 trips per day
BRT Road construction

Services ‘in the mud’ at UJ
COJ BRT System
Phase 1B: Planned extension to the current trunk route to be completed by third quarter 2011.
Rea Vaya, We are going, Ons gaan saam

Thank you