The Trackless Tram and Lithium Valley - the next agenda...

by

Peter Newman
Thanks to the CRC Low Carbon Living for an amazing 8 years of support for CUSP....
Transport, Energy and Land Use – a personal and academic journey....
Getting data to compare cities - to see why some have fewer cars and better transit....

Rail vs road, density vs sprawl........

Global Cities Database on 100 cities.

1989  2009  2015

PETER NEUMANN and JEFFREY KENWORTHY

THE END of AUTOMOBILE DEPENDENCE

How Cities are Moving Beyond Car-Based Planning
Global growth now in rail ...

- 82 Chinese cities building metros and high speed rail between cities
  Shanghai 8m passengers/day
- 51 Indian cities building metros Any city over 1m.
- Middle east cities building rail for first time
Theory of Urban Fabrics – three cities exist in all cities. Need to respect and rejuvenate all three...different energy strategies in each
Most cities now want Rail Transit Fabric......rail and activity centres
ALONG COMES THE TRACKLESS TRAM.....
Electric. 70 kph. 300-500 people capacity

TRACKLESS TRAM in ZhuZhou
No tracks
$6m per km instead of minimum $50m
Linked to Local Shared Mobility
Autonomous Local Transit at Curtin - interoperability
### Characteristics of transit systems

The table summarises the key characteristics of Bus Rapid Transit (BRT), Light Rail Transit (LRT) and Autonomous Rail Transit (ART, or trackless tram) systems.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>BRT</th>
<th>LRT</th>
<th>ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed and capacity</td>
<td>✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>Ride quality</td>
<td>✗</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>Land development potential</td>
<td>✗</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
<tr>
<td>Cost</td>
<td>✓</td>
<td>✗</td>
<td>✓✓</td>
</tr>
<tr>
<td>Disruption to services and local economy in construction period</td>
<td>✓</td>
<td>✗</td>
<td>✓✓</td>
</tr>
<tr>
<td>Implementation time</td>
<td>✓</td>
<td>✗</td>
<td>✓✓</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>✓</td>
<td>✓✓</td>
<td>✓✓</td>
</tr>
</tbody>
</table>

Source: Author provided
GUIDE and MANUAL
- available on CUSP website
- next project will apply it to several places across Australia
Transit Activated Development

Developer-led transit

Transit Activated Development

Developer-led transit
The Trackless Tram...

• New generation technology with significant opportunity to reduce carbon.
• Enables integrated land development through finance options.
• Offers a dramatic opportunity to create a far less car dependent city
• Should be possible to build without requiring only-government funding but needs new partnerships.
• Requires lots of demonstrations as part of a new CRC......
The disruptive innovations changing our future cities......

2010 to 2016....according to IRENA

1. Solar grew by 66%
2. Wind grew by 30%
3. Batteries grew by 50%

And the annual rates keep going up...
Solar growth as cost drops – mass production China

Global cumulative solar & price

2010-2017 market data; @FSS_Au @ProfRayWills forecast av. 28% annual price decline 11Feb18

- Solar PV
- PV price c/kW

$US Price/kWh

GW

Battery growth as cost drops....

Global cumulative all batteries (EVs + storage) & price

2010-2016 market data; @FSS_Au @ProfRayWills forecast av. 28% annual price decline Update 14Feb18
Electric vehicles are growing globally at over 40% per year ...

Honda Zero Carbon Home
Will we run out of Lithium and other battery minerals?
Country reserves of key battery materials as a percentage of known global reserves
The New Energy economy needs metals...

Australia has a big role...
How we are taking this seriously....
Lithium Valley:
To become the California of the New Energy Economy
Also needs a new CRC....