



## **An Urban Public Transport Strategy for the UK**

Apart from a few Metro and conventional high-cost tram systems in the larger cities the principal form of urban public transport in the UK today is the diesel bus. There are a number of reasons why a significant proportion of these diesel buses needs to be replaced as soon as possible over the next decade. These include:

- Carbon emissions from traffic must be reduced and ultimately eliminated to combat climate change
- Toxic emissions from traffic must be reduced and ultimately eliminated for public health reasons
- Dependence on fossil fuels needs to be phased out as their cost and availability become increasingly volatile
- Energy efficiency must be given priority if we are to meet the growing gap between energy supply and demand
- In towns public transport needs to be made a more attractive alternative option to private cars in order to increase modal shift and avoid increasing congestion

The development of the new transport modes and fuels required to achieve these changes will involve additional expenditure. But such changes will not generate any compensating increases in revenue for manufacturers and operators. In the existing management arrangements there are inadequate market incentives to achieve these changes; and only new government initiatives and action can bring them about in the required time-frame. Government therefore needs to develop a strategy for replacing diesel buses with more efficient, non-polluting public transport which will encourage modal shift away from private cars. Such a system needs to be rail-based, in order to benefit from the low rolling resistance of steel wheels on steel rails, which can reduce energy consumption by as much as two thirds. Autonomously powered light trams, with no external electrification, equipped like modern buses with an on-board power source, a hybrid drive train and regenerative braking, can provide the most energy efficient and popular form of low-cost public transport, whilst reducing energy consumption and carbon and toxic emissions to the lowest possible level. The rail infrastructure for such systems can be laid quickly and cheaply, with minimal urban disruption.

One of the most obvious alternative sources of transport fuel is the sewage and other organic “wastes” generated by urban populations. It is essential that these materials are recycled anyway in order to capture and use the methane they will otherwise emit into the atmosphere, where it causes 25 times more damage than carbon as a Greenhouse Gas. A number of towns such as Lille and Stockholm have already successfully pioneered the production and use of biomethane as a public transport



fuel. Biomethane powered engines reduce noise, eliminate net carbon emissions and minimise toxic emissions. There are over 7 million vehicles powered by “natural gas” operating around the world today. Biomethane and “natural gas” are interchangeable, so that conversion to renewable fuel can take place progressively as biomethane production increases. A recent report has shown that in the UK it is possible to produce enough biomethane from “wastes” to provide 16% of total transport fuel requirements. This is more than enough to enable all new urban public transport in the UK to be powered from this source. The change would greatly enhance energy security in urban areas, providing immunity from power cuts and disruption of fossil fuel supplies. Modal shift would also increase, maximising passenger kilometres per unit of energy, as ultra light trams replaced buses.

The process of converting public transport to run on biomethane will take many years. It needs to start now. Buses are normally amortised over 5-8 years so they can be progressively replaced by ultra light trams, which should normally last at least 30 years. As anaerobic digestion plants for recycling organic waste come into production Compressed Natural Gas (CNG) can be progressively replaced by biomethane. Gas engines are quiet and biomethane produces no net carbon emissions and virtually no toxic emissions. The cost of providing incentives for this conversion process can be met relatively painlessly and cost effectively by progressively switching the current £1 million daily subsidy for diesel fuel for buses into subsidising the cost of installing new light rail systems, new ultra light trams and new anaerobic digestion plants.

This is a practical, attainable programme which will drastically reduce methane, carbon and toxic emissions; improve the quality and popularity of public transport; save lives by purifying air quality in urban areas; reduce overall energy demand and lower the long-term cost of public transport by using trams that last for 30 years. There are no technological obstacles to implementing this programme – the technology exists and is fully proven. Progress is hampered by inertia, lack of ambition and difficulties with existing institutionalised funding arrangements, which do not exist in some other countries. However there is an urgent need now for a Government funded development and demonstration programme. The programme needs to be started now as an insurance policy against disruptions in fossil fuel supplies and as a means of tackling global warming. It will also have the political advantage of providing the public with the transport they prefer at a modest, affordable cost.