

QUICK WINS

EXECUTIVE SUMMARY

Overview of Quick Wins implemented by partners
in the public transport field

June 2011

THIS PUBLICATION IS A PRODUCTION OF:

The “TICKET TO KYOTO” project - www.tickettokyoto.eu

The partners of this project are:

- STIB (Brussels, Belgium) as lead partner
- TfGM (Manchester, UK. Formerly GMPTE)
- moBiel (Bielefeld, Germany)
- RATP (Paris, France)
- RET (Rotterdam, The Netherlands).

The Ticket to Kyoto project is co-financed by the INTERREG IVB North West-Europe Programme.

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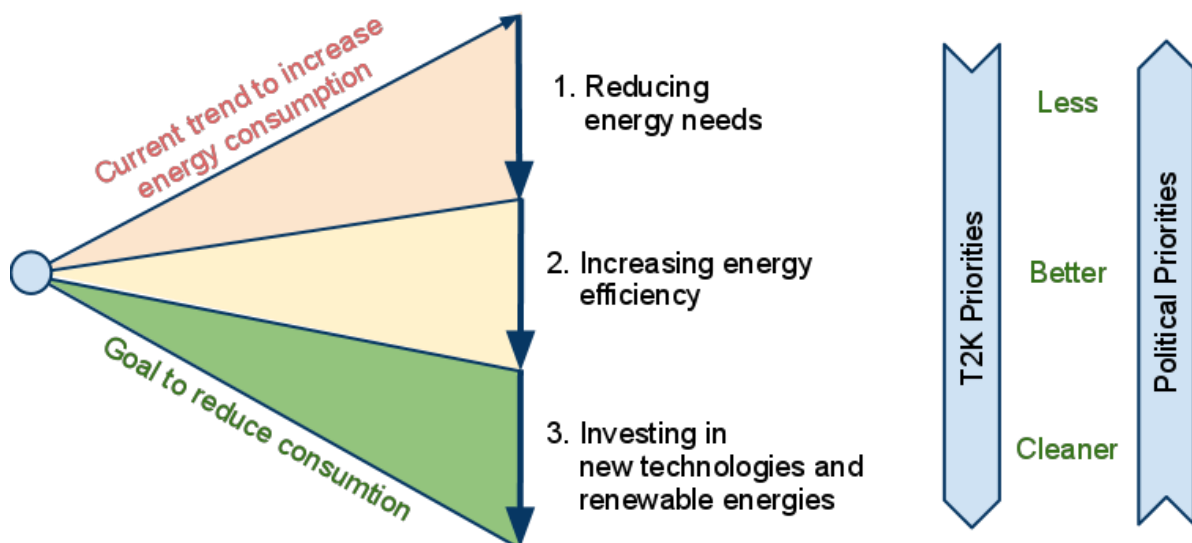
Executive summary

Five European public transport companies have joined forces to reduce CO₂ emissions in public transport. Their actions are centralized through a European project, Ticket to Kyoto (T2K - www.tickettokyoto.eu) that mobilises public transport companies and their stakeholders to take action against climate change.

The objective of this document is to provide details of the Quick Win projects implemented by the Ticket to Kyoto (T2K) partners. A Quick Win is an action to reduce energy consumption and characterized by a short return on investment. With this publication, the T2K consortium aims at enabling partners and other stakeholders in the public transport sector to replicate the projects that are most suitable for them and thus reduce their own CO₂ emissions, supporting the Ticket to Kyoto programme objectives.

The Ticket to Kyoto project objective is to reduce energy consumption and CO₂ emissions by public transport companies. To achieve this objective the partners have considered and are implementing three strategies:

1. To reduce the energy demand of the company.
2. To invest in improvements to energy efficiency.
3. To invest in new technologies and renewable energies.



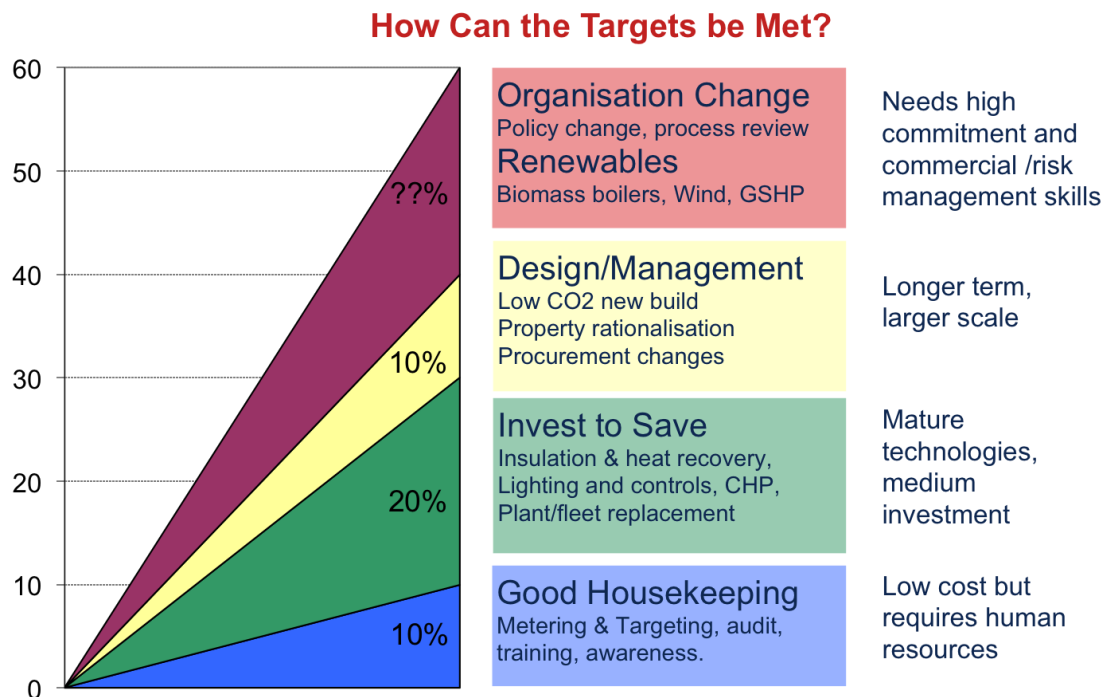
The first two strategies can be considered to be Quick Wins. They can be achieved by implementing energy saving and efficiency measures, for example: switching off unnecessary lights automatically, temperature controls, the automating of energy related systems, introducing new technical solutions, achieving employee behavioural change and by making changes to rolling stock usage. These strategies are able to deliver energy and cost savings, full details of which are contained in this report and an outline of examples is provided later in this Executive Summary.

The third strategy is longer-term and requires more significant investments – details of the projects undertaken by partners in this area are presented on www.tickettokyoto.eu. While the T2K partner companies have been considering and implementing their own strategies prior to the T2K project, these efforts have been stimulated by the collaborative analyses done in the first part of the project.

Definition - A Quick Win is a project that:

- will lead to energy reduction
- has long-lasting effects
- has a return on investment of < 1 year (Class A) or < 5 years (Class B)
- has an implementation period of less than one year
- can measure or estimate the levels of energy reduction
- can be replicated.

The graphic below describes the activities, gains and investment to achieve energy savings.



The partners have delivered a variety of Quick Win projects, which have been detailed within five broad themes, being:

- Maintenance
- Energy management
- Behavioural change
- Energy efficient investments
- Technical improvements.

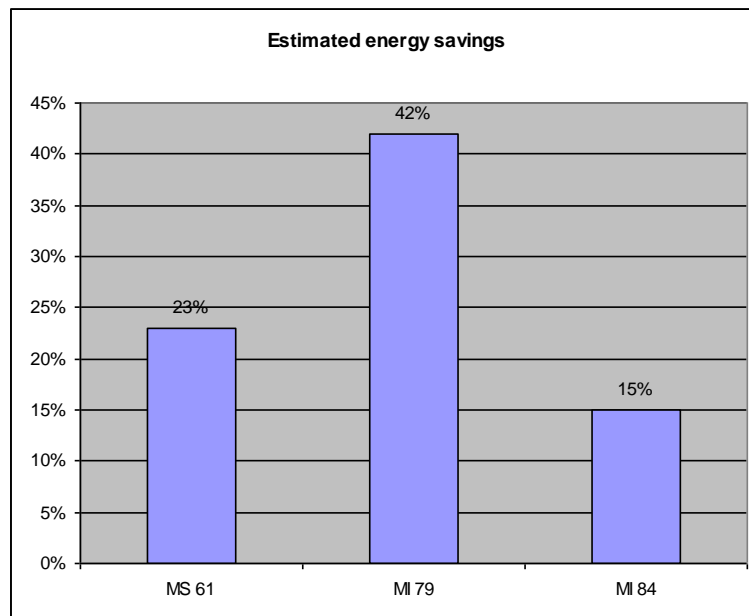
In this document, each project has a description of its purpose, summarises the prerequisites to enable the project to be implemented together with details of implementation mechanisms and the impact of the project. The full report includes contact details for project personnel at each of the partner companies and a glossary of resources and additional supporting information.

Many of the Quick Win projects are already showing cost and energy savings. Examples are provided with the outline project descriptions shown below.

Maintenance

The Maintenance themed project is from RATP. This project concerns the heating in rolling stocks: the set point temperature was reduced from 18 degrees Celsius to 15 degrees Celsius. While reprogramming the set point temperature, some temperature sensors were found to be defective and consequently replaced. By ensuring temperature consistency across all cars in three different types of rolling stock and thus being able to reduce the set point temperature requirement, significant energy and cost savings were achieved.

The estimated energy savings for each of the three different types of rolling stock is shown in the figure below:



Energy management

The first Quick Win in this section is from RET and relates to gas heated buildings. The objective was to monitor and then reduce gas consumption across the seven RET buildings. The project involved monitoring gas consumption and a staff awareness campaign, moving towards reducing the gas heating to working hours only on days when the external temperature was below 15 degrees Celsius.

This project aimed to deliver a 25% saving of gas consumption, a saving of 0.625 m3 gas (5,831,250 kWh) from a total of 2.5 m3 (23,325,000 kWh). The project has achieved a reduction of 0.5 m3 (4,665,000 kWh) in year one with a cost reduction for the company of 200,000 Euro.

Note: the conversion from m³ gas to kWh uses the Brussels standard calorific value for 1m³ of gas equalling 9.33kWh energy use measured at 0 degrees and 1 bar of atmospheric pressure.

The second Quick Win in this theme is by TfGM and concerns automated metering for electricity consumption. TfGM identified which electricity meters across its sites needed to be replaced by 'smart' meters – 'smart' meters are able to provide half-hourly usage readings which can be downloaded for monitoring and analysis. The smart meters were used to provide statistical data of electricity usage across the TfGM estate to help identify where savings could be made by reducing the energy usage.

Behavioural change

The first project under this theme is from moBiel and involved the training of bus drivers. The drivers received on-the-job-training in how to drive more economically and environmentally efficiently. New equipment was installed in the buses that enables the bus drivers to measure their driving efficiency and allows the company to monitor the effects and outputs. The training included a theoretical section as well as the practical driving session.

It is anticipated that this Quick Win, through training and behavioural change will result in 10% savings (3,528 Euro per vehicle per annum) due to improved and more efficient and economic driving, this will also deliver a CO₂ reduction of some 660 tons per annum.

The second project on Behavioural change is by TfGM. As part of a package of staff energy awareness, TfGM held an Energy Week. Information pack were provided to sites providing them with details of their energy usage, tips on how to save energy (such as turning computer monitors off at the end of the day rather than leaving them on standby) and details of how to report energy wastage. A competition was held between bus stations to see which site could save the most energy during the week. Posters were displayed throughout the estate buildings and information seminars held. Prizes and a company 'thank you' were used as incentives to motivate and encourage staff.

The third Quick Win in this section is from STIB who delivered an 'Energy Challenge' project. It is important to have an energy accounting system so that measurements can be made and benchmarks established to assess the impact that different actions have on energy reduction. Various communications methods are used to inform and involve the employees about the energy challenge and prizes are offered as motivators.

Energy efficient investments

The first Quick Win project in this section is from RATP. The company committed to meeting the energy policy targets set out in 'Grenelle de l'environnement' to reduce energy consumption by at least 40% and greenhouse gas emissions of at least 50%. RATP identified the RATP Headquarter building as being the highest energy consumer site and the first actions were therefore taken in this building. A number of steps were taken including improvement of the ventilation system regulation, replacement of more than 1,000 ventilators, staff training, LED relighting and presence sensors installed and more efficient temperature regulation. These changes resulted in substantial energy and cost savings, markedly above expectations.

The initial investment for the temperature regulation element of the project was 597,000 Euro and estimates of potential savings were made, being: 1,200,000 kWh, 98 teq CO₂ and around 80,000 Euro per annum.

The achieved savings, over 20 months were: 6,750,000 kWh, 598 teq CO₂ and a cost saving of 483,000 Euro. This demonstrates a huge saving in energy, emissions and costs and the measured return on the investment is two years.

The second project under this theme is by moBiel and delivered substantial cost and emissions savings by replacing existing lighting in an underground station with more efficient fluorescent lighting units. The replacement installations were undertaken during regular maintenance work and the new lights expanded the maintenance period from two to four years.

Through an initial investment of some 25,500 Euro (not including on-going materials and maintenance costs) it is estimated that this investment will be recouped within 5-6 years and will achieve cost savings in the region of 5,300 Euro per annum and a reduction in CO₂ of 11.06 tons per year.

Technical improvements

The first Technical improvement Quick Win is from RET. This project reduced the number of metro cars forming each vehicle during off-peak periods. An analysis of passenger numbers using the metro at different periods was conducted and identification of the number of cars required during the peak and off-peak periods established. This enabled the number of cars forming each vehicle during off-peak periods to be reduced from four to one, thus delivering fewer metro kilometres, lower maintenance costs and reducing the energy traction consumption.

The second project in this section is from STIB. This project involved reducing the maximum authorised speed of metro vehicles from 72 km/h (high speed) to 60 km/h and 50 km/h instead of 60 km/h. It is possible to override these limits if delays are occurring on the network and an additional metro was also able to be added to the system to compensate for the slight delay by the metros travelling slower. This action has resulted in improved regularity of the metros and an energy reduction of 15% of the traction power required.

This project had an investment budget of 35,000 Euro for the training and technical measuring equipment and has achieved substantial CO₂ reduction, energy and cost savings totalling:

- 3,900 tons of CO₂ per year saved
- 14 GWh per year of energy saved
- 1,777,000 Euro per year saved.

The final Quick Win in this section is from moBiel and details a project for replacing manually closing bus garage and bus depot doors with an automated door opening and closing system. The benefits from automating the doors are that time is saved by not requiring a manual opening and closing, the time taken to open and close the doors is significantly reduced which then results in a reduction in air exchange. By lessening the air exchange energy savings are made by reducing the need to re-heat or re-cool air during winter and summer.

Conclusion

These projects are all covered in more detail in the full Quick Wins Report and further information can be obtained from the five partner companies. It can be seen that the projects vary in terms of scale, resources and costs but all have had a positive impact on reducing the energy consumption and CO₂ emissions by each partner. Further Quick Win projects are being explored as part of the Ticket to Kyoto programme and additional details will be made available.

Of course, not every Quick Win project will be suitable for every company involved in the public transport sector. It is important that the most suitable solution is identified for each company, but whilst the exact detail for each project contained in this report may not fit, the ideas themselves and the approach taken may provide stimulus for others to take a similar course of action.

It is also important to recognise that projects of this nature need the support and buy-in from senior management to allow the initial investment and to enable the projects to progress. Many of the projects will also require significant buy-in from employees. Changed working practices, additional or new training may be required and methods of operation updated. It is important to ensure effective and timely information to maintain support and ensure continued motivation.

However, it is also the case that for many projects of this nature, it is possible to integrate the changes into the normal working practices of the company thus ensuring continued rather than one-off, successes in reducing emissions and securing savings.

Many of the ideas considered and implemented have come about through employee engagement and the development of their ideas, rather than from a top-down approach. This report clearly demonstrates that Quick Wins can be exactly that. The projects detailed in this report can be achieved at comparatively low cost, with short implementation timeframes and a return on investment usually lower than one year and up to five years. These projects deliver energy reductions and cost savings which have a long-term impact.

The Ticket to Kyoto partners are keen to receive feedback about the Quick Wins outlined in this Executive Summary and detailed in the full Quick Wins Report and about ideas and projects that come from other public transport companies. Feedback can be provided through the Ticket to Kyoto website at www.tickettokyoto.eu.