

Global Insight's Automotive Group has undertaken a number of projects that address the issues regarding the ability of the industry to develop the means by which mobility can be ultimately sustainable.

Some examples of our experience are given below:

ALTERNATIVE SCENARIOS FOR THE EUROPEAN REGULATORY ENVIRONMENT

Global Insight developed three alternative scenarios of market performance; various levels of achievement of CO2 objectives under the voluntary agreements of ACEA, JAMA, and KAMA; and the likely response of the European Commission. Hypotheses were developed for each scenario, which were subsequently tested through discussions with European regulatory and industry organizations. Our client received a set of likely futures that enabled it to prepare appropriate responses in advance of the 2008/09 performance deadlines.

INTEGRATED APPROACH TOWARDS CO2 REDUCTION

In support of an assessment of the potential for a global, integrated approach to reduce net CO2 emissions from the in-use fleet, Global Insight examined prior programs and/or proposed initiatives undertaken anywhere in the world that influenced traffic management, transport infrastructure, and/or consumer/driver behavior. Global Insight identified potential investments and/or initiatives that could reduce car-related CO2 emissions. Marginal costs of CO2 emission reductions were determined for each of these investments/initiatives. Global insight further identified methods to measure the CO2 reductions of these investments/initiatives, along with their cost-efficiency elasticity ratios, and identified options to contribute to these initiatives.

ASSESSMENT OF PROGRESS TOWARDS THE CO2 GOAL

Global Insight quantified the contributions of all the influencing factors on the CO2 output of passenger vehicles sold in Europe. The impacts on CO2 emissions of fiscal incentives, consumer information programs, vehicle technology developments, market preferences and safety standards were assessed. Global Insight's analysis indicated that technological progress resulted in a significantly greater gain in vehicle efficiency than had been apparent due to the offsetting impacts of market preferences for more powerful, more fully equipped and safer vehicles as well as regulatory requirements, all of which add mass and/or parasitic loss to the vehicle.

THE VIEW FOR 2025: THE FUTURE OF THE AUTO INDUSTRY

This assessed the growth of the global automotive industry through the year 2025, assuming no changes from the present evolutionary trajectory. Normal economic development and its concurrent need for mobility and demand for both commercial vehicles and private automotive transportation was analyzed to assess the apparent sustainability of-or lack thereof-that trajectory. Implications of that growth on greenhouse gas, manufacturing capacity, fuels, and vehicle technology were indicated, and the differences between developing and developed nations assessed. Three distinctly different classes of vehicles were expected to evolve based on affordability, environmental, and competitive factors.

FUTURE POWERTRAIN TECHNOLOGIES: THE NEXT GENERATION

Two landmark multiclient studies, one for light-duty vehicles and one for heavy-duty, assessed the likelihood of the various alternative powertrain technologies achieving technical and market success in the 2007/08 to 2025 timeframe. First, they determined the technical readiness and commercial viability of advanced powertrain technologies (hybrids, battery-electric, fuel cells, SIDI, HCCI (CAI), highly boosted and downsized auto cycle engines, and transmissions). They then developed three reasonably probable and internally consistent alternative scenarios of emissions, fuel economy (CO₂), oil price, and economic conditions. The likely market share of each technology was forecasted under each scenario. In the light-duty case, the winning technologies were those assessed as lowest risk, lowest cost. For heavy-duty vehicles, a lifecycle cost model was developed to assess the impact of various engine and emission-control strategies on ownership costs and payback period. The technologies exhibiting the lowest lifecycle costs were selected as the technologies of choice for each of seven different heavy truck vocations. These studies are being widely used by suppliers and OEMs alike for business and technology planning purposes, and by regulators to assess the impact of alternative emissions standards on vehicle technologies.

POWERTRAIN TECHNOLOGY STRATEGIES, 1995-2010

This involved developing an overall forecast for light-vehicle powertrain technology trends through 2010 by conducting in-depth interviews with selected vehicle manufacturers in the United States, Europe, and Japan, together with major component suppliers and specialist R&D organizations. The results have been used by vehicle OEMs, as well as engine and transmission component suppliers to guide their long-range technology and business planning.

THE ROLLING AUTO PLASTICS INVENTORY: QUANTIFYING THE ISSUES

Presented to the Society of Automotive Analysts, this paper examined the rate at which various plastics will become available for recycling as the vehicles they are part of enter scrap yards. Global Insight's analysis indicated that 1) at reasonable recovery rates, the supply of recyclable plastics will exceed the likely ability of the industry to re-use the materials unless new processes or post-consumer alloys are developed; and 2) if the new plastic components contain 25% recycled resins, the annual demand for virgin automotive resins in 10 years will be roughly equal to that of the prior decade.

EUROPEAN EMISSIONS CONTROL AND AUTOMOTIVE FUEL USE

This report assessed the consequences of the so-called "Luxembourg Compromise" legislation of 1985, which, for the first time, introduced severe controls on vehicle emissions (NO_x, HC, CO) in the EC, as well as brought about the introduction of unleaded gasoline. For each country, projections were made of vehicle fleet by engine size, fuel type, and consequent emissions-control technology under two scenarios of diesel penetration through to the year 2000. These results were processed further into detailed fuel consumption forecasts, which were input into refinery models to assess possible impacts on fuel supply, quality, and price. The report correctly predicted that some European countries would force the pace of new legislation, leading to the universal adoption of three-way catalytic converters in Europe by the mid-1990s.

LIFECYCLE ENERGY USE OF ALTERNATIVE AUTOMOTIVE SHEET MATERIALS

In this project, funded by the AISI, the authors researched the lifecycle energy consumption of the production and recycling of various automotive sheet materials (various steel and aluminum alloys, as well as plastics and composites) and compared those energy costs with the in-use energy savings afforded by using materials other than traditional automotive body sheet steel. Parameters as to the amount of weight savings that must be obtained from the use of each material were developed as a design guide for the applications of various alternative materials in order to achieve net lifecycle energy savings.