

Baseline analysis report

Summary

This is the summary of a report from the Intelligent Energy Europe action RECODRIVE (Rewarding and recognition schemes for energy conserving driving, vehicle procurement and maintenance). The report contains the results of the Framework analysis and Specification of the working hypothesis. This work is made up of the four baseline analyses covering:

- Financial and legal issues
- Human factors
- Quality management schemes
- Effect of on-board devices on fuel saving

Financial and legal issues

An overview of legal and financial issues relevant for fleet management is given. The legislation for privacy protection connected to processing of personal data is then covered, incl. EU Directive 95/46 and the European convention on Human Rights. The specific conditions and existing pilots of ecodriving, fleet management and logistic optimizing, as well as an analysis of possible legal enabling regulations, barriers and collective agreements in the RECODRIVE countries is also presented. Finally, the regulation EC no 561/2006 and 2002/15/EC on driving and rest time is described in terms of its RECODRIVE relevance.

From this overview, RECODRIVE appears as an innovative project in a field where only a few pilot projects are being realised in Europe. The collective agreements define rights of drivers and other employees, such as privacy aspects and also establish driving and rest time rules. All Member States in Europe have an independent authority for the protection of personal data and privacy.

Based on results from a survey of RECODRIVE companies reductions of total costs will reach at least 1.5% for more than half of companies reaching up to more than 3% in some cases.

Human factors

In this analysis the focus is on theories of motivation, leading to a closer look at different ideas for rewarding and recognition schemes. Existing experiments and practises with rewarding programmes, as well as cultural differences between countries are covered. The results are summarised in The *Ten Commandments* for introducing rewarding schemes:

1. Theories of motivation clearly indicate that **involvement** is a success-factor. This should be a combination of a top-down and a bottom-up process. It is on the one hand important to involve employees at an early stage; at the other hand the rewarding program must be embedded in the company's management, e.g. through strategic plan(s).



2. The distinction between **extrinsic and intrinsic motivation** should be reflected upon. *Extrinsic motivators* can have powerful effects, but it would not necessarily last long. *Intrinsic motivators*, on the other hand, are likely to have a deeper and longer-term effects because they are not imposed from outside. An extrinsic reward is external to the person, e.g. financial rewards. Intrinsic rewards, on the other hand, are internal to the person. By being internal it refers to such aspects as *satisfaction and accomplishment*.
3. There is no universalistic rewarding scheme. Therefore there must be defined a **local image of the problem**, and there must be a mutual understanding of the problem(s). This is called *contextual and culture fit*: The design of reward processes should be govern by the contexts. “Best fit is more important than best practice.” A reward must be *conceived as a reward* if it is to have any effect. And what is conceived as a reward depends of course of the context.
4. Be prepared of **implementation-challenges!** Although the literature argues that contribution-based rewards are preferable, it must be guided by thoroughly consideration of the conditions for implementation. Be consistent in the way you weight justice vs. complexity; cost and continual adjustments and changes.
5. The rewarding and recognition scheme must take into account **the cultural differences**. This regards especially the indexes of masculinity and uncertainty avoidance.
6. The rewarding process should include both **distributive and procedural justice**. Distributive justice refers to *how* rewards are provided to people, and procedural justice refers to ways in which managerial decisions are made and reward policies are put into practice, e.g. that the viewpoints of employees is given consideration.
7. The rewarding process should be characterized by **equity, consistency and transparency**. Equity means that people are rewarded appropriately in relation to others within the organization; consistency implies that decisions do not vary arbitrary; transparency exists when people understand how reward processes function and how they are affected by them.
8. Be aware of the **tasks’ characteristics**. If the task needs close and intimate coordination with others, a low reward differential is preferable. If the tasks don’t require coordination and cooperation it can be preferable with high rewarding differentials.
9. **Non-monetary rewards** might be difficult to valuate. There is also a considerable challenge according to taxation – which is different from country to country.
10. The results from a preliminary study show that **economic rewards are considered to be most suitable for the RECODRIVE-companies**. However it is a clear tendency that bonus-systems *are more* appropriate than result based wages.

Quality Management Schemes

This analysis covers different quality management schemes, such as environmental management schemes or integrated management systems. From the analysis it is found that ISO 9001 and ISO 14001 are the most popular international standards, in terms of quality and environmental management. Eco-Management and Auditing Scheme (EMAS) applies mainly



to organizations with larger scale environmental impacts and so it is usually not applied in organizations of the transportation field.

ISO 9001 contains requirements related to machinery procurement, maintenance and employee training. In terms of environmental impacts assessment and improvement, the procurement, maintenance and drivers' training processes must be planned and implemented with regards to elimination of fuel consumption and emissions. Integrated quality and environmental management systems must aim both on the performance and the continuous improvement of the organization, with regards to the customer satisfaction, and on the elimination of the environmental impacts of the transporting organizations' operation.

RECODRIVE project outcomes, in terms of methodology for achieving reduction in fuel consumption can be useful in achieving goals related to the Quality and/ or Environmental Management Systems. RECODRIVE principles can be applied into the existing environmental or quality management schemes.

Effect of on-board devices on fuel saving

An extensive list of on-board devices for fuel saving is compiled. The available number of on-board devices for fuel saving on the market is increasing rapidly. There are however large differences in the requirements that are expected to be satisfied by the vehicles. Public transport ranges from ski buses in the Austrian Alps, where skiers need to be transported up to high elevations (3000 metres above sea level), to the inner city transport in a Dutch city for example. All devices included in the list contribute to a reduction of fuel consumption. The decision of which on board device is being implemented therefore depends on the state of the art, the objectives and the specific circumstances of the company applying them. As a final remark it is to say that the ideal on-board solution which combines all features does not exist yet.

It has been concluded that practical tests show a savings in fuel consumption of 5-25% without increasing the travel time. In contrast sporty driving increases fuel consumption by more than 30%. The question whether the implication of a price mechanism (rewarding concept) in cooperation with an on-board device or other measure is useful, is being discussed. It is strongly recommended that in conjunction with a pricing mechanism, driving alternatives (e.g. routes, time of day) should be provided in order to use the full advantage of pricing in a fuel-efficient support tool:

“A pricing mechanism stimulates drivers to travel less. The consequence is a reduction of accidents and an improvement of the traffic safety...An improvement of the fuel-efficiency by avoiding congested areas is a positive side effect...Reducing the absolute number of kilometres driven leads to an overall reduction of congestion due to traffic jams, which thus also improves fuel efficiency.”

(From P.J. Feenstra and A.R.A. van der Horst: *Literature review of in-vehicle support for fuel-efficient driving related to pricing mechanisms*. TNO-DV 2006 D216. TNO Defence, Security and Safety, The Netherlands.)

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