COPY – PASTE POLICIES

Analysis of transferability of successfull policies related to alternative fuels and alternative automotive concepts in transport

A report compiled within the European research project

Deriving effective least-cost policy strategies for alternative automotive concepts and alternative fuels-ALTER-MOTIVE

Intelligent Energy – Europe (IEE), STEER
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Abstract

The aim of this study is to support policy makers in developing and improving policies that support the use, technology development and implementation of alternative fuels and alternative fuel technologies via the transfer of existing successful policies. Based on data collected via a questionnaire a set of 113 policies on local, regional and national level are analysed. Outcomes of this analysis provide insights what policies are successful according to the respondents, the characteristics of these policies (the fuels and fuel technologies they target, the policy instruments they consist of, the phase in the fuel chain they target, the elements that could be transferred, etc) and the external factors influencing the success of these policies (the economic and financial factors, social and environmental factors, technical factors, cultural and demographic factors). The insights gained are translated into recommendations for policy makers in the format of a four step approach for developing new or improved policies based on the transfer of existing policies.

Contents

List of tables

List of figures

Summary for policy makers

Many successful policies to promote alternative fuels and fuel technologies exist in the EU on different policy levels. These are an important resource in the development of new policies. On first sight, the easiest way to make use of existing policies is to copy and apply them in another situation. This transfer of policies is an efficient way to create new policies because experiences from others can be incorporated, shortcomings can be improved and time for reinventing the wheel is saved.

Many factors influence the success of policies. In order to transfer a successful policy to another situation (another geographical location or other fuel (technology)) in which it has the same effect requires that these factors are similar to the original situation. The factors influencing the success of policies are diverse. They include the type of fuels or fuel technologies that are targeted by the policy, the policy instruments the policy consists of and external factors (economic and financial, social and environmental, technical and cultural and demographic factors) which form the context.

Investigating the transferability of a policy therefore includes the analysis of these different factors. This can be done via the following four step approach developed in this study to support policy makers in the development of new or improved policies that are based on existing policies.

1. A first step is to define the aim of the new policy, the impact that it should have, e.g. have citizens buy more electric cars, or sell more biofuels.
2. A second step is to investigate what policies currently exist in other situations (other countries, or other technologies) that are / have been successful in reaching similar aims. This can be done by investigating the 'successfulness' of policies in terms of effectiveness and efficiency of reaching the objectives. Only policies that fulfill these two requirements sufficiently are eligible for transfer.
3. Once one or more policies eligible for transfer are found, a third step is to investigate in detail the elements that influence the success of these existing policies. A combination of elements influences the success of each policy. This combination of elements is unique in every case and consists of:
   - The *external factors* that cannot be influenced (easily) by the policy maker. These include financial and economic factors, social and environmental factors, technical factors and cultural and demographic factors.
   - The *characteristics of the policy* that can be influenced and changed by policy makers. These include the objectives, the fuels or fuel technologies targeted and the policy instruments it consists of.

     The external factors should be investigated first. Only when these are similar to those in your own situation, the chances for successful policy transfer increase. When these are not similar, little chances for successful transfer exist and we recommend to look for other policies with more similar external factors.

     When the external factors are similar to your own situation you can continue with investigating the characteristics of the existing policy. These characteristics are the base for your new policy.
4. In the fourth step you can design your new policy based on the characteristics of the existing policy which is eligible for successful transfer based on the previous steps. This design should be based on a detailed investigation of what elements of the existing policy can be transferred (whole policy or only the policy goals, structure and content, instrument, administrative techniques, institutions involved, ideas, attitudes and concepts, etc). The parts that cannot be transferred should be replaced by others.

1. Introduction

To reduce the dependency on fossil fuels and to reduce emissions in the transport sector, countries worldwide stimulate the development, distribution, sales and use of alternative fuels (AF) and alternative automotive technologies (AMMT). This stimulation is often translated in specific policies on the local, regional, national and supra-national level. Because most governments do not have a long history in the development of policies on this field[1], there is limited experiences to learn from. Knowledge must thus be gained from other sources including lessons learned from experiences of other governments with more and less successful policies related to the field of alternative fuels and alternative fuel technologies. Incorporating these lessons effectively can result in successful policies. This copying and pasting of policies to other situations looks simple, but implies some risks as well. Things can go differently as expected when the circumstances in which a policy is implemented differ, resulting in non successful policies. This study aims to support policy makers in the process of copying and pasting policies related to alternative fuels and fuel technologies to other situations.

1.1 Background

This report is the result of task 5.2 of the European project Alter-Motive, funded by the Intelligent Energy Europe (IEE) programme[2]. The core objective of the whole Alter-Motive project is to derive effective least-cost policy strategies to achieve a significant increase in innovative alternative fuels (AF) and corresponding alternative more efficient automotive technologies (AAMT) to head towards a sustainable individual and public transport system. AF comprise bioethanol, biodiesel, synthetic fuels, biogas, hydrogen, renewable electricity, LPG & natural gas, whilst AAMT include biofuel, fuel cell & electric vehicles and various types of hybrid systems as well as systems based on natural or biogas. The major outcome of the Alter-Motive project will be a detailed action plan for practical implementation within Europe as a whole as well as for the specific regions and countries, describing step-by-step how to transfer and disseminate the most promising current local initiatives for AF and AAMT and how to accompany them with effective and efficient national or EU policies.

One of the tasks of Work Package 5 of the Alter-Motive project focuses on the transferability of governmental policies that support the use, technology development and implementation of alternative fuels and alternative fuel technologies within the EU. We investigate in this task to what extend successful policies can be transferred to other situations, e.g. other geographic locations and/or other fuels or fuel technologies. Based on the outcomes of a literature review and data-analysis, we define recommendations for local, regional and national policy makers in Europe about the transfer of existing policy measures related to the promotion of alternative fuels or fuel technologies.

1.2 Aim of this study

The aim of this study is to support policy makers in developing and improving policies that support the use, technology development and implementation of alternative fuels and alternative fuel technologies. This is done by providing them insights and concrete recommendations about existing successful policies in this field, the specific policy measures these successful policies consist of, the external factors that influence the outcomes of these policies and the

[1] LPG was the first alternative fuel that was promoted since the 1950ties. Other alternative fuels are promoted in the EU since the end of the 20th century.

[2] Contract number IEE/07/807/S12.499569.

elements of these policies that can be transferred to other situations. Successfulness in this study is defined in terms of efficiency and effectiveness of a policy in reaching the objectives.

The recommendations are related to the aspects that policy makers need to take into account when developing and improving policies which are based on policies that already exist elsewhere. Herewith we do not focus on specific policies, but on categories of policies: policies related to feedstock of alternative fuels, policies related to fuel production, policies related to distribution and sales of alternative fuels, policies related to vehicles that are using alternative fuel (technologies) and policies related to the users of alternative fueled vehicles. It is beyond the scope of this study to indicate what exact policies (what measures, what policy goals, etc) should be developed or implemented on the different governmental levels in the EU.

To achieve the above mentioned aim, we firstly investigate the concept of transferability. What does it mean exactly and what is required to successfully transfer policies to other situations? Secondly we investigate data about the existing successful policies in Europe on local, regional and national level and the possibilities to transfer these. These data are collected via questionnaires filled in by different people involved in policies about alternative fuel (technologies) in the EU. In more popular terms we could say that we investigate what policies can be 'copied and pasted' to other geographic locations (e.g. the successful policy to only allow electric cars in the city centre of Krakow might be transferred to other cities in Poland or other countries as well) or other alternative fuels or fuel technologies (e.g. the policy to have tax deductions on CNG and LPG cars might also be successful when applied to other alternative fuelled vehicles like electric cars). We focus in this study primarily on the transfer of policies within the field of alternative fuels and fuel technologies and thus not on transfer of policies to other sectors. The outcomes of this study are translated into concrete recommendations for policy makers in Europe on national, regional and local level that are involved in the creation and improvement of policies related to alternative fuels and alternative fuel technologies

Our analysis is based on two main resources: a short literature review of existing knowledge on the concept of *transferability of policy* and data on the transferability of existing successful policies collected via a questionnaire. The literature review (chapter 1) provides insights in existing knowledge, examples, constraints and preconditions of transferring policies to other contexts successfully. The questionnaire (chapter 2) and the analysis of the data collected (chapter 3) about what current policies to promote alternative fuels and related technologies are successful according to the respondents, why they are successful and if and how they might be transferred successfully to other geographic locations or technologies. Analysing and comparing these data further provides detailed insights in future possibilities for successful policy transfer.

2. Transferability of policies: a short literature review

2.1 A short history

Policy transfer exists as long as organized governments exist. It's a very common phenomenon. Governments have been looking at and learning from each others successes and failures since the Greek times, e.g. ancient cities that learned about and copied each others policies about market protection (import taxes) or in the twentieth century the introduction of the VAT system (value added tax) which countries in the EU copied from each other in the fifties and sixties[3]. The knowledge gained by looking at existing policies has been used to develop and improve other policies. During the last decades however the growing possibilities for communication among policy makers has increased policy transfer and not surprisingly also increased the attention for the study of it. However still there are only a few studies that focus on the process and concept of policy transfer and lesson drawing in general. One of the reasons for this limited literature on these concepts in general could be that policy transferability has been studied via different disciplines (political science, comparative politics, etc) and does not have a common theoretical or methodological discourse (Evans and Davies, 1999). More common in literature are analysis of the transfer of specific policies between two or more countries.

Policy transfer, lesson drawing and emulation are often combined in literature because they are highly interrelated (Dolowitz and Marsh, 1996; Dolowitz, 2000, Rose). They all refer to "a process in which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system" (Dolowitz in Dolowitz and Marsh, 2000).

Rose (1991) introduces different degrees of policy transfer: copying; emulation; hybridization; synthesis; and inspiration. This categorization of how to incorporate lessons into other political systems is largely taken over by Dolowitz and Marsh (1996) who merge hybridization and synthesis into one. In the same publication Dolowitz and Marsh also identify seven objects of transfer: policy goals; structure and content; policy instruments or administrative techniques; institutions; ideology; ideas, attitudes and concepts; and negative lessons (p. 349-350).

Due to the limitations of our data collection[4] we do not use the different degrees of policy transfer in this study and only look at transfer of policies in general. We do however use the objects of transfer that were listed above. This selection of elements that are analysed is related to the aim of this study and the type of data collection we used: a questionnaire. The aim of this study is to provide concrete recommendations to policy makers. Knowing what elements of existing successful policies can be transferred is of high relevance for them as it provides them concrete advice on what to 'copy' from an existing policy. The degrees of policy transfer listed above are concepts that are mainly used to describe policy transfer in more abstract terms. These are more of relevance for researchers and others observing what policies are transferred and how this is done.

[3] For example the Dutch VAT system (introduced in 1969) was based on the existing French VAT system (introduced in 1953) and the newly developed German VAT system (also introduced in 1969) (Bax, 2008).

[4] The questionnaires used for the data collection are filled in by people active in the field of transport (policies). We considered questions about the different degrees of policy transfer to specialised to be answered by our respondents.

In more recent years, policy transferability in relation to transport has been a topic researched in many projects funded by the European Commission including LEDA, TRANSPLUS, CUPID, MARETOPE and CIVITAS I and METEOR (Macario, 2008). Although having different foci, these projects created a common conceptual base for transferability. This includes the following characteristics[5]:

- Transferability depends to some extent on compatibility of institutional context which implies attention for individual policy instruments and how that fits its context.
- Different kinds of transferability are recognized in terms of transfer of policy instruments between territories or situations, e.g. scaling up a policy measure (vertical transfer) and transferring a policy from one situation to another (horizontal transfer).
- Different phases of transferability are identified, e.g. demonstration, test and implementation phase
- Different kinds of process assist transferability, e.g. networks, skill exchanges, co-operative projects, etc
- Transferability may be indirect via osmosis, e.g. via direct and indirect contact between different organisations and individuals (site visits, information gathered by phone and internet, etc).
- Acceptability is crucial, however difficult to predict. Herefore it is more relevant to develop a methodological process for transferability than to try to find a universal solution for transferability based on quantitative analysis.

Talking about the transfer of policies, this always includes an original policy in a specific situation which will be transferred to another *situation*. In the original definition of policy transferability Dolowitz calls the situation 'a political system'. This is because he merely focuses on the transfer of policies between different political systems. The European projects mentioned above which performed a lot of research on transferability focus on the transfer of policies between cities. Here the situation means thus 'another city'. In this study we include also policies on regional and national level. Our situation would thus firstly be another physical location, e.g. another city, region or country. Secondly also transfer to another policy level is included, e.g. from local to regional or regional to national. Thirdly our focus on alternative fuels and alternative fuel technologies also provides the possibility to transfer policies from one technology to another, e.g. a policy to promote electric cars can be transferred to a policy to promote fuel cell cars. In this study, the situation to which a policy can be transferred to is therefore defined as another geographic location, other policy level or other alternative fuel or fuel technology.

2.2 An important hypothesis

The European projects focusing on transferability of policies mainly look at the transfer of policies related to transport on the local level, between cities. Although this study has a more narrow focus of policies (only those related to alternative fuels and alternative fuel technologies) but broader focus on policy levels (local, regional and national policies), the starting hypothesis about transferability can be taken from the European projects. Building upon the earlier European projects, the METEOR project uses the following starting hypothesis about transferability: "if a measure or package of measures has been successfully implemented within a given geographical, demographic, socio-economic, cultural, technologic, institutional and organizational setting, then comparable results in terms of degree of attainment of the measure or package of measures objectives can be achieved in areas characterized by a similar setting" (Macario, 2008, p147).

This thus means that the external factors influencing the setting, or context of a policy, also influence the success of the policy. To be able to transfer a policy successfully, these external

[5] This summary is based on State-of-the-art in research on transferability from Macario, 2008.

factors must be known and taken into account. The hypothesis also implies the focus on successful policies (and not on less successful ones). The definition of successful is thus important. In the METEOR project success is related to the objectives set for the policy and the extent to which these are achieved (mostly quantitative) (Macario, 2008). This definition is still very general and does not focus on the efforts done to reach the objectives of a policy. We prefer therefore to use a further defined definition of success which includes the extent to which the objectives are reached in terms of effectiveness, efficiency and lasting changes. With the latter we refer to the effect of a policy in a longer period of time, whether the objectives are not only reached but also remain (or improve further). Effectiveness refers to the extent in which the objectives are met in terms of investments. Efficiency refers to the extent in which the target group of the policy is reached and objectives are met. Our definition defines successful policies thus as policies that have reached their objectives in an efficient and effective manner for a longer period of time.

3. Data collection via questionnaire

Data about the existing successful policies that support the use, technology development and implementation of alternative fuels and fuel, the factors influencing the success of these policies and the possibilities for transferring these policies to other situations is collected via a questionnaire by the Alter-Motive consortium. This data collection method is chosen because although literature exists about successful policies in the different EU countries[6], only very limited literature is available about the external factors influencing existing policies related to alternative fuel (technologies) and the transferability of these policies.

The questionnaire is based on the outcomes of the literature review summarized in chapter 1. Elements from both the founders of transferability (Dolowitz, Rose & March) as well as from the application of transferability in the different European projects are integrated in the questionnaire. The different elements and questions of the questionnaire are further introduced below.

3.1 Backbone of the questionnaire

Following the hypothesis from the European Projects about transferability, the questionnaire focuses on the most successful governmental policy measures according to those filling in the questionnaire. Successfulness is defined in terms of the efficiency and effectiveness of a policy to reach the objectives. It provides answers to the following questions directly:

- What 2 policies to promote alternative fuels or alternative fuel technologies are successful? And what fuel or related technology do they focus on?
- What type of policy measure(s) are these policies based on?
- What contextual factors play a role in the success of these policies?
- Which (parts of) successful policies can be transferred to other situations, e.g. other geographic locations or other (fuel) technologies?
- What barriers exist for this transfer of these policies?
- What measures are less successful and should not be transferred to other situations?

Additionally, the filled-in questionnaires also provide the possibility to categorise and analyse more in depth the successful policy measures named, including:

- Policies related to feedstock
- Policies related to fuel production
- Policies related to fuel distribution and sales
- Policies related to vehicles (using alternative fuels or fuel technologies)
- Policies related to users of alternative fuelled vehicles.

In the next paragraphs the different elements of the questionnaire are discussed in more detail. The full questionnaire can be found in Annex 1 of this report.

3.1.1 Focus: alternative fuels and fuel technologies

The focus of this study (as well as of the whole ALTER-MOTIVE project) is on policies to stimulate the use and development of alternative fuels and fuel technologies. These include: bioethanol, biodiesel, synthetic fuel (Fischer Tropsch), biogas, hydrogen, (renewable) elec-

[6] For example the Evaluation of Swedish policies (Sprei, 2009)

tricity and electric vehicles, LPG, natural gas, fuel cell vehicles, hybrid vehicles. The policies investigated are stimulating one or more of these fuels or technologies.

3.1.2 Target group of questionnaire: policy makers, users and observers

People with different backgrounds and interests are involved in policies to promote alternative fuels and fuel technologies: those making and implementing the policies (policy makers), those being targeted by the policies (fuel and vehicle developers and producers, fuel and vehicle purchasers and users, etc) and those observing and investigating the effects of the policies as outsiders (researchers). Because of the different interests of these different groups, they might also have different opinions about what policies are successful, what contextual factors influence these policies and what possibilities exist to transfer them to other situations. To include these different opinions in the analysis, the questionnaire was filled in by representatives of national & local governments, policy research and transport companies.

3.1.3 Geographical scope: policies at different levels in EU

The scope of the questionnaire is policies on local, regional and national level within the EU. It thus does not include policies on the European level. To include policies from the different EU countries, the questionnaire is distributed via the project partners of the ALTER-MOTIVE project in different countries[7]. To further broaden the scope of the questionnaire successful policies on different levels (local, regional, national) are investigated.

3.2 Successful policies

The aim of the questionnaire is to have an overview of the successful policies in the EU to promote alternative fuels or fuel technologies, of the contextual factors influencing these policies and of the possibilities of transferring these policies to other locations or situations. The key element in the questionnaire and the analysis are thus the successful policies. Successful policies in this context are defined as policies that are efficient in terms of investments, are effective in reaching their target group and objectives and have lasting effects.

3.2.1 Factors influencing the success of policies

There are many factors that influence the success of policies. To investigate the transferability of policies, it is important to have a detailed overview of these factors. One of the factors is the content of the policy: the single or set of *policy instruments* the policy consists of. Many different policy instruments and combinations of them exist within policies. To be able to analyse them, they are often categorised. In the questionnaire we used the categorization of policy instruments often used in examining policy transferability: stimulation of research and technology development; legislative and regulative policies; fiscal measures; information, dissemination and awareness raising; other assisting or voluntary measures.

Secondly there are *external factors* that influence the success of policies. These factors are related to the context of the policy. External factors are factors that are not included in the policy instruments that the policy we are investigating consists of, e.g. an existing debate in society about whether growing biomass for biofuels has a negative impact on the production of food or the willingness of investors to cooperate with each other in a demonstration project. External factors can also be other existing policies, e.g. taxes on fuels that are not part of the policy investigated.

[7] Project partners of the Alter-Motive project are based in Germany, Austria, Poland, Sweden, Greece, Portugal, the Netherlands, Italy, Denmark, France and Bulgaria

There are many different external factors that can influence the success of policies. To analyse the transferability of policies, these contextual factors are very important. If the success of a policy is highly depending on specific contextual factors, this should be taken into account when transferring that policy to another situation (and thus other context). Also it should be taken into account that the context of a specific policy is always unique. To be able to analyse the contextual factors we use the following categorizations in the questionnaire: economic and financial factors; social and environmental factors; technical factors; cultural and demographic factors.

Often it is difficult to identify the contextual factors influencing the success of policies because they are part of a whole, a context (society) in which a policy is implemented. Also it is difficult to measure the effect of specific contextual factors on policies and they are therefore often not incorporated in policy evaluations. This results in little attention to the contextual factors and often unawareness of their influence on policies. The people filling in the questionnaire might thus not be used to think in terms of contextual factors that are influencing the policies they describe as being successful. To stimulate them in their thinking about these factors, we therefore named five examples of factors in each category that might influence the success of policies that stimulate alternative fuels and fuel technologies[8].

External factors can influence the outcomes both positively and negatively. Because this analysis aims at gaining insights in what policies can be successful in other situations, we only focus on the factors influencing the outcomes positively. Also by knowing what factors have a positive effect, we often see that the opposite situation has a negative effect on the outcomes.

3.2.2 The elements of transferability

Most of the respondents of the questionnaire are not familiar with the concept of transferability. Therefore we could not use this concept directly in the questions of the questionnaire but described it in other words. The concept of transferability was assessed in the questionnaire by asking whether successful policies could also be successful in other situations region/country or to other alternative fuel or technology.

As described in chapter 1, the literature on transferability of policies distinguishes several elements of transfer. We incorporated these in the questionnaire and not only asked the respondent whether or not he or she thinks that the successful policies he or she describes can be used in other situations, but also what elements of the policy could be transferred, e.g. the complete policy or only parts of it, like the goals, the administrative techniques, etc.

3.3 Learning from mistakes

For this study we focus on successful policies. This focus is chosen because successful policies are more likely to become a success in another situation as well, than less successful policies. We however recognize the importance of learning from mistakes of others, from the less successful policies in other situations as well. Therefore we also included a question on less successful policies in the questionnaire and what lessons others can learn from that.

[8] See the examples of external factors indicated for each category in question 6 of the questionnaire in appendix A

4. Analysis questionnaire data

In Appendix B all data collected from the questionnaires are presented. The analysis of the data consists of two parts. Firstly we analyse the complete set of data in the overall analysis (4.1). Secondly we concentrate more in depth on three specific categories of policies: policies related to fuel distribution and sales, policies related to vehicles and policies related to users (4.2).

4.1 Overall analysis

4.1.1 Diversity of respondents and policies

In total 61 questionnaires were filled in sufficiently to include in the analysis. Most questionnaires were filled in by researchers (21)[9], followed by national policy makers (15), local policy makers (7), representatives of transport companies (5) and people that do not fit one of these categories (13). All respondents are from 11 EU countries and all European areas are represented[10]:

- Northern Europe: Sweden (14); Denmark (4)
- Western Europe: the Netherlands (4); Germany (3); France (13); Austria (6)
- Southern Europe: Portugal (4); Italy (4)
- Eastern Europe: Poland (3); Bulgaria (5); Czech Republic (1)

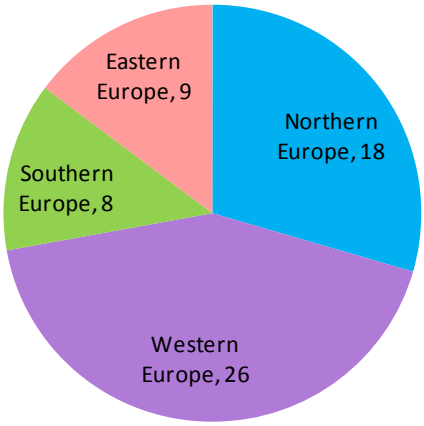

Figure 4.1 *Geographic coverage of respondents in EU*

Within these questionnaires 113 successful policies to stimulate the use and development of alternative fuels and fuel technologies were named by respondents (most respondents followed the instruction to name the 2 policies they thought were most successful). Some policies were named by more than one of the respondents. Taking into account these 'doubles' 87 unique policies are named. However the respondents gave different answers to the questions about the successful policies that were named more than ones. To include all these answers we therefore decided to include all 113 successful policies named into the further analysis.

[9] Numbers between brackets (…) indicate the number of questionnaires received that are filled in sufficiently to include in the analysis.

[10] Idem.

A large majority of these successful policies named by the respondents are national policies (64%[11]). Additionally local (23%) and regional (9%) polices were named. 4% of the policies are a combination of two of these levels at the same time (local and regional or regional and national) according to the respondents.

The policies analysed via the questionnaire are thus geographically spread over Europe. This enables drawing EU-wide conclusions. The total number of questionnaires per country however does not provide enough data and insights to draw country based conclusions. In paragraph 3.3 however we do draw some conclusions about the different European regions as indicated above. The high number of national policies named by the respondents might be explained by the high number of researchers (often working at national organisations) and national policy makers under the respondents.

4.1.2 Alternative fuels and alternative fuel (technologies) targeted

The respondents were asked to indicate which fuel (technology) was targeted by policy that they named. The outcomes show that 70% of the successful policies mentioned by the respondents target more than one fuel (technology). Half of the policies target at least electricity and electric vehicles. Additionally hybrid vehicles, biodiesel, bioethanol, biogas and CNG are targeted by many policies as well (between 32 and 37% policies). Less targeted by the successful policies named by the respondents are synthetic fuel, hydrogen, LPG and fuel cells (between 18 and 13% of the policies). See Figure 4.2.

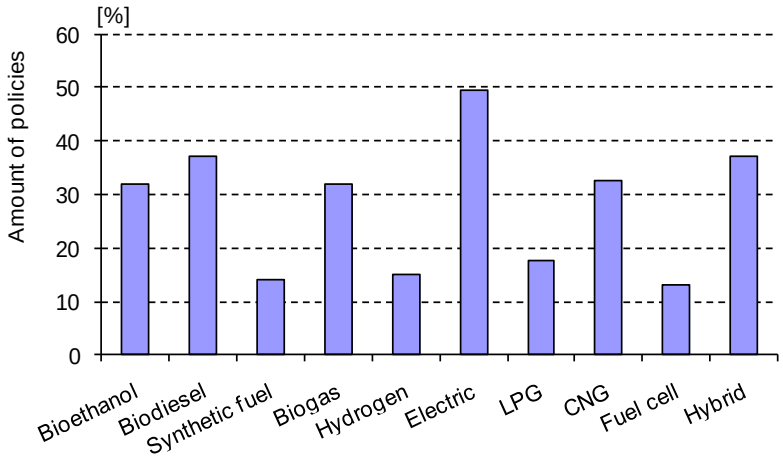

Figure 4.2 *Alternative fuels and fuel technologies targeted by policies*

Of the policies that only target one fuel (technology), 42% target only electricity and electric cars and 18% biodiesel. Fuel (technologies) that are always targeted in combination with others (and thus never as a single fuel) in the successful policies are: synthetic fuels, hydrogen and LPG.

Based on these numbers about the alternative fuels and alternative fuel technologies targeted by the successful policies in the questionnaires, we can conclude that most successful policies target electric vehicles or hybrid vehicles or biodiesel as a fuel[12]. Secondly we can conclude that most of these policies target more than one alternative fuel or fuel technology. Policies

[11] All percentages mentioned in this document are round up to the nearest integer.

[12] Note from the author. Although the respondents indicate that most of the successful policies are targeting electric vehicles, the experts still indicate that electric vehicles are not successfully promoted yet because despite the implementation of policies to promote electric vehicles since decades in Europe, there is still no significant development of electric vehicles in the EU.

that target only one fuel are most successful when targeting electric vehicles or the fuel biodiesel. Additionally we can conclude that policies targeting only synthetic fuels, hydrogen or LPG are not mentioned by the respondents and thus not successful in their view (or do not exist).

4.1.3 Types of policy instruments

A policy consists of one or more policy instruments. Having an overview of the policy instruments of which a specific policy consists of, is relevant for the evaluation of its transferability. Some policy instruments are easier to transfer to other situations than others, e.g. information dissemination and awareness raising is less connected to other existing policy frameworks and therefore easier to transfer than fiscal or legislative instruments. Secondly the complexity of a set of policy instruments also influences the possibility to transfer it to another situation.

The outcomes of the questionnaire show that almost half of the policies consists of one policy instrument, the others consist of a combination of policy instruments. Most of the policies consisting of a single instrument are fiscal measures (40%), followed by legislative and regulatory measures (32%) and stimulation of research and technology development (20% of the single policy instrument policies). Only 6 % of the single instrument policies are based on information dissemination and awareness raising.

When looking at all the policies named by the respondents more than half (57%) consist of fiscal instruments (alone or in combination with other instruments). Stimulation of research and technology development and legislative and regulatory instruments are often also part of the successful policies. See Figure 4.3.

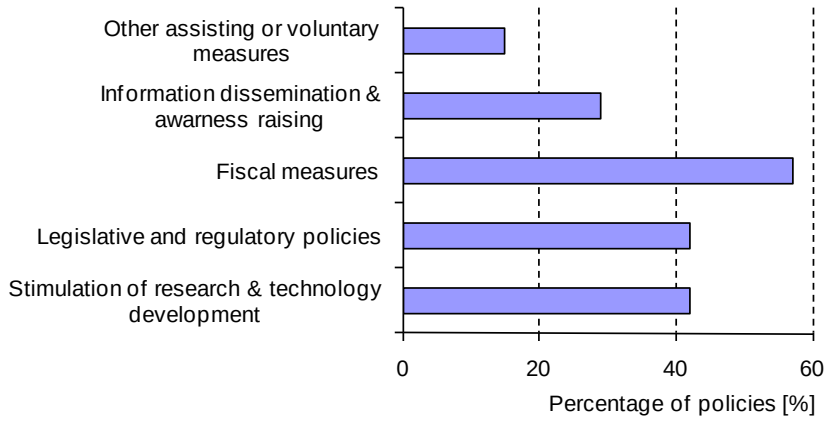

Figure 4.3 *Policy measures policies consist of*

From the above we can conclude that both policies based on one policy instrument and policies based on a combination of different instruments can be successful. We can also conclude that most successful policies to promote alternative fuels or alternative fuel technologies in Europe include fiscal instruments and/or legislative and regulatory instruments and/or R&D stimulation instruments. Information dissemination and awareness raising and other assisting or voluntary instruments are only included in a few successful policies.

4.1.4 External factors influencing the success of policies

Apart from the policy instruments a policy consists of, the success of a policy is also influenced by external factors.

In the questionnaire the respondents could indicate what external factors influence(d) the outcomes of the policies they named positively[13]. The factors are categorised in four categories and each category had six or seven factors named including the option 'other' which respondents could fill in their selves. All factors can be found in the figures 3a, 3b, 3c and 3d. Most of the respondents indicated more than one factor and often also more factors per category. Technical factors were named most often (194 times), followed by 177 social and environmental factors, 170 economic and financial factors and 155 cultural and demographic factors were indicated to influence the outcomes of the policies positively. See Figure 4.4 for an overview of how often specific factors are named in the different categories.

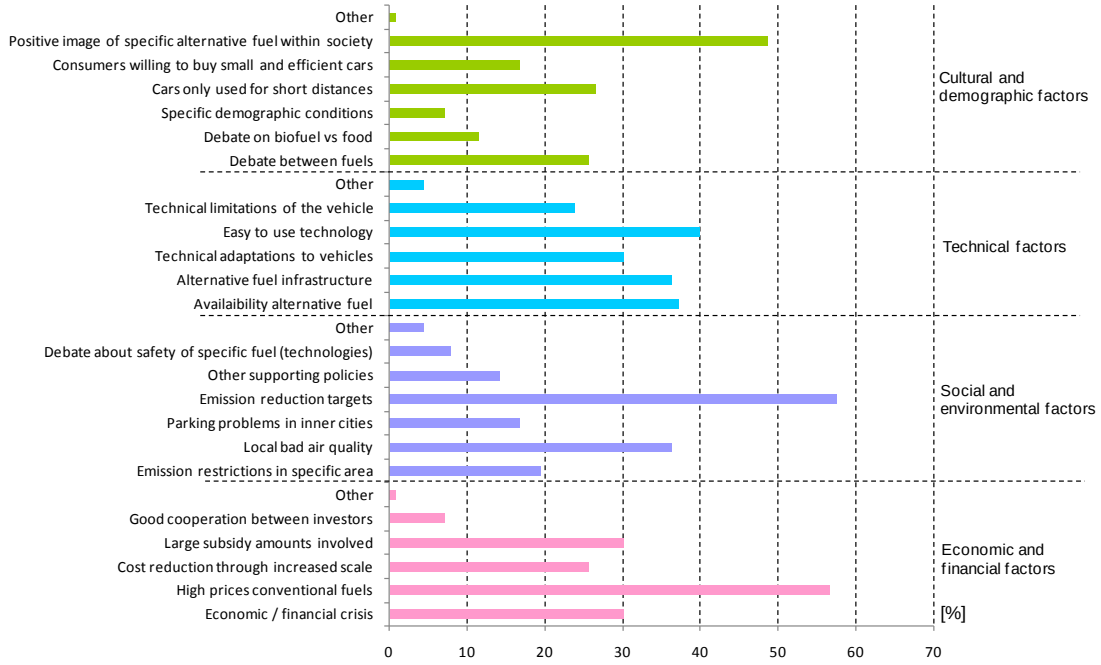

Figure 4.4 *External factors influencing the success of policies*

The four external factors indicated most often are equally divided over the categories (one in all four categories):

1. *Existing emission reduction targets* (a social or environmental factor) is influencing the outcomes of 57,5 % of the named successful policies.
2. *High price of conventional fuels* (an economic or financial factor) is influencing 57 % of the policies;
3. *A positive image of specific alternative fuel in society* (a cultural or demographic factor) is influencing the outcomes of 49 % of the policies;
4. *Easy to use technology* (a technical factor) is influencing the outcomes of 40% of the policies.

The four external factors that influence the 113 named policies least are:

[13] Due to the use of a not definitive version of the questionnaires in order to be able to disseminate it through an Alter-Motive conference, those filled in by French respondents (13 questionnaires describing 24 policies in total) included less options to choose from in three of the four categories of external factors influencing the successful policies named in these questionnaires. The option 'good cooperation with investors' in the category of social and environmental factors was not included in the French questionnaire, neither was 'Emission restrictions in specific area' as a social and environmental factor, nor were 'debate on biofuel vs food' and 'specific demographic conditions' as cultural and demographic factors.

1. *Good cooperation between investors* (an economic or financial factor) and *specific demographic conditions* (a cultural or demographic factor) are only influencing 7% of the policies.
2. A *debate about safety of specific fuel (technologies)* (a social or environmental factor) is only influencing 8% of the policies
3. the *debate between biofuel and food* (a cultural or demographic factor) is only influencing 12% of the policies.

From the fact that the totals of the four categories do not differ a lot and that the four most named external factors that influence the outcomes of the named policies positively are divided over the four categories, we may conclude that all the four categories have an equal impact on the success of policies. The large differences between the times that a specific factor is indicated shows that some factors are influencing more than half of the policies while others are influencing only a small minority of the policies. Following from this, we can conclude that economic and financial as well as social and environmental as well as technical as well as cultural or demographic factors play an equal role in the success of policies. To examine the transferability of policies we must thus look to the individual external factors influencing a policy and not to the different categories in general.

4.1.5 Transfer of successful policies

The last question in the questionnaire about the successful policies that the respondents had named focused directly on the transferability of these policies to other situations (other region / country or other alternative fuel / technology). The answers to this question show that a large majority (80%) of the successful policies can be transferred to other situations according to the respondents. For the other 20% the respondents did not give an answer or indicated that the policy could not be transferred.

When focusing on the specific elements of the policies that could be transferred, the respondents said in more than half of the cases that the complete policy could be transferred[14]. In the other cases one or more of the elements of the policy could be transferred according to the respondents. In 22% of the policies the *policy goals* could be transferred. In more than 15% of the cases the *institutions involved*, the *policy instruments* and the *structure and content of the policy* could be transferred. The negative lessons could only be transferred in 8% of the cases. See Figure 4.5 for the complete overview of the times the respondents indicated that a specific element could be transferred

From the above we can conclude that accordingly to the respondents most of the existing successful policies can be transferred to other situations. We must however take into account that not in all cases the complete policy can be transferred, but only specific elements of it. The numbers show that it is important to not only look at transfer of policies in general but also in more detail to what elements of the policy can be transferred to other situations.

[14] The percentages in this paragraph are based on the total amount of policies that can be transferred (thus the 80% of the total amount of policies named by respondents)

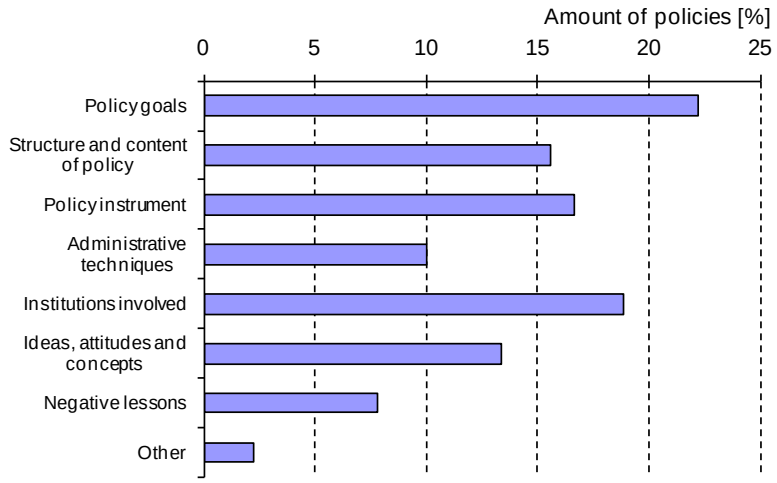

Figure 4.5 *Elements of policy transfer*

4.1.6 Less successful policies

Opposite to the successful policies that most of the data collected via the questionnaire are related to, the questionnaire also provided data about less successful policies that should not be transferred to other situations[15]. In total 22 policies or descriptions of policy instruments were named by the respondents that were not or less successful. Many respondents did not give detailed information about these policies, which makes it difficult to categorise them or draw detailed general conclusions. The following observations can be made however:

- Five of the 14 Swedish respondents named the same less successful Swedish policy: the pump law[16]. According to this law every fuelling station has to have one pump providing an alternative fuel. Because there are large price difference in the costs of placing pumps of different fuels, there is no equal competition between alternative fuels and most fuelling station choose to have the cheapest option: a pump providing E85 (gasoline (15%) mixed with ethanol (85%)).
- Some policies are named both as an example of a successful policy as an example of a less successful policy. This difference is probably due to the different criteria the respondents used for the assessment of the policy, some examples:
  - The Swedish pump law was also named as an example of a successful policy by one respondent. The law might not have been successful in promoting equally different alternative fuels, but it was successful in increasing the availability of alternative fuels in Sweden.
  - Also CO_2 tax, a car scrappage system and reduction of road tax for green vehicles are named as unsuccessful policies while other respondents used them as example of successful policies.
- More than half of the less successful policies named are existing specific policies in the country of the respondent (e.g. the Swedish pump law). The other respondents who answered the question about less successful policies named more general characteristics of policies that are less successful.
  - Examples of specific policies that were named as being less successful are:
    - Alternate plate circulation in Italy because it encouraged people to buy a second car (with another plate)
    - Certificates for green electricity production because the focus is on targets and not on price

[15] Due to the version of the questionnaire for the French respondents used there was no question about less successful policies in the French questionnaire and thus no data of the French respondents are available.

[16] One Swedish respondent also named the 'pump law' as one of the successful policies in Sweden. In his or her opinion the pump law was successful because more alternative fuel pumps have been installed.

  - Time restrictions for parking or restrictions for goods delivery in city centre.
  - etc
- The general characteristics of less successful policies named are:
  - Policies that lack information and promotion about rules and measures concerning alternative fuels
  - Policies not supported by local authorities
  - Policies that do not take into account the behavioural change needed of the drivers
  - Instable regulation or too short subsidy schemes
  - Etc

Based on the above we can conclude that apart from the Swedish 'pump law' the respondents all have different ideas about what policies are less successful. This is the prove that it is important in the assessment of successful and less successful policies, to indicate the selection criteria and definitions used for 'successful' and 'less successful' carefully and to include the reasons why a policy is or is not successful.

4.2 Analysis per policy category

4.2.1 Policy categorization

To improve the comparison of the policies named by the respondents and to draw more specific conclusions about the transferability of these policies, we categories the policies in groups that can be compared to each other. We choose to base this categorization on the five stages of the fuel chain that the policies target. There are two main arguments for this choice. Firstly governmental aims and targets are often based on these categories, e.g. increase of fuel production or increase of alternative cars on the roads. Policies to reach these governmental aims are thus often designed directly around these categories. Secondly most of the policies analysed target only one stage of the fuel chain, thus can easily be categorised[17].

Within some of the categories we found many similar policies named by the respondents. When this was the case we grouped these policies in sub-categories. This led to the following categorization:
Policies related to:

1. Policies related to *feedstock* (3% of the policies)
2. Policies related to *fuel production* (5,5% policies)
3. Policies related to *fuel distribution and sales* (38% of the policies), of which:
   a. 23% is related to blending of biofuels
   b. 40% is related to tax reduction (or exemption) of fuels
4. Policies related to *vehicles* (28,5% of the policies), of which:
   a. 19% is related to tax reduction (or exemption) of vehicle
   b. 31% is related to subsidy on vehicle
5. Policies related to the *users of vehicles* (17% of the policies), of which
   a. 74 % is related to specific driving or parking areas for 'green vehicles'

There are very little policies in the two first categories (policies related to feedstock and fuel production). The limited amount of data makes it difficult to draw general conclusions as any abnormality or deviation can have large influence on the general conclusions. We therefore do not further analyse these two categories in detail and focus below on the three other categories (Policies related to fuel distribution and sales, to vehicles and to the users of the vehicles). When analyzing these three categories special attention is given to the outcomes per

[17] Another argument for following this categorization is that also in other research performed in the ALTERMOTIVE this categorization is used. Using the same categorization makes comparison and integration of research results possible.

category that deviate to a large extend to the outcomes of the analysis of the complete set of policies analysed in the previous paragraphs.

4.2.2 Policies related to fuel distribution and sales

43 of the 113 policies named by the respondents are related to fuel distribution and sales (38%). These include policies related to the fuel infrastructure, refueling stations, the requirements for fuels that are sold to users (e.g. blending of fuels), consumer taxes on fuels, etc. When focusing the data analysis on this category of policies, the following observations are made:

Policy level
Almost all (40 of the 43) policies related to distribution and sales of fuels are national policies. This high number indicates that distribution and sales of alternative fuels is mostly organized at the national level. This is not so much surprising because agreements about fuel prices, fuelling stations, blending of fuels, etc. are most often made on the national level[18].

Fuels and fuel technologies
12 of the 43 policies related to sales and distribution of fuel are targeting one fuel or fuel technology. The others are targeting more than one fuel or fuel technology. Most of the policies related to fuel distribution and sales are related to biofuels (biodiesel is targeted by 56% of the policies and bioethanol by 53%) followed by electric (33%) and hybrid vehicles (26%). These number deviate thus a lot with the analysis of all the policies which showed that electric cars were targeted most (56%), followed by hybrid and biodiesel (both 42%)

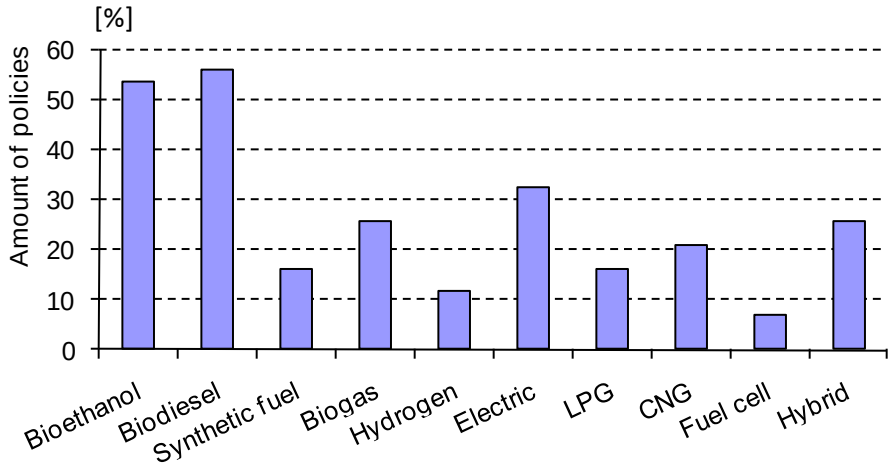

Figure 4.6 *Fuels (technologies) targeted by policies related to fuel distribution and sales*

The high percentage of policies targeting biofuels in this category is differentiating a lot from the outcomes of the analysis of all the policies. The explanation is found in the high level of policies named related to the blending of biofuels. Additional to the European regulation on the blending of biofuels with conventional fuels, many countries have their own policies about the proportions of the different fuels in the mixes. 10 of the 61 respondents named the policies related to the blending of biofuels as a successful policy in their country.

High numbers in this category of policies related to fuel distribution and sales can also be explained on the base of the development stage of a fuel (technology). Biofuels are widely pro-

[18] These policies are also often implemented on European level, but these are beyond the scope of this research.

duced and available and thus less policy is needed to stimulate the production. To increase the market share of biofuels, policies to stimulate the distribution and sales are applied. This argument does not explain the number of policies related to electric vehicles though. For this technology the fuel technology, distribution and sales are not well developed yet.

Policy instruments

The majority (26 of the 43) of the policies related to fuel distribution and sales are based on one single policy instrument. These single policy instrument policies are mostly legislative and regulatory instruments (13 of the 26) and fiscal instruments (11 of the 26). Looking at all the policies related to fuel distribution and sales, most of them are based on fiscal instruments (60%) alone or in combination with other instruments, and legal and regulatory instruments (53%).

Focusing on the fiscal instruments named in this category, we see that most of them are tax exemptions on alternative fuels (17 of the 26 policies that include fiscal instruments). These tax exemptions are in most cases also related to more than one fuel, and often even to all alternative fuels and fuel technologies.

External factors influencing the success

Looking at the external factors influencing the success of the policies related to fuel distribution and sales we can conclude that the outcomes are relatively similar to the analysis of all the policies. This would mean that the policies in this category are relatively average in the factors by which they are influenced. The largest deviation to the overall analysis shows the influence of local bad air quality on the success of the policies. This is influencing 36% of all the policies and only 19% of the policies in this category.

Policy transfer

88% of the policies related to fuel distribution and sales are transferable to other situations according to the respondents. This number is slightly higher compared to the outcome of the analysis of all policies. An even bigger difference in this category compared to the overall outcomes is that 63% of the policies that can be transferred, can be transferred as a complete policy to another situation (compared to 46% of all the policies). From these differentiations we can conclude that the policies in this category are more easy to transfer to other situations than others.

When focusing on the different elements of transfer, we see that some deviations compared to the overall analysis occur here as well. For example the transfer of structure and content of the policies is indicated in 11% of the policies in this category, while it is indicated in 16% of all the policies (see Figure 4.7).

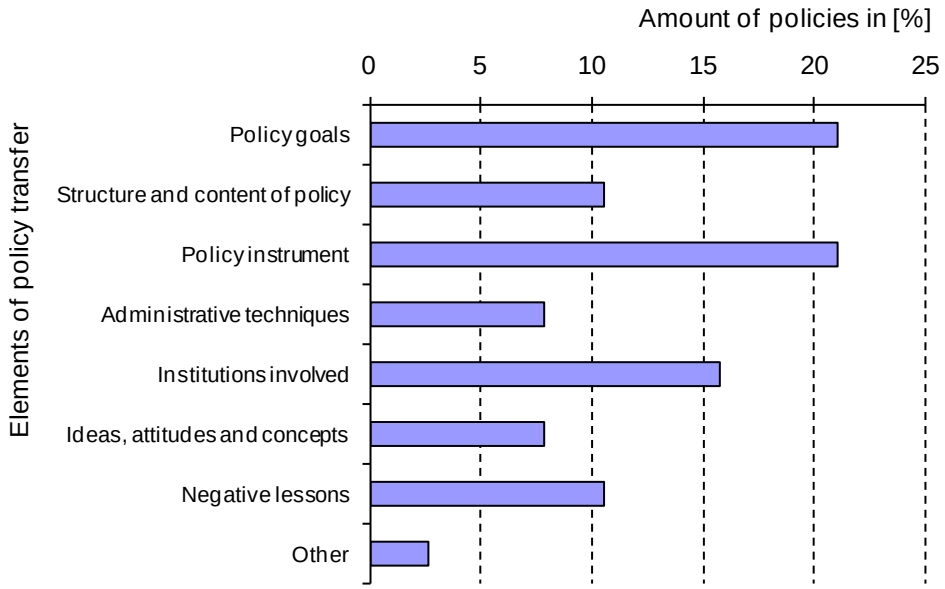

Figure 4.7 *Element of policy transfer of policies related to fuel distribution and sales*

4.2.3 Policies related to vehicles

32 of the 113 successful policies analysed are related to vehicles (28%). In this category we include all policies related to the vehicles (and thus not to the fuel). This includes policies related to taxes, subsidies and insurances based on the type of vehicle, the development of fuel dependent technologies in vehicles like hybrid vehicles or electric vehicles, etc.

Policy level

Also in this category a relatively large amount of the policies is implemented on the national level (75%) (compared to the complete set of policies) and few on regional and local level. This can be explained by the type of policies in this category. Most are related to taxes or subsidies and these are mostly implemented on national levels.

Fuel and fuel technologies

One fourth of the policies in this category are only targeting one fuel or fuel technology. This number does not deviate a lot from the overall analysis. A large deviation does occur however when looking at the fuels or fuel technologies the policies in this category target (see Figure 4.8). A very high number of the policies target electric (75%) and hybrid (60%) cars (alone or in combination with other fuel or fuel technologies). Biodiesel and bioethanol are targeted only by a relatively limited amount of the policies in this category.

These high numbers for electric and hybrid technologies in the category of policies related to vehicles, can be explained by the fact that vehicles fuelled by electricity and hydrogen, need to be adapted completely to these fuels. These adaptations make the vehicles relatively more expensive than vehicles driving on conventional fuels, gas or biofuels. For fuel cells the vehicles also need to be adapted to the fuel. The analysis shows however that only limited policies include fuel cells as a fuel technology. This can be explained by the fact that fuel cell cars are not commercially available on the market now (like hybrids) and are not expected to become available soon (like is expected from electric vehicles). No policies to stimulate the purchase or use of the vehicles are needed or successful when the vehicles are not available.

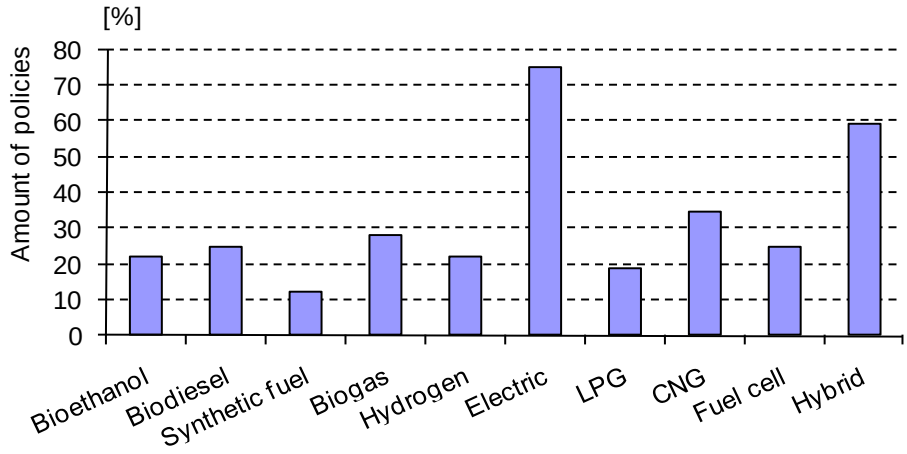

Figure 4.8 *Fuels and fuel technologies targeted by policies related to vehicles*

Policy instruments

Looking at the policy instruments policies consist of, we see that also for the policies in this category, most are build upon fiscal instruments (56%) alone (1/3 of these) or in combination with another instrument (2/3). Focusing further on the policies consisting of fiscal instruments, we see that most of these policies are related to subsidies that are provided when buying alternative fuelled vehicles (more than half of these) and tax exemptions for alternative fuelled cars (1/3 of these). These are both instruments to promote the purchase of alternative fuelled cars.

The biggest deviation of this category of policies compared to the overall analysis is however the number of policies based on legislative and regulative instruments. Only 22% of the policies related to the vehicle are based on these instruments while 42% of all policies consist of legislative and regulatory instruments. Also relatively many policies consist of information dissemination and awareness raising instruments (34%) in combination with one or more other policy instruments.

These deviations in the numbers of the different policy instruments in this category can be explained by the focus of this category: the vehicle. Most policies in this category aim to stimulation the purchase of alternative fuelled vehicles. Stimulating an early market as alternative fuelled cars is typically done via fiscal instruments like tax exemptions or subsidies. Additionally these fiscal instruments are often combined with information dissemination and awareness raising to promote the fiscal instrument itself and the purchase of the vehicles. Legislative and regulatory instruments are more common when markets are further developed to define and install new norms and values.

External factors influencing policies

Looking at the external factors influencing the success of policies related to vehicles, we see some deviations to the overall analysis. Focusing at the economic and financial factors we see one larger deviation compared to the overall analysis. For this category of policies in more than 40% (compared to 30% of the overall policies) of the cases *large subsidy amounts involved* are important for the success. This is of course easy to explain because, as explained above, many of these policies are based on subsidies (or tax exemptions – which are a form of subsidy).

Looking at the social and environmental factors we have a relatively larger amount of policies being influence by *local bad air quality* (47% compared to 26%) but fewer about *emission restrictions in specific area* (13% compared to 19%). The other factors are relatively equal of impact in this category compared to the overall analysis. Focusing on the technical factors in-

fluencing the success of the policies we see that the *availability of an alternative fuel* does play a smaller role in the category of policies related to the vehicle than in the overall analysis (28% compared to 37%). Another deviation are the *technical limitations of the vehicles*, which are more often named in the overall analysis than in this category specifically (13% compared to 24%). The technical factor named most in this category of policies is *the alternative fuel infrastructure* (38%), while in the overall analysis easy to use technology was named most (40%).

The *debate on biofuels and food* as a cultural or demographic factor does influence relatively few policies in this category (3%). The *positive image of a specific alternative fuel* (50%) and the fact that *cars are only used for short distances* (31%) influence most policies in this category. However no large deviations in the number occur compared to the overall analysis.

We can conclude from the above that the largest deviations in this category of policies (10% or more) are related to the *large subsidy amounts involved* and the *local bad air quality*. All other factors are relatively comparable to the overall analysis (have deviations of less than 10%).

Policy transfer

Only 66% of the policies related to the vehicle can be transferred completely or partly to another situation according to the respondents, compared to 80% of the overall policies. The percentage of these that can be transferred completely is almost similar to the overall analysis (52% compared to 51%). When focusing on the elements of transfer of the policies that can be transferred, we see that in most cases policy goals (29%) and institutions involved (24%) can be transferred in this category. This is again similar to the overall analysis. Larger deviations however are seen in the other elements of transfer. For example the transfer of the policy instrument which can only be done in 10% of the policies transferable in this category (compared to 17%) and none of the negative lessons can be transferred according to the respondents. The ideas, attitudes and concepts can on the other hand be transferred more often (19% compared to 13%).

4.2.4 Policies related to users of vehicles

In this category we include all policies that are related to the end user of the vehicle. This includes both the owners and buyers of the vehicles as well as the users or drivers. Included in this category are for example policies related to specific parking or driving areas for specific cars, and to the placement of charging points for electric cars.

Compared to the two other categories analysed more thoroughly, this category is relatively small with only 19 policies of the overall total. Of these 14 are related directly to specific driving or parking areas for ‘green vehicles’. Because of the little variety in this relatively small category, we decided not to analyse the different elements as thoroughly compared to the previous two category analysis.

Most of the policies in this category are targeting electric (63%), CNG (53%) and/or hybrid (37%) vehicles. More than a quarter of the policies in this category are only targeting electric vehicles. A large deviation with the other categories of policies is seen when looking at the policy instruments used. Most of the policies related to the users of alternative fuelled vehicles are based on information dissemination and awareness raising (47%). The other instruments are part of 21% to 37% of the policies.

Looking at the external factors influencing the policies in this category we see that social and environmental factors as *parking problems in inner cities* and *local bad air quality* influence

the success of many (63% and 53%) of these policies in a positive way. On the other hand debates about safety or about fuel versus food, have no influence according to the respondents.

79% of the policies related to the users are transferable. A deviation is noticed however when focusing on the elements of the policies that can be transferred. Here most often was mentioned that the institutions involved could be transferred (37% of the policies that are transferable), compared to the policy goals, which were mentioned most often in the other categories.

5. Conclusions

Copying and pasting successful policies to other situations to promote alternative fuels and alternative fuel technologies in Europe can be advantageous. Policies based on the experience of others are in general more efficient and effective because time can be saved and the wheel does not need to be re-invented. At first sight it also looks simple to accomplish. However, when looking more in depth into the transferability of policies, we can conclude that transferring policies successfully is much more difficult than it seems.

Both literature and the data-analysis show that many factors influence the success of policies. This makes each policy unique. In order to transfer a successful policy to another situation in which it has the same effect requires that these factors are similar to the original situation. The 'uniqueness' of the situation must thus in some way be similar.

The factors influencing the success of policies are diverse. They include the type of fuels or fuel technologies that are targeted by the policy, the policy instruments the policy consists of and external factors (economic and financial, social and environmental, technical and cultural and demographic factors) which form the context. Investigating the transferability of a policy therefore includes the analysis of these different factors. We did so in the analysis of the data we collected via a questionnaire about existing successful policies to promote alternative fuel and alternative fuel technologies in Europe. These questionnaires were filled in by local and national policy makers, researchers and representatives of transport organizations and thus represent the opinions of these respondents. The outcomes of the questionnaires are summarized in table 1. The conclusions based on these are further described below.

Summary and conclusions of the overall analysis

113 successful policies spread over Europe and different policy levels (local, regional and national) named by the respondents are analysed. The most important outcomes are:

- Related to the fuel or fuel technology targeted by the policies
  - Most of successful policies target more than one alternative fuel or fuel technology.
  - Most successful policies target electric and/or hybrid vehicles and/or biodiesel as a fuel.
  - Policies targeting only one fuel or fuel technology are most successful when targetting electric vehicles or biodiesel as a fuel. No successful policies targeting only synthetic fuels, hydrogen or LPG are mentioned by the respondents.
- Related to policy instruments
  - Both policies based on a single policy instrument as policies based on a combination of different policy instrument can be successful.
  - Most successful policies include fiscal measures, followed by legislative and regulatory measures and measures to stimulate research and technology development.
- Related to the external factors
  - External factors can be categorised in economic and financial factors; social and environmental factors; technical factors and cultural and demographic factors.
  - The four categories of factors influence the success of the policies relatively equally.
  - Large differences exist in the impact of individual factors.
  - Influencing the success of more than 50% of the policies are *existing emission reduction targets* and *high prices of conventional fuels*.
- Related to transferability
  - Most of the policies can be transferred to another situation (geographic location, other policy level or other fuel (technology).

- In half of the cases the whole policy measure can be transferred.
- When only parts of the policy can be transferred, these are mainly the policy goals and the institutions involved.

From this overall analysis we can conclude that successful policies to promote alternative fuels and fuel technology mostly target different fuels or fuel technologies and consist of one or more different policy instruments. There are many different external factors playing a role in the different policies. To transfer these policies successfully to another situation, the external factors influencing the policy should be similar to the initial situation. Apart from existing emission reduction targets and high prices of conventional fuels, no other factor is influencing more than 50% of the policies. This shows the uniqueness of the set of factors influencing policies and the need for thorough investigation of the external factors influencing each individual policy before starting the transfer of it.

Additionally the data show that although the majority of the policies might be transferred, often not the complete policy but only elements of it can be transferred. When investigating the possibilities of transfer of a specific policy, attention must thus also be given on what elements of the policy can be transferred.

Summary and conclusions about the analysis of different categories of policies

More detailed conclusions about the factors influencing the success and the transferability of policies can be drawn from three different categories of policies which are analysed more thoroughly: policies related to fuel distribution and sales, policies related to vehicles and policies related to the users. We see some deviations to the overall analysis of all the policies. These are summarized in table 1 and described in more detail below.

Firstly we see can some deviations between the three categories and the overall analysis based on the fuel and fuel technologies targeted by the policies. The policies related to fuel distribution and sales are merely targeting bioethanol and biodiesel than the other fuels or fuel technologies. Policies related to the vehicle are mostly targeting electric and hybrid vehicles while policies related to the users are mostly targeting electric and CNG vehicles.

Related to the policy instruments the different policies consist of we see a large deviation in the policies related to users. Here most of the policies are based on information dissemination and awareness raising while in the other categories the fiscal measures exist most and the information dissemination is named much less. Another important deviation to the overall analysis is the low number of policies consisting of legislative and regulatory instruments in the categories of policies related to the vehicle and users.

Looking at the external factors influencing the success of policies, the factor local bad air quality deviates relatively largely from the overall analysis and has a different impact in the three categories. Only 19% of the policies related to the fuel distribution and sales are influenced by this factor compared to 47% of the policies related to the vehicle and even 53% of the policies related to the users.

Focusing on the transferability we also see some differences between the three categories. The policies related to the fuel distribution and sales seem to be easier to transfer (88% can be transferred) than the policies related to the vehicles (66% can be transferred). The transferability of policies related to the users is around average.

From the analysis of the three different categories of policies, we can conclude that the different categories have many things in common. Some deviations however are remarkable and should be taken into account when transferring policies related to fuel distribution and sales, vehicles or users.

Table 5.1 *Summary analysis of questionnaires*

	All policies	**Policies related to fuel distribution and sales**	**Policies related to vehicles**	**Policies related to users**
Fuels (technologies) targeted by policies				
Most	Electric fuel technology	Bioethanol and biodiesel	Electric and hybrid fuel technologies	Electric vehicles and CNG
Least	Synthetic fuel and fuel cell	Fuel cells and hydrogen	Synthetic fuel and LNG	Hydrogen, synthetic fuels and fuel cells
Policy instruments used				
Most	Fiscal measures	Fiscal measures	Fiscal measures	Information dissemination and awareness raising
Least	Other assisting or voluntary measures	Other or voluntary measures	Other or voluntary measures	Legislative and regulatory
Influence of categories of external factors				
Most	Technical factors	Technical factors	Economic and financial factors	Social and environmental factors
Least	Cultural and demographic factors	Social and environmental factors	Cultural and demographical factors	Cultural and demographic factors
Influence of individual external factors				
Most	Emission reduction targets	Emission reduction targets	High price conventional fuels and emission reduction targets	Parking problems inner cities
Least	Good cooperation between investors	Parking problems inner cities and specific demographic conditions	Good cooperation between investors and debate between biofuels and food	Debate about safety of specific fuel
Potential for (complete or partial) policy transfer				
Total	80%	88%	66%	79%
Elements of policy transfer				
Complete policy	51%	63%	52%	33%
Most	Policy goals	Policy goals and policy instruments	Policy goals	Institutions involved
Least	Negative lessons	Administrative techniques	Negative lessons	Administrative techniques and negative lessons

5.1 Recommendations for policy makers

The conclusions outlined above are below translated in concrete recommendations for policy makers that are involved in the development and improvement of policies related to the promotion of alternative fuels and alternative fuel technologies on local, regional and national level in Europe.

Many successful policies to promote alternative fuels and fuel technologies exist in the EU on different levels. These are an important resource in the development of new policies. On first sight, the easiest way to make use of existing policies is to copy and apply them in another situation. This transfer of policies is an efficient way to create new policies because expe-

riences from others can be incorporated, shortcomings can be improved and time for reinventing the wheel is saved.

1. A first step is to define the aim of a policy, the impact that it should have, e.g. have citizens buy more electric cars.
2. A second step is to investigate what policies currently exist in other situations (other countries, or other technologies) that are / have been successful in reaching similar aims. This can be done by investigating the 'successfulness' of policies in terms of effectiveness and efficiency of reaching the objectives. Only policies that fulfill these two requirements sufficiently are eligible for transfer.
3. Once one or more policies eligible for transfer are found, a third step is to investigate in detail the elements that influence the success of these existing policies. A combination of elements influences the success of each policy. This combination of elements is unique in every case and consists of:
   - The *external factors* that cannot be influenced (easily) by the policy maker. These include financial and economic factors, social and environmental factors, technical factors and cultural and demographic factors.
   - The *characteristics of the policy* that can be influenced and changed by policy makers. These include the objectives, the fuels or fuel technologies targeted and the policy instruments it consists of.

   The external factors should be investigated first. Only when these are similar to those in your own situation, the chances for successful policy transfer increase. When these are not similar, little chances for successful transfer exist and we recommend to look for other policies with more similar external factors.

   When the external factors are similar to your own situation you can continue with investigating the characteristics of the existing policy. These characteristics are the base for your new policy.
4. In the fourth step you can design your new policy based on the characteristics of the existing policy which is eligible for successful transfer based on the previous steps. This design should be based on a detailed investigation of what elements of the existing policy can be transferred (whole policy or only the policy goals, structure and content, instrument, administrative techniques, institutions involved, ideas, attitudes and concepts, etc). The parts that cannot be transferred should be replaced by others.

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Appendix A Questionnaire on policies

This questionnaire is part of the European research project Alter-Motive (www.alter-motive.org) and aims at getting insights in the existing successful governmental policies in EU countries.
Please fill in the answers to the below questions. Please be as precisely as possible in your answers to the open questions.
Thank you very much for your cooperation!

---

1. **In what country do you work?**

…….

2. **In which of the following sectors do you work?**

A. National government
B. Local government
C. Research
D. Transport company
E. Other……..

3. **What are in your opinion the most successful[19] governmental policy measures in your country on the local or national level to stimulate alternative fuels or related technologies in the transport sector?**

E.g. national policy to exclude biofuels from fuel taxes or local policy to assign specific parking places in inner cities to 'green cars'.

Policy 1:
Name:----------

Aim of this policy:---------- ----

---
*This is a local / regional / national policy (*please indicate the right option)

Policy 2:
Name:---------- ----

Aim of this policy:---------- ----

This is a local / regional / national policy (please indicate the right option)

[19] Successful policies are policies that are effective in reaching their aim, are efficient in terms of costs and have sustantial lasting results

4. What alternative <u>fuel or related technology</u> do these policy measures focus on?
(more options per policy might be chosen)

Policy 1:
A. bioethanol
B. biodiesel
C. synthetic fuel (fischer-tropsch)
D. biogas
E. hydrogen
F. (renewable) electricity – electric vehicles
G. LPG
H. natural gas
I. Fuel cell vehicles
J. hybrid vehicles (e.g. Toyota Prius)

Policy 2:
A. bioethanol
B. biodiesel
C. synthetic fuel (fischer-tropsch)
D. biogas
E. hydrogen
F. (renewable) electricity – electric vehicles
G. LPG
H. natural gas
I. Fuel cell vehicles
J. hybrid vehicles (e.g. Toyota Prius)

5. What <u>measures</u> are these policies mainly based on?

Policy 1:
A. Stimulation of research and technology development
B. Legislative and regulatory policies
C. Fiscal measures
D. Information dissemination and awareness raising
E. Other assisting or voluntary measures

Policy 2:
A. Stimulation of research and technology development
B. Legislative and regulatory policies
C. Fiscal measures
D. Information dissemination and awareness raising
E. Other assisting or voluntary measures

6. Why do you think are these policies so successful? What elements play a role in the success?
E.g. 'subsidy system is easy to understand and apply', 'biofuel is largely available in my country', 'the taxes on conventional fuels are high' 'public transport companies have high emission reduction targets'

Policy 1*:* ----------

Policy 2*:*----------

---

7. What other factors <u>influence the success</u> of these policies positively? More than one factor may be chosen per category.

Policy 1

<u>Economic and financial factors</u>
- o *Economic / financial crisis*
- o *high prices conventional fuels*
- o *cost reduction through increased scale*
- o *large subsidy amounts involved*
- o *good cooperation between investors*
- o ……

<u>Social and environmental factors</u>
- o *Emission restrictions in specific area,*
- o *Local bad air quality*
- o *parking problems in inner cities,*
- o *Emission reduction targets*
- o *Other supporting policies*
- o *Debate about safety of specific fuel (technologies)*
- o ……

<u>Technical factors</u>
- o *Availability alternative fuel*
- o *alternative fuel infrastructure*
- o *technical adaptations to vehicles*
- o *easy to use technology,*
- o *technical limitations of the vehicles*
- o ……

<u>Cultural or demographic factors</u>
- o *debate between fuels (e.g. biofuel vs electricity)*
- o *debate on biofuel vs food*
- o *specific demographic conditions*
- o *cars only used for short distances*
- o *consumers willing to buy small and efficient cars*
- o *positive image of specific alternative fuel within society*
- o ……

Policy 2

<u>Economic and financial factors</u>
- o *Economic / financial crisis*
- o *high prices conventional fuels*
- o *cost reduction through increased scale*
- o *large subsidy amounts involved*
- o *good cooperation between investors*
- o ……

<u>Social and environmental factors</u>
- o *Emission restrictions in specific area,*
- o *Local bad air quality*
- o *parking problems in inner cities,*
- o *Emission reduction targets*
- o *Other supporting policies*
- o *Debate about safety of specific fuel (technologies)*
- o ……

<u>Technical factors</u>
- o *Availability alternative fuel*
- o *alternative fuel infrastructure*
- o *technical adaptations to vehicles*
- o *easy to use technology,*
- o *technical limitations of the vehicles*
- o ……

<u>Cultural or demographic factors</u>
- o *debate between fuels (e.g. biofuel vs electricity)*
- o *debate on biofuel vs food*
- o *specific demographic conditions*
- o *cars only used for short distances*
- o *consumers willing to buy small and efficient cars*
- o *positive image of specific alternative fuel within society*
- o ……

8. Do you think that (parts of) these policy measures can also be successful in other situations (when applied in other region/country or to other alternative fuel or technology?

Policy 1

- ***Yes**, in what situation:* ----------

What parts of this policy measures do you think can be successful in other situations:

A. *The complete policy measure*
B. *Policy goals*
C. *Structure and content of policy measure*
D. *Policy instrument*
E. *Administrative techniques*
F. *Institutions involved*
G. *Ideas, attitudes and concepts*
H. *Negative lessons*
I. ……..
J. ……..

- ***No**, why not:*----------

Policy 2

- ***Yes**, in what situation:* ----------

What parts of this policy measures do you think can be successful in other situations:

- *The complete policy measure*
- *Policy goals*
- *Structure and content of policy measure*
- *Policy instrument*
- *Administrative techniques*
- *Institutions involved*
- *Ideas, attitudes and concepts*
- *Negative lessons*
- ……..
- ……..

- ***No**, why not:*----------

  ----

9. Opposite to the successful policy measures, what measures are less successful in your country and should not be transferred to other situations? Why?

Appendix B Data collected via the questionnaire

Table B.1. and B.2. contain all the responses provided by the respondents on the questionnaire. The numbers in the first column refer to the samen policies in both tables. For the questions to which these are the answers, we refer to questionnaire in Appendix A. Table B.1 provides the answers to questions 1 to 6 of this questionnaire. Table B.2 contains the answers of the respondents on questions 7 and 8.

Table B.1 *Responses received on the questionnaire, part 1*

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
1	IT	reduce taxes green fuels	increase competition				x						x	x	x		x		x	x		
2		free circulation green cars when pollution limits are reached	increase competition	No driving restrictions due to air pollution in inner citie		x							x	x	x				x			
3	IT	exclude taxes on green cars	push sales green cars	taxes conventional fuels are high		x							x	x	x		x	x		x		
4		free circulation green cars when pollution limits are reached		subsidy system easy to understand and apply		x							x	x	x			x		x		
5	IT	reduce taxes alternative cars	increase competition			x	x		x				x	x	x		x	x		x		
6		free circulation green cars when pollution limits are reached	push sales green cars			x	x		x				x	x	x		x	x		x		
7	IT	incentives to technology research	to stimulate industry to invest in clean technologies	Investments are too costly in competitive market, incentives are thus needed			x		x				x	x	x		x	x		x		
8		reduce tax & insurance costs alternative vehicles	to reduce barriers to buy alternative cars	costs barriers exist for alternative cars			x		x				x	x	x			x		x		

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
9	PO	quality standards for biofuels & ethanol blends	elimintion of biofuels of less quality	quality control system			x	x	x								x	x		x		
10		R&D grants for industrial biofuels projects	introduce biofuels with required standards	Research institutes do not have enough financial matters to cooperate with industry			x			x	x				x			x	x			
11	PO	no restriction for electric cars in city centre Krakow	stimulate electric car market and reduce noice & pollution	willingness of people to enter city centre by car	x								x		x				x		x	
12		biogas produced of waste used in municipal bus fleet	reduction emissions & pollution	city administration determined promotion alternative fuels	x						x							x	x			
13	PO	allow CNG vehicles ot traffic restricted areas	promotion enviromental friendly fuels & decrease local air polution	public acceptance raised by awarness campaign in media & evidence on air pollution provided by research	x										x			x			x	
14		no restriction for electric cars in city centre Krakow	preserve historical character & decrease pollution	wide social acceptance due to media support & legislation allows efficient execution & modern computer models	x								x					x	x		x	
15	NL	build charging points for electric cars where owner prefers	creating a clean & sustainable living space	citizens decide on where and how charging points are builded	x								x								x	x
16		sustainability vision	Creating sustainable living areas	users of city (citizens & market parties) create policy	x			x	x	x	x	x	x	x	x	x	x				x	
17	NL	subsidies for experiments with alternative fuels	speed up introduction sustainable drives	subsidies reduce business risks to experiment			x		x		x	x			x			x				
18		repulse cars in city areas and stimulate public transport	create shift to ensure benefits of subsidy	good model shift leads to cost coverage at long term		x										x			x		x	
19	NL	obligation minimun market share biofuels	create level playing field & meet targets	penalties if no compliance	x			x	x	x	x								x			
20		financial incentives for alternative fuels	create higher percentage alternative fuels	people don't like to pay too much	x									x			x		x	x		

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
21	NL	obligation minimun market share biofuels	stimulate biofuels	obligation = result guaranteed			x	x	x										x			
22		tax reductions for vehicles with low emissions	stimulate alternative fuels	better position for alternative fuels in market			x					x	x			x	x			x		
23	BU	use of CNG	Environmental & economic efficiency	High tax on convential fuels & targets on reduction of emissions	x										x				x			
24	BU	zero excise tax on CNG & biofuels	stimulation of CNG & biofuels	tax ememption made CNG cheapest fuel. NOT SUCCESSFULL for biofuels (still too expensive			x	x	x					x	x					x		
25	BU	zero excise duty (tax) on pure biodiesel & bio-ethanol & blends	stimulation biofuels	just introduced. Expected to stimulate biofuels (blends) use			x	x	x											x		
26		adaption to biofuels blending law	optimizing legal conditions for obligatory blending	ensures effective execution of controlling & marketing (blending of) biofuels			x	x	x										x			
27	BU	EC decision reduction excise tax on biofuels	support producers of biofuels	Installed capacity for biofuels is much higher than currently used			x		x													
28	BU	Requirements for biofuels blending	reduction conventional fuels	national target for reduction of conventional fuels			x		x					x					x			
29		LPG & CNG use	economic considerations & reduction emissions	economic considerations: reduction exploitation costs		x								x	x					x		x
30	CZ	blending obligation biofuels	assure required share of biofuels	low transaction costs			x	x	x										x			
31		reduced tax CNG & ecological cars	increase competitiveness alternative fuels	lower price due to improved competition			x							x	x					x		

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
32	DK	exemption tax electric & alternative fuels until 2012	establishing market	Technical development is promoted - necessary for establisment market			x										x		x	x		
33		investment in windpower	increase windpower	windpower encourages smart metering & difference day-night el prices for charging cars			x		x								x					
34	DK	tax on convential fuels	phase out convential fuels	high taxes create market for alternative fuels			x						x				x			x		
35		create contracts that favour hybrid busses	cleaner local community	busses meet technical requirements & are better for environment	x												x	x				
36	DK	exemption biofuels from fuel tax		vehicle tax is very high & electric & hydrogen cars are expensive -> competition must be supported			x					x	x			x		x		x	x	
37		copenhagen climate plan	CO_2 reduction & municipality buy only electric / hydrogen cars	larger municipalities have possibility to start introduction new technologies.	x							x	x			x		x	x	x	x	
38	DK	tax exemption electric vehicles	promote electric vehicles	high tax on conventianal cars & good potential for renewable energy & short distances driven by cars			x					x	x			x				x		
39		subsidy for buying electric vehicles	encourage private companies with large fleets to buy electric cars	willingness to create private-public partnerships to buy electric vehicles creates demand & practical experiences with EV			x						x					x			x	
40	AU	promote CNG and e-mobility	reduction conventional vehicles & emissions	easy to understand & apply	x	x							x		x							x
41		exclude biofuels from fuel tax	promote environmental friendly drive system	creates an incentive system that encourages environmentally friendly fuels			x	x	x											x		

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
42	AU	blending biofuels with conventional	increase share biofuels	easy implementation & execution			x	x	x										x			
43		research funding programmes	strengthening competitiveness in EU industry	specific target orientation			x				x	x	x			x	x	x				
44	AU	biofuels blending		required measure -> obligations are fulfilled			x	x	x										x			
45		tax reductions & exemptions biofuels					x	x	x	x	x									x		
46	AU	sustitute fossil fuels with fuels from renewable sources		incentives for private & commercial customers to change from fossil to low emission fuels		x					x		x		x		x		x	x		x
47		reduction emissions & fine dust				x					x				x			x	x	x		
48	AU	CO_2 taxes	imcrease competitiveness alternative fuels / driving systems	increase tax conventional fuels			x	x	x	x	x		x						x			
49		funding for early adapters	stimulate market growth	subidy system = easy to understand	x	x							x									x
50	AU	stimulate electric vehicle (components & servicers) production	build up domestic electric vehicle market	domestic value creation			x						x				x	x				
51		start up support for electric vehicles	?	no emission penalties necessary in future			x						x				x			x		
52	SW	reduced parking fees in cities for environmentally friendly cars	stimulate purchase env. Friendly cars	Higher buying costs are compensated with less parking costs	x			x	x	x	x	x	x		x		x					x
53		decreased tax on company cars driven privately by staff	increase number env. Friendly Cars bought by companies to increase 2nd hand env. Friendly cars in next years	expensive to drive expensive car			x	x	x	x	x	x	x		x	x	x					x

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
54	SW	reduced parking fees in cities for environmentally friendly cars	increase number of env. Friendly cars		x			x			x									x		
55		pump law	increase number of fuelling stations with alternative fuel pumps				x	x											x			
56	SW	carbon tax	reduce emissions & promote alternative fuels	taxes internalise external costs			x	x	x	x	x	x	x	x	x	x	x			x		
57		decreased tax on company cars driven privately by staff	stimulate purchase env. Friendly cars	push to buy effective (but expensive) alternative cars for first movers			x				x		x							x		
58	SW	carbon tax	reduce emissions	you do not forbid something, but point out what you want			x	x	x	x	x	x	x	x	x	x	x	x		x		
59	SW	CO_2 taxes	to stimulate green fuels	economic advantage to drive eco-friendly			x	x	x		x		x		x		x		x	x		
60		bonus for buyers eco-friendly cars	motivate general public to buy eco friendly car	economic advantage to drive eco-friendly			x	x	x		x		x		x		x		x	x		
61	SW	tax reduction gas/hybrids		economic stimulance for buying eco-car			x				x				x		x			x		
62		free parking env. Friendly cars		free parking makes consumer lives easier	x			x			x				x		x					
63	SW	decreased tax on company cars driven privately by staff	increase amount of eco-cars on roads				x	x	x		x		x				x			x		
64		tax exemption biofuels	increase biofuels sales				x	x			x	x	x				x			x		
65	SW	reduced parking fees in cities for environmentally friendly cars	create niche market & stimuate alternative technologies	good national definition of 'environmental friendly cars'	x			x			x						x			x		
66		blending fuels	create market alternative fuels & stimulate production	low cost & short time-frame effective measure to stimulate market & production			x	x	x										x			

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
67	SW	biogas West	creating biogas market	biogas was fast on market		x					x								x			
68		Skaraborgs gas	create biogas market & production & infrastructure	motivate green sector to develop biogas production from societal waste & biomass	x	x					x										x	
69	SW	CO_2 based vehicle tax	promote low carbon vehicles	easy to understand & technology neutral			x	x	x	x	x	x	x	x	x	x	x		x	x		
70		green vehicle promotion stockholm	reducing number of cars in central Stockholm by only allowing green ones for free	can easily be diversified	x			x	x	x	x	x	x	x	x	x	x			x		
71	SW	CO_2 taxes		direct costs for fossil fuels & stimulans renewables			x	x	x		x									x		
72		law for ETUH fuel pumps		improving fuel infrastructure			x	x											x			
73	SW	definition 'clean vehicles'	to identify cars that have less CO_2 emissions & benefits	clarity opens up for action			x	x	x	x	x	x	x			x	x		x		x	
74		purchasing requirements procurements	give clear signals to market & demand	market is driven by consumers. Car buyers want national authorities			x	x	x	x	x	x	x			x	x	x	x	x	x	
75	SW	reduced tax on company cars driven by private people		flexibel measure (subsidies can be changed). Majority of new cars is bought buy companies	x			x			x				x		x		x			
76	SW	support research & demonstration of alternative fuels		policy development must start with intensive research & lessons learned from demonstration			x			x	x							x			x	
77		long term defined support to reduce emissions & improve efficient use		industry will only move when long term 'rules of the game' are defined			x			x	x	x	x					x			x	

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
78	FR	keep research centres in city	stimulate research & technology development	energy efficiency & pollution reduction		x											x	x				
79		use clean fuels	improve air quality	pollution reduction at low costs			x		x										x			
80	FR	Natural Gas Vehicle					x								x					x	x	
81		Hybrid					x										x	x				
82	FR	financial incentive to eliminate old vehicles	enhance car market & suppress polluting vehicles				x										x			x	x	
83		financial incentive to purchase clean vehicles	limit CO_2 emissions				x						x	x	x		x			x	x	
84	FR	car park electric vehicles		easiness - less space conventional cars	x								x									x
85		financiel incentive to purchase electric vehicles	purchase power dimuniation	easiness			x						x					x				
86	FR	carbon tax	limit emissions & promote alternative fuels	introduce the 'real future prices' of energy			x				x		x				x	x		x		x
87		financial incentive to purchase clean vehicles	promote purchase clean cars	introduce the 'real future prices' of energy			x				x		x				x	x				x
88	FR	car share & public transport	diminish number of vehicles in cities	financial incentive	x				x						x		x	x			x	x
89		financial incentive to eliminate old vehicles	decrease emissions	financial incentive			x										x	x		x	x	
90	FR	car park clean vehicles	advertising clean vehicles	advantage for driver	x																x	
91		oil tax		increases change in behaviour			x													x		
92	FR	pure plant oil experimentation	change of legislation	based on partnerships with farmers	x				x										x		x	x
93	FR	fiscal incentives					x						x				x	x		x		
94		low noice trucks			x								x				x	x				

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
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95	FR	public transport using electricity produced from waste	limit environmental impacts	availability of fuel	x						x		x					x	x			
96		multimodal approach with tax incentives	diminish pollution	emission reduction targets of public transport companies			x													x	x	
97	FR	free parking for electric vehicles	help develop electric vehicles		x								x							x		
98	FR	FAME	solve deficit of diesel production	local production imply interesting price			x		x									x	x	x	x	
99		E85	diversify sources	local production imply interesting price			x	x										x	x	x	x	
100	FR	electric plugs near car parks	help electric vehicles	information on the streets	x								x								x	x
101		research projects with local authorities on hydrogen/fuel cell	develop fuel cells	partners mobilisation		x										x		x				
102	GE	national plan for electric mobility	advance research & market	consolidated strategy among different ministeries, rapid & sound financial endowment, good combination of policy aims			x						x					x			x	
103		tax deduction on CNG / LPG	fostering market entry alternative fuels	successful in local bus & taxi market, relatively low conversion costs			x							x	x					x		
104	GE	national plan for electric mobility	advance research & market	consolidated strategy among different ministeries, rapid & sound financial endowment, good combination of policy aims			x						x					x			x	
105	GE	Quota and taxation system	increase market share biofuels	quota system can force implementation of FFV in Germany			x	x	x	x									x	x		

Q	C	Name of policy	Description of policy	Why is this policy a success?	Policy level			Fuel (technology) targeted by policy										Instruments policy consists of				
					Local	Regional	National	Bioethanol	Biodiesel	Synthetic fuel	Biogas	Hydrogen	Electric	LPG	CNG	Fuel cell	Hybrid	Stimulation of research & technology development	Legislative and regulatory policies	Fiscal measures	Information dissemination & awarness raising	Other assisting or voluntary measures
106	PT	incentive in acquisition alternative fuel buses	To provide opportunity to use EC and CNG in buses	Demonstration of fuel in daily life in professional context is needed			x						x		x				x	x	x	
107		low tax on biofuels	to stimulate production alternative fuels	easy to implement			x	x	x										x	x		
108	PT	Electric mobility - recharging Portugal	implementation national network of electric recharging points	Avoid negative effect of uncertainty on autonomy & allow more people to use electric vehicles			x						x					x				x
109		co-funding for new trolley bus	increase number of alternative fuel vehicles	allow purchase of electric trolley buses even when prices are high	x								x									x
110	PT	Electric mobility - recharging Portugal	Establish recharging infrastructure & encourage electric vehicles	multidiscplinary approach (cooperation with industry) and focus on open grid that allows competition of EC manufacturers			x						x					x	x	x		
111		national policy to promote biofuels incl tax exemption	Promote biofuels and decide upon what biofuels need to be used	large scope for further improvement			x		x										x	x		
112	PT	Electric mobility - recharging Portugal	reduce dependency on petrol	large political commitment			x						x					x		x	x	
113		Promote biofuels and natural gas	incorperate biofuel in diesel and exempt CNG from tax	commitment from large portuguese petrol company			x		x						x				x	x		

Table B.2 *Responses received on the questionnaire, part 2*

Q	Economic and financial factors						Social and environmental factors							Technical factors						Cultural and demographic factors							Transferability										
	Economic / financial crisis	High prices conventional fuels	Cost reduction through increased scale	Large subsidy amounts involved	Good cooperation between investors	Other	Emission restrictions in specific area	Local bad air quality	Parking problems in inner cities	Emission reduction targets	Other supporting policies	Debate about safety of specific fuel (technologies)	Other	Availability alternative fuel	Alternative fuel infrastructure	Technical adaptations to vehicles	Easy to use technology	Technical limitations of the vehicle	Other	Debate between fuels	Debate on biofuel vs food	Specific demographic conditions	Cars only used for short distances	Consumers willing to buy small and efficient cars	Positive image of specific alternative fuel within society	Other	Yes	No	Complete policy measure	Policy goals	Structure and content of policy	Policy instrument	Administrative techniques	Institutions involved	Ideas, attitudes and concepts	Negative lessons	Other
1	x							x		x				x	x		x						x												
2	x							x		x												x					x	x								
3		x					x	x																												
4	x						x	x																												
5																																				
6																																				
7	x		x	x																							x									
8	x						x			x																										
9	x	x					x					x				x					x				x		x		x			x	x			
10		x	x					x		x				x						x			x		x		x			x			x			
11					x		x	x	x								x	x				x		x	x		x						x	x			
12		x	x				x	x		x				x	x	x				x		x			x		x						x				
13			x				x	x		x						x									x		x		x				x				
14							x	x	x	x															x		x						x				
15													x		x									x			x		x								
16					x								x														x			x							
17	x		x	x			x	x						x	x	x	x	x		x	x	x	x	x	x		x			x						
18	x	x					x	x	x	x	x						x										x			x						
19													x	x	x		x		x								x		x								
20	x	x											x	x	x		x							x	x		x		x		x						
21		x	x					x					x				x	x			x	x					x										

Q	Economic and financial factors						Social and environmental factors							Technical factors						Cultural and demographic factors							Transferability									
	Economic / financial crisis	High prices conventional fuels	Cost reduction through increased scale	Large subsidy amounts involved	Good cooperation between investors	Other	Emission restrictions in specific area	Local bad air quality	Parking problems in inner cities	Emission reduction targets	Other supporting policies	Debate about safety of specific fuel (technologies)	Other	Availability alternative fuel	Alternative fuel infrastructure	Technical adaptations to vehicles	Easy to use technology	Technical limitations of the vehicle	Other	Debate between fuels	Debate on biofuel vs food	Specific demographic conditions	Cars only used for short distances	Consumers willing to buy small and efficient cars	Positive image of specific alternative fuel within society	Other	Yes	No	Complete policy measure	Policy goals	Structure and content of policy	Policy instrument	Administrative techniques	Institutions involved	Ideas, attitudes and concepts	Negative lessons	Other
22	x	x										x			x								x				x								
23		x					x			x				x	x	x	x								x		x								
24		x				x									x		x		x								x		x							
25		x								x															x		x								
26																											x				x				
27	x	x					x							x		x					x				x		x								
28	x									x															x		x		x						
29	x	x												x		x	x										x		x						
30											x																x								
31														x	x	x	x										x								
32		x		x	x				x	x					x	x	x	x					x	x	x		x				x				
33	x	x													x	x									x		x		x		x				
34		x		x			x	x		x	x	x				x	x	x									x				x		x		
35		x						x																			x		x						
36	x	x	x	x	x					x		x			x	x		x				x	x				x		x		x	x			
37	x	x	x	x	x			x		x		x			x	x				x	x	x	x	x			x		x	x	x	x	x	x		
38		x	x					x	x	x				x	x					x				x	x		x			x					x	
39				x											x	x	x			x							x			x	x					
40		x					x	x		x	x				x		x	x		x		x	x	x			x		x		x					
41	x	x					x			x	x			x	x			x		x	x				x		x		x		x					
42		x								x				x			x	x							x		x								
43				x						x									x	x	x						x				x		x			
44		x						x		x	x			x				x							x		x		x	x	x	x			
45		x						x		x				x											x		x		x		x				

Q	Economic and financial factors						Social and environmental factors							Technical factors						Cultural and demographic factors							Transferability									
	Economic / financial crisis	High prices conventional fuels	Cost reduction through increased scale	Large subsidy amounts involved	Good cooperation between investors	Other	Emission restrictions in specific area	Local bad air quality	Parking problems in inner cities	Emission reduction targets	Other supporting policies	Debate about safety of specific fuel (technologies)	Other	Availability alternative fuel	Alternative fuel infrastructure	Technical adaptations to vehicles	Easy to use technology	Technical limitations of the vehicle	Other	Debate between fuels	Debate on biofuel vs food	Specific demographic conditions	Cars only used for short distances	Consumers willing to buy small and efficient cars	Positive image of specific alternative fuel within society	Other	Yes	No	Complete policy measure	Policy goals	Structure and content of policy	Policy instrument	Administrative techniques	Institutions involved	Ideas, attitudes and concepts	Negative lessons	Other
46		x						x		x		x		x	x					x	x			x			x				x				
47							x	x		x						x		x					x		x			x							
48	x	x					x			x														x		x		x			x				
49	x	x					x	x	x		x						x						x	x		x			x				x			
50		x						x		x					x		x						x		x		x								
51		x	x					x		x					x		x							x		x					x					
52			x						x								x							x		x					x				
53				x							x						x							x		x							x			
54																																				
55																																				
56	x							x		x								x		x	x			x		x		x	x							
57			x					x		x		x				x	x			x			x		x											
58																										x				x			x			
59		x								x	x			x	x									x	x		x									
60				x						x	x			x	x							x		x	x		x									
61			x	x											x					x					x		x									
62					x				x					x	x																					
63		x		x					x	x				x	x	x	x								x		x				x				
64		x		x					x	x				x	x	x	x								x		x				x				
65				x				x	x						x		x	x		x					x		x		x							
66			x							x				x							x				x		x									
67	x	x		x				x			x				x	x	x				x				x		x			x		x			
68	x							x			x					x	x	x			x				x	x	x			x		x			
69	x																							x		x		x								
70	x						x	x	x	x				x	x											x		x								

Q	Economic and financial factors						Social and environmental factors								Technical factors						Cultural and demographic factors								Transferability									
	Economic / financial crisis	High prices conventional fuels	Cost reduction through increased scale	Large subsidy amounts involved	Good cooperation between investors	Other	Emission restrictions in specific area	Local bad air quality	Parking problems in inner cities	Emission reduction targets	Other supporting policies	Debate about safety of specific fuel (technologies)	Other		Availability alternative fuel	Alternative fuel infrastructure	Technical adaptations to vehicles	Easy to use technology	Technical limitations of the vehicle	Other		Debate between fuels	Debate on biofuel vs food	Specific demographic conditions	Cars only used for short distances	Consumers willing to buy small and efficient cars	Positive image of specific alternative fuel within society	Other		Yes	No	Complete policy measure	Policy goals	Structure and content of policy	Policy instrument	Administrative techniques	Institutions involved	Ideas, attitudes and concepts	Negative lessons	Other
71		x								x					x	x	x				x								x								
72										x					x	x					x																
73		x					x	x		x					x	x	x		x							x			x								
74	x	x	x	x				x		x					x	x			x										x		x						
75		x		x						x	x																		x		x						
76	x	x	x		x					x																			x								
77	x									x											x								x								
78		x								x							x		x					x					x		x						
79										x					x			x	x							x			x		x						
80		x								x							x									x											
81		x						x		x					x			x							x												
82										x							x	x																			
83								x																													
84		x							x									x						x				x									
85		x								x								x						x				x		x							
86	x	x	x	x						x					x	x		x			x			x				x		x							
87	x	x	x	x						x					x	x		x			x			x				x		x							
88		x		x				x	x	x								x	x	x	x			x		x		x					x	x			
89	x	x		x				x		x								x		x	x			x				x	x				x	x			
90				x					x						x	x								x				x		x							
91				x				x										x								x										x	
92		x								x					x		x		x		x					x			x						x		
93		x	x	x				x		x					x			x						x		x											
94																																					
95	x	x	x												x	x	x	x	x																		

Q	Economic and financial factors						Social and environmental factors							Technical factors						Cultural and demographic factors								Transferability											
	Economic / financial crisis	High prices conventional fuels	Cost reduction through increased scale	Large subsidy amounts involved	Good cooperation between investors	Other	Emission restrictions in specific area	Local bad air quality	Parking problems in inner cities	Emission reduction targets	Other supporting policies	Debate about safety of specific fuel (technologies)	Other	Availability alternative fuel	Alternative fuel infrastructure	Technical adaptations to vehicles	Easy to use technology	Technical limitations of the vehicle	Other	Debate between fuels	Debate on biofuel vs food	Specific demographic conditions	Cars only used for short distances	Consumers willing to buy small and efficient cars	Positive image of specific alternative fuel within society	Other	Yes	No	Complete policy measure	Policy goals	Structure and content of policy	Policy instrument	Administrative techniques	Institutions involved	Ideas, attitudes and concepts	Negative lessons	Other
96	x	x							x											x																	
97		x						x	x							x							x				x								x		
98		x	x							x				x		x	x	x		x					x		x								x		
99		x	x							x				x		x	x	x		x					x		x								x		
100	x	x							x					x				x					x				x		x								
101			x						x																x													
102		x	x	x				x		x						x		x		x			x	x	x		x			x							
103		x		x			x			x	x			x		x	x			x					x		x		x	x					x		
104		x	x	x				x		x						x		x		x			x	x	x		x			x							
105		x	x													x									x		x		x									
106		x	x	x								x		x											x		x					x	x				
107		x		x								x					x																				
108		x								x													x		x		x						x				
109	x			x						x															x		x		x						x		
110			x	x	x					x	x				x		x						x	x	x		x		x								
111			x	x						x				x			x										x										
112		x		x			x			x	x				x		x	x					x	x	x		x		x				x		x		
113				x				x		x				x	x		x			x	x				x		x			x				x		x		