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Measure Evaluation Results

GDA 1.1 Alternative Fuels

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Executive Summary

Urban agglomerations suffer from serious pollution problems caused by road traffic which is one of the main pollutant sources. To reduce the pollution cities seek for solutions which allow the reduction of CO₂ and other greenhouse gases emissions. One of these solutions for emissions reduction is the introduction of cleaner alternative fuels to the different type of vehicle users: citizens, bus operators, freight and special vehicle operators.

The MIMOSA measure 'Alternative Fuels' aimed at examination the possibility of using alternative fuels in public transport, car traffic and freight traffic in Gdansk. The measure consisted on the elaboration of a report to provide a comprehensive analysis of the current situation and the potential of development related to use of alternative fuel consumption in Gdansk. The report 'The possibility of a wide use of bio fuels for road transport in the City of Gdansk' was prepared within this measure by the City, together with a group of experts from the Department of Chemical Apparatus and Theory of Machines at Gdansk University of Technology. This measure was a fully theoretical measure without concrete implementation phases.

The measure was realised in the four followings stages:

Stage 1: State of the Art (September 2009 – March 2010) The first months were dedicated to conduct status quo analysis and stakeholders analysis with the aim to acquire the necessary knowledge and actively approach stakeholders involved and concerned by the measure.

Stage 2: Subcontractor selection process (April 2010 – August 2010) During this second stage the measure leader was mainly focused on drafting the specification for the final report and searching for a subcontractor.

Stage 3: Creation of a subcontracted report (August 2010 - April 2011) The subcontractor conducted field research with a focus on citizens' awareness and attitudes towards use of alternative fuels and combined the results in the final report.

Stage 4: Dissemination of the measure's results (April 2011-April 2012) MIMOSA team and the subcontractor worked in close cooperation to proof, review and publish the report called 'The possibility of a wide use of bio fuels for road transport in the City of Gdansk'. The results of the research were presented to 20 stakeholders from diverse sectors (public transportation providers, academic researchers, NGO, public institutions, etc) who received a copy of the final report.

The prepared report gave a clear answer on possibility of production and use of bio fuels in Gdańsk as one of the **key results** of the measure. One important determining factors is that oilseed rape is the most important and popular crop in the region. This had an impact on the decision to localise the first Greenfield bio fuels power plant of Poland there, which supplies the biggest polish oil company PKN Orlen. There is also a refinery owned by Lotos Group located in Gdańsk, which has potential to produce next generation bio fuels. The lack of adequate law regulations allowing this kind of production and further use of bio fuels proved to be a problem. There is also a group of five other distilleries and refineries around Gdansk's region already producing bio fuels which are used as a bio component by the all the companies producing and distributing fuels in Poland.

The RTD work also pointed out the existing distribution network of bio-fuels in Gdansk comprising the network of gas stations "Bliska" owned by PKN Orlen selling pure biodiesel. In contrast to a general lack of interest among the identified stakeholders, the surveys with residents carried out by the subcontractor revealed a significant awareness of the theme of

alternative fuels of Gdansk citizens. The general outcome of the survey showed a positive attitude of Gdansk citizens towards bio fuels and their willingness to introduce alternative methods of powering vehicles to Gdansk's public transport.

The report also showed possibilities of adapting buses and passenger cars to the use of bio fuels presenting best practice examples of cities such as Graz in Austria, Halifax in UK, Stockholm and Skelleftea in Sweden where bio fuel powered vehicle fleets already exist.

Since the measure is a "RTD only" measure, the evaluation approach was focused on process evaluation and allowed to identify the drivers and barriers encountered during MIMOSA. The progress of the measure was marked by good cooperation between the City and the Subcontractor over all four stages of the project. A crucial prerequisite for the successful measure realization was an extensive knowledge of the chosen subcontractor in the theme of alternative/bio fuels. So the subcontractor's wide experience in the field of bio fuels as well as his enthusiastic approach to the measure's assumptions constituted other **strong drivers** which supported the realization of the measure.

The **main barrier** which the measure encountered related to insufficient involvement and disinterest of policymakers in this topic, which resulted in insufficient consultation with PT providers and a general lack of involvement of all potential stakeholders. The measure leader tried to consult about 25 stakeholders such as farmers organisations, processors, refineries, fuel distributors, PT providers, freight companies, scientists and NGO's concerned with ecology to discuss the scope of this report with them. The goal of this action was to conduct a wide brainstorming which would have helped the creation of the outline for the report. The fact that only one person gave a feedback showed a total lack of interest in the theme of bio fuels among the contacted stakeholders in the region of Gdańsk.

To realize a similar measure **it is recommended** to work from the beginning in close cooperation with a centre of scientific research which could provide scientific inputs and suggest which type of bio fuel is appropriate to the local context as well as with a bio fuel producer/distributor who could supply the operator with the bio fuel. Moreover **it is crucial** to ensure political commitment from the earliest stage of the measure in order to work in a long-term vision and guarantee the implementation of the concept developed in the frame of RTD measure.

Planned as a preparation for an implementation after MIMOSA, a concrete implementation plan could not be achieved within the timeframe of the project. Due to lack of financial resources and the already mentioned lack of interest and support of stakeholders resulting in missing clear statements of policy-makers, law regulations and agreement with transport operator responsible for a testing phase, the measure was limited to RTD only.

However, MIMOSA has contributed to provide a comprehensive and context oriented analysis of the fuel issue in transportation system in the city. The city of Gdansk strived for dissemination of the results of the report, including the positive condition of availability of bio fuel in the region, to increase the acceptance and willingness of citizens, policy-makers and economic stakeholders to implement pilot studies with bio fuel vehicles in future. The situation may be influenced in future by increasing costs of fossil fuels and increasingly strict CO₂ regulations, which may sometime increase the support to carry out a pilot implementation in Gdansk. The RTD study provided a crucial theoretical basis for the elaboration of a long-term strategy of clean fuel consumption in Gdansk in the next years.

A Introduction

A1 Objectives

The measure objectives are:

- (A) High level / longer term:
 - To improve air quality
- (B) Strategic level:
 - Alternative fuels and clean vehicles
- (C) Measure level:
 - To investigate the feasibility of operating bio fuels (bio diesel or pure plant oil) in Public Transport vehicles, Commercial freight fleets, Private vehicles
 - Guidelines for development of a bio fuels realization programme

A2 Description

A growing need for fuels and energy arising from the economic development in the face of decreasing resources of fossil fuels imposes a move towards exploring and supporting advancement in use of bio-components, liquid bio fuels and other renewable fuels. Polish circumstances are determined mainly by the legal considerations of European Union which define the direction of development of bio fuels. It is important to mention that all the currently registered motor vehicles in Gdansk run on fossil fuels.

In order to answer the question whether production and use of alternative fuels in Gdansk is possible there was a need to examine the following issues:

Gdańsk as a city concerned with environmental issues wanted to examine the possibility of using alternative fuels in public transport, car traffic and freight traffic. The City, together with group of experts from the Gdańsk University of Technology, prepared a special report called: 'The possibility of wide use of bio fuels for road transport in the City of Gdańsk addressing all the important questions relating to use of alternative fuels. The subcontracted report included, among the others, a state-of-the-art review, taxation issues, legal constrains, alternative fuel supply, opportunities for production and distribution, adjustment of the vehicles to alternative fuels. Additionally a survey of awareness and attitude to bio fuels was carried out among citizens of Gdańsk by the subcontractor. Realization of the measure required involvement of all relevant stakeholders which were identified within the measure the description of measure GDA 1.1 – Alternative Fuels did not assume an implementation phase. However recommendations for future implementations were presented.

B Measure Implementation

B1 Innovative Aspects

The innovative aspects of the measure are:

- **New conceptual approach: New type of fuel examined.** – For the first time a comprehensive study examined all the issues concerning the possible use of alternative fuels in Gdansk. The study considered the whole process of production, distribution and use of different kinds of alternative fuels and their impacts on the areas of environment, society and the local economy. By a survey examining awareness and attitude of residents towards the use of alternative fuels, the perspective of potential users was also included.

B2 Research and Technology Development

Measure 1.1 – GDA Alternative Fuels is a fully theoretical measure without implementation phase. The main outcome of the measure is a subcontracted report elaborated by the group of experts from the Gdansk University of Technology.

The character of the measure required division of RTD activities into two parts. The first part was devoted mainly to pre - RTD activities carried out by the measure leader, who had to acquire wide knowledge in the field of alternative fuels in order to prepare the scope of the subcontracted document. This required consulting with organizations dealing with bio fuels, researching already existing scientific studies as well as meetings with stakeholders and experts. The measure leader investigated the relevant stakeholders. Farming organisations, processors, refineries, fuel distributors, PT providers, freight companies, scientists, NGO's concerned with ecology and citizens were identified as the most important stakeholders for the issue of bio fuels.

The pre-RTD activities were finished within the first 6 months of the measure. By then the research of possible subcontractors was done, which resulted in signing a subcontracting agreement between the City Hall of Gdansk and the team of experts of the Department of Chemical Apparatus and Theory of Machines at the Gdansk University of Technology. Unfortunately the stakeholders showed indifference to the issue of cooperation which constituted an important barrier.

The measure leader also contacted all the relevant stakeholders including municipal authorities due to determine the scope of surveys which had to be undertaken. During the consultation process it was agreed that the most adequate way of conducting surveys to receive reliable data would be subcontracting it to professional researcher. One conclusion of consultation of experts was also that the topic area which had to be covered by the questionnaires for residents may only be properly conducted by scientific research. Therefore the subcontracted report covered areas such as State of the Art review and analyses of potential production, installation facilities, legal and fiscal issues, fuel availability and distribution. Additionally, surveys concerning awareness and knowledge of bio fuel issues, attitudes towards bio fuels of residents of Gdansk and their willingness to run and use vehicles driven by bio fuels were carried out within the subcontracted report.

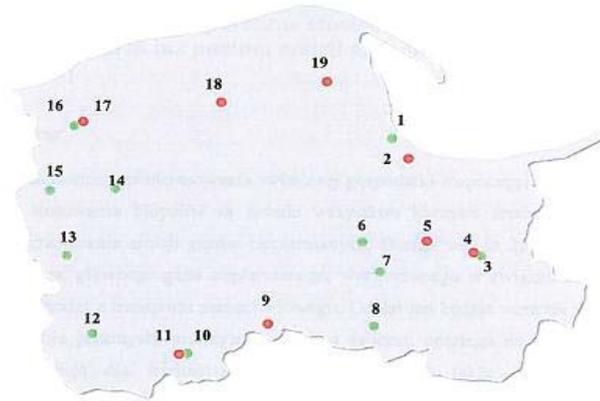
The experts carried out the scientific part of RTD activities within the measure and prepared a feasibility study structured as follows:

- 1) Introduction - the justification of the topic, the benefits of widespread use of bio fuels in road transport for the city and region.
- 2) Current situation in the country with particular focus on the region.
- 3) The state of knowledge on bio fuels and opinions of the residents of Gdańsk on the matter (through the survey).
- 4) Characteristics of bio fuels and methods for their conversion into useable energy:
 - a) First generation bio fuels: bio ethanol and bio diesel,
 - b) Second generation bio fuels - produced from raw materials not intended for food.
- 5) The formal/legal conditions for wide use of bio fuels in the region:
 - a) The legal rules regarding the use of bio fuels,
 - b) The legal rules regarding the production of bio fuels, including by individual producers (farmers),
 - c) Tax regulations,
 - d) Ways of supporting the development of the bio fuel market.
- 6) The technical problems connected with the possibility of the use of bio fuels in cars, trucks and public transport.
- 7) The quality of bio fuels - the standards required, samples of fuel, intended for distribution.
- 8) Economic aspects of the use of bio fuels in road transport.
- 9) The availability of bio-fuels - production and distribution of bio fuels in the region.
- 10) Environmental and social aspects of use of bio fuels in road transport (including the level of harmful emissions, increases in food prices).
- 11) Domestic and foreign experience in the widespread use of bio fuels.
- 12) Alternatives – hybrid engines.
- 13) Summary

The RTD work implemented within the measure gave a clear, but still theoretical answer on possibility of production and use of bio fuels in Gdańsk. One of the most crucial factors as already mentioned is the oilseed rape as the most important and popular crop in the region of Gdańsk.

This fact had also impact on decision of location in the Gdansk's region the first Greenfield biofuels power plant in Poland. Currently the plant supplies exclusively the biggest polish oil company PKN Orlen with componets for the production of biodiesel. Grupa Lotos, the other main market player of the Polish oil market, owns also a refinery located in Gdańsk, which also has possibility of production of next-generation bio fuels. However there is lack of adequate law regulations allowing this kind of production. There is also a group of 5 other distilleries and refineries around Gdansk's region already producing bio fuels. The RTD work also pointed at the existing distribution network of bio fuels (biodiesel) in Gdansk, which is illustrated at the following map.

FIGURE B2.1: Network of petrol stations selling pure biodiesel in Gdansk region.



Rysunek 46 Rozmieszczenie stacji Orlen i Bliska oferujących BIO100

1. Gdańsk, ul. Dąbrowszczaków 16
2. Gdańsk, ul. Miałki Szlak 14
3. Malbork, ul. De Gaulle'a
4. Grobelno, Grobelno 69
5. Tczew, Al. Solidarności
6. Skarszewy, ul. Starogardzka 5
7. Starogard Gd, ul. Mickiewicza
8. Skórcz, ul. Pomorska 16
9. Czernik, ul. Starogardzka 29
10. Chojnice, ul. Gdańska 66
11. Chojnice, ul. Człuchowska 64
12. Rzeczenica, ul. Białobórska 26
13. Miastko, ul. Słupska
14. Kołczygłowy, ul. Słupska 66
15. Kępice, ul. Sikorskiego 9
16. Słupsk, ul. Przemysłowa 34
17. Słupsk, ul. Gdańska 18A
18. Lębork, ul. 1-szej Armii Wojska Polskiego
19. Wejherowo, ul. Gdańska 103

Source: Ewa Klugmann-Radziemska, Witold M. Lewandowski, Anna Melcer, Radosław Kołosa, Piotr Meler, Krzysztof Ciunel, Katarzyna Januszewicz, Piotr Ostrowski, Magdalena Melaniuk: 'The possibility of a wide use of bio fuels for road transport in the City of Gdansk', Gdansk 2011.

Within measure implementation a wide range of surveys were carried out in order to examine knowledge and attitudes of residents of Gdansk towards alternative ways of powering vehicles. The surveys' results showed a very positive attitude towards use of bio fuels among residents of Gdańsk. The respondents demonstrated a significant knowledge on basic issues considering bio fuels. Over 90% of respondents agree that Gdansk could benefit from introduction of public transport powered by bio fuels (sample size: 470).

The report also showed possibilities of adapting buses and passenger cars to use bio-fuels giving best practice examples from cities where bio fuels-powered vehicle fleets already exist. The case of the City of Graz in Austria presented in the report constitutes a best-practise example for Gdańsk. Since 2003 all buses in Graz have been run on biodiesel. This biodiesel is produced from used plant oil collected from restaurants and households. Unfortunately the report did not provide information on financial end ecological benefits of introduction of biodiesel.

The current legal conditions are one barrier for a wide use of bio fuels in the Gdansk's region. This barrier will exist as long as the legal regulations are modified at national level.

Finally the subcontracted document also indicated the forthcoming perspective of the significant transition towards renewable fuels as an important argument in favor of a further use of bio fuels, driven by decreasing resources and increasing costs of fossil fuels and the need for a strong expansion of the range of activities directed at the protection of the natural environment.

The theoretical character of the measure and lack of implementation phase makes it almost impossible to foresee the future activities related to the measure. During the realization of the measure almost none of the stakeholders was involved in the performed activities, which means that the issue of use of bio fuels is still unfamiliar to them.

The report covered various areas of transport in the City. However the emphasis was put on Public Transport which is dependent on city authorities and therefore was actually supposed to be a subject of a possible pilot implementation. The subcontractor presented a comprehensive report on all possible kinds of alternative fuels and methods of its production and distribution which also applies to commercial freight fleet and private vehicles in general. Only an implementation phase could show the specific effects of bio fuel applications in the area of PT, car traffic and/or freight traffic in Gdansk.

The final meeting with stakeholders where results were presented and discussed at least brought about a declaration of Public Transport Operator, ZKM – Zakład Komunikacji Miejskiej, on a preliminary agreement to carry out a pilot implementation phase in future. This decision is dependent on obtaining another European project or additional funding for a bio fuel pilot study, that would secure financial resources for purchasing of biofuel and maintenance of the vehicle. Under present circumstances this seems to be almost impossible.

This disadvantageous situation is mainly caused by the fact that there is a general lack of policy which supports bio fuels on a national level in Poland. The government does neither support nor promote usage of alternative fuels. Transport operators are not provided with any incentives when using bio fuels. Therefore also the distribution system is still underdeveloped. The same situation exists on the city level. Those are the factors causing a general lack of interest among most of the stakeholders in testing bio fuels in Gdansk.

B3 Situation before CIVITAS

Gdansk is one of the largest Polish transport nodes of international significance. The city is situated at the centre of sea routes across the Baltic Sea and the land section of the 6th Trans-European Transport Corridor North-South, linking Northern Europe to Central, Eastern, and South-Eastern parts of the continent.

Gdansk suffers from increasing motorisation as mentioned already. The trend of a big share of households with one or two cars is reflected in Gdansk's modal split.

TABLE B3.1: Modal Split in Gdansk in 2009

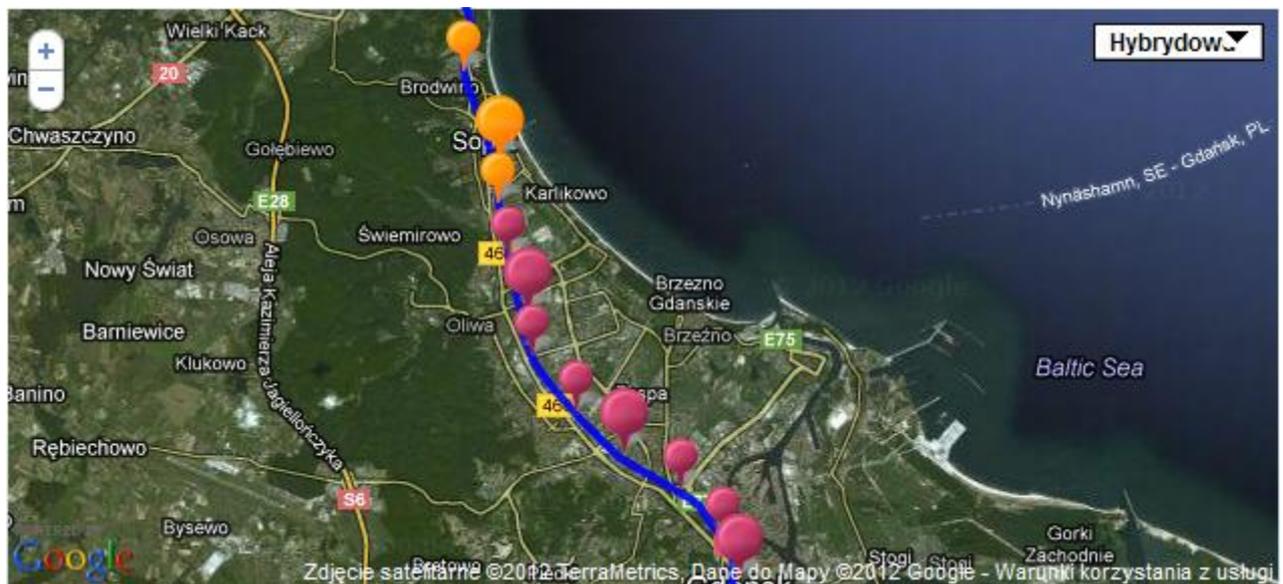
| Mode of Transport | Share |
|---------------------|-------|
| Car | 41,6% |
| Bus | 19,1% |
| Pedestrians | 16,1% |
| Tram | 16,0% |
| Fast Commuter Train | 5,7% |
| Bicycle | 1,5% |

Source: Internal data of the City Hall of Gdansk delivered by Faculty of Analysis and Socio-economic Research.

The city of Gdansk has over 455.000 inhabitants and accounts for the core of the entire population of the third urban agglomeration in Poland in terms of size. Made up of the functionally linked cities of Gdansk, Gdynia, and Sopot, (so called Trojmiasto) and the neighbouring towns and communes, the agglomeration has over one million residents. Gdansk as such ranks sixth in the size of Polish cities after Warsaw, Lodz, Krakow, Wroclaw and Poznan.

The back bone of the city transport system in this area is the Fast Commuter Train (SKM – Szybka Kolej Miejska) and the three-lane, dual carriageway connecting the three cities. This road is very congested particularly during peak hours.

FIGURE B3.1: Commuter train route and dual carriageway connecting Gdansk, Sopot and Gdynia



Source: www.skm.pkp.pl - website of Fast Commuter Train (SKM)

Gdańsk suffers from heavy congestion during peak hours. Large numbers of diesel engine powered heavy vehicles such as trucks, and buses result in high CO₂ and other greenhouse gases emissions. Gdańsk owns 221 diesel engine buses with a total mileage of 16 millions kilometres each year. It is worth noting that there are many private transport operators in Gdansk, the majority of them have diesel engine bus fleets. This situation requires an economical solution which would help to reduce air pollution and introduce new environmental friendly fuels.

Gdansk's transport strategy assumes that the number of means of transport in Gdansk will increase (35% more cars by 2030) as well as traffic in general. Therefore the main aim of local transportation policy is to constantly create conditions for efficient, environment friendly and safe transport. It is also very important to increase the quality of travelling within the city and outside the city. The transportation policy of Gdańsk will be made under sustainable development priority (eco-development). At this date, the city is actively developing this transport/mobility plan which includes large infrastructure projects to enable the city's future liveability. This plan covers:

- tramway renewal and extinction

- replacement of old trams and buses
- improvement of safety and security on roads and in means of PT
- improvement of traffic management to solve traffic jams and congestion in the city centre

Poland currently imports all road vehicle fuels for which it has to pay a full market price. Despite this dependency there is a general resistance to consideration of alternative fuels. Unfortunately none of the Gdansk's undertakings move PT towards introduction of alternative fuels because the support of developing the use of alternative fuels has not been included in the transport strategy of Gdansk so far. Currently there are not any incentives for the use of alternative fuels in the Gdansk region. To show the potential, barriers and drivers for a usage of bio fuel in the region of Gdansk this measure was introduced as a basis for creating a future pilot implementation. It is important to underline that a pilot implementation has not been planned so far.

B4 Actual Implementation of the Measure

The RTD-only measure was realized in the following stages:

Stage 1: State of the Art (*September 2009 – March 2010*) – During the first stage the measure leader became acquainted with the assumptions of the measure and the theme of alternative fuels. During this stage the measure leader was mainly focused on:

- studying measure description, current situations of alternative fuels in Gdansk, among the European Union and other countries
- approaching PT providers, PT Management and Politicians
- identification and listing of other relevant stakeholders
- listing of institutions possibly interested in the report results
- listing of possible issues to be dealt with in the report
- researching and contacting of possible subcontractors with a scientific background

During the first stage the measure leader held several meetings with stakeholders to improve the understanding of the measure assumptions. Also a brainstorming session within Gdansk Mimosa team was carried out in order to create a comprehensive report specification.

Stage 2: Subcontractor selection process (*April 2010 – August 2010*) – During this second stage the measure leader was mainly focused on:

- creating the final specification for the subcontracted report
- negotiations with the possible subcontractors leading to obtainment the best report terms
- signing a contract with the group of experts of the [Department of Chemical Apparatus and Theory of Machines](#) at the Gdansk University of Technology as the subcontractor in August 2010

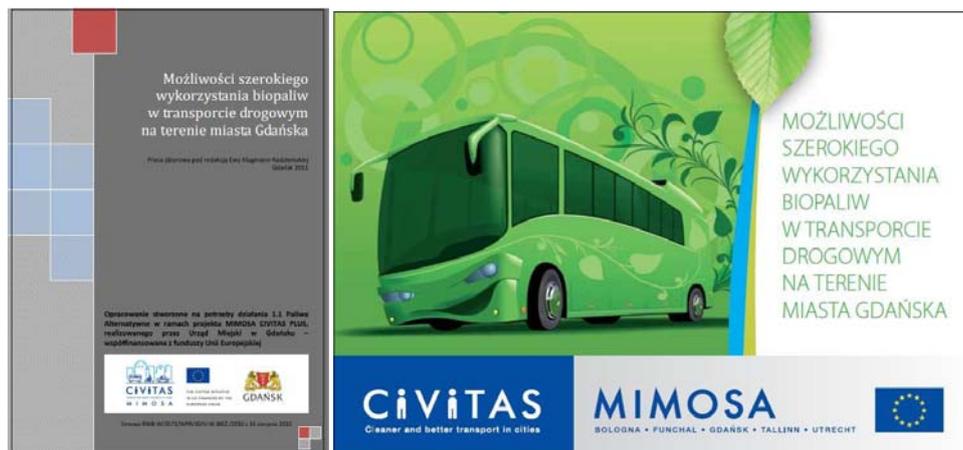
Stage 3: Creation of a subcontracted report (*August 2010-April 2011*) – During the third stage the measure realization was mainly focused on:

- conducting research and elaborating the report by the subcontractor
- conducting surveys examining citizens' awareness and attitudes towards use of alternative fuels (by the subcontractor)

Stage 4: Dissemination of the measure's results (April 2011-April 2012) – During the fourth stage the measure leader was mainly focused on:

- verification of the report delivered by the subcontractor which took 4 weeks due to necessity of introducing amendments
- organizing of a re-visit of stakeholders, during which all the stakeholders became acquainted with the results of the report and got the PDF file with the subcontracted report. The meeting was attended by 20 stakeholders from different organizations (ZKM –PT Operator, ZTM - PT Management, PSSTM – NGO dealing with public transport, WIOS – governmental organization dealing with environmental issues, experts from Technical University of Gdansk, KDS – automotive NGO).
- Producing the informative brochure about the research results which was handed over to the stakeholders during the re-visit to summarize the results. The brochure (figure below) was called like the report – ‘The possibility of a wide use of bio fuels for road transport in the City of Gdansk’. The front page was created by polish graphics company – “Swierszcze”. All the pages of this brochure have got green colour and a very similar style like the front page presented below. Due to scientific character of the report and the brochure its distribution was restricted to the stakeholders during this meeting.

FIGURE B4.1: Front-page of the subcontracted report and the informative brochure



Source: Klugmann-Radziemska, Ewa (ed.): ‘The possibility of a wide use of bio fuels for road transport in the City of Gdansk’. Gdansk 2011, front page.

B5 Inter-Relationships with Other Measures

The measure is related to other measures as follows:

Measure 1.1 - Alternative Fuels is one of the two measures being implemented in Gdansk which are entirely theoretical. Because of the fact that the measure has only a RTD phase it is quite difficult to indicate any inter-relationships with other measures.

- **Measure 4.3 - Mobility Week**

However the general assumptions of measure 1.1 are in accordance with specific objectives of measure GDA 4.3 Mobility Week which addresses different pillars of sustainable mobility issues. Promotion of alternative fuels (GDA 1.1) is one of them. During the events of Mobility Weeks in 2010 and 2011 hybrid, ethanol and other pro-ecological vehicles were introduced to the audience.

C Impact Evaluation Findings

Not applicable.

D Process Evaluation Findings

D1 Deviations from the Original Plan

The deviations from the original plan comprised:

- **Delay** – The only deviation that occurred during the measure realization was a slight delay of realization, caused by a general delay of starting of the MIMOSA project in Gdansk. During the first year the biggest effort of the Gdansk MIMOSA activities was dedicated to the organisational and horizontal activities like preparing the employment procedures for the MIMOSA staff. Additionally, some organisational problems related to long and demanding employment procedures in the city hall of Gdansk caused some difficulties in the implementation of the first tasks. Fortunately, the problem of delay was solved during stage 1.

D2 Barriers and Drivers

D2.1 Barriers

Preparation Phase

- **Stakeholder involvement** (5 – *Involvement, communication*) – The first barrier is related to insufficient involvement, disinterest of policy-makers and insufficient consultation from PT providers which generally caused a lack of involvement of potential stakeholders. The 25 stakeholders, which were contacted to discuss issues to be interesting and to be included in the report. This action was meant to be a kind of a wide brain storming process, which should have helped the preparation of the outline of the planned report. Unfortunately, only one stakeholder gave a feedback which reflected a total lack of interest in the theme of bio fuels among relevant stakeholders.
- **Bureaucracy** (2 – *Institutional*) – The second barrier is relevant for all the measures of Gdansk. As a result of administrative structures, procedures and routines, existing rules, laws and regulations and their application the progress of the measures was impeded and caused additional efforts.

D2.2 Drivers

Preparation Phase

- **Good cooperation with subcontractor** (8 – *Organizational*) – The only driver that should be mentioned here is related to a good cooperation between measure leader and the subcontractor, the Gdańsk University of Technology. A crucial issue for the measure implementation is an extensive knowledge of the subcontractor in the theme of alternative/bio fuels. The fact that the subcontractor has already dealt with the issue of bio fuels in Gdansk is a strong driver. Additionally, the subcontractor's enthusiastic approach to the measure's assumptions strongly support the implementation of the measure.

D2.3 Activities

Overall activities

- **Coordination of measure's realization (2 – Institutional)** – Due to the fact that the core part of the measure was subcontracted, the main activity of the Gdansk MIMOSA team was preparation of the subcontract and coordination, post processing and dissemination of the work carried out by the subcontractor.

Preparation phase

- **Activities 1 (5 – Involvement)** – Acquiring knowledge in field of bio fuels and relevant stakeholders and holding several meeting with possible subcontractors.
- **Activities 2 (2 – Institutional)** – Creating the final specification for the subcontracted report followed by negotiations with possible subcontractors to obtain the best report terms.
- **Activity 3 (2 – Institutional)** – Finalizing the subcontract and signing it by the chosen subcontractor in August 2010.

Realization phase

- **Activity 1 – (4 – Problem related)** Carrying out research by the subcontractor.
- **Activity 2 – (5 – Involvement)** Development of an information brochure summarizing the results of the scientific report.
- **Activity 3 – (5 – Involvement)** Organizing a re-visit of stakeholders in order to disseminate the measure results among the group of stakeholders and raise more interest for the issue of bio fuels in Gdansk.

D3 Participation

D3.1 Measure Partners

Department of Public Utilities of the City Hall of Gdansk, where the Gdansk MIMOSA team was located, was responsible for the realization of the measure on the part of the city.

Group of experts from the Gdansk University of Technology (Department of Chemical Apparatus and Theory of Machines) responsible for elaborating a subcontracted report entitled: 'The possibility of wide use of bio fuels for road transport in the City of Gdansk'.

D3.2 Stakeholders

Among the identified relevant and contacted stakeholders of measure 1.1 – GDA Alternative Fuels were:

ZKM – Public Transport Provider

ZTM – Public Transport Management

PSSTM – Pomeranian Association of Public Transport Fans

WARBUS – Company providing a part of bus transport service in Gdańsk

BAPE – Baltic Energy Conservation Agency

LOTOS – Polish Oil Company producing biofuels

KDS – Automotive NGO

WOIS – Regional Inspectorate of Environment

It is difficult to differentiate between the roles of each stakeholder in the measure. All of them showed indifference and did not play an important role during the measure realization.

- **All stakeholders** - The general problem in Gdansk was a lack of interest shown by all contacted possible stakeholders except for the possible subcontractors. The measure leader contacted all possible stakeholders in Gdansk by both mail and telephone. Unfortunately there was weak feedback from the institutions (including institutions dependant on the Gdansk City Hall), PT providers, offices, and organizations. Therefore it was difficult to write about specific participation of each stakeholder.

D4 Recommendations

D4.1 Recommendations: Measure Replication

- **Need for implementation phase** – Measure 1.1 – GDA Alternative Fuels is a fully theoretical measure without any implementation phases. The main outcome of the measure is a subcontracted report elaborated by the group of experts from the Gdansk University of Technology. There has not been planned any implementation phases so far. However in order to obtain valuable results, the measure description should assume also an implementation phase, where the research outputs could be tested under real circumstances after the theoretical pre-study. In case of PT, which is the most probable to carry out the possible implementation phase, this requires an agreement with Public Transport operator who would be responsible for the testing phase. It is important that the PT Operator purchased or already disposed a vehicle suitable for a bio fuels use.
- **Security of alternative fuel supply** – Another important issue to be handled before an implementation phase is security of alternative fuel supply. This would be problematic, if an unusual kind of bio fuel had been chosen for testing. It is also important to underline factors like terrain, temperatures during winter time or distances between bus stops, which influence a different cost-effectiveness of bio fuel among cities.
- **Availability of subcontractor** – The city implementing such measure should have a centre of scientific research that could propose the most adequate kind of bio fuel adequate to local circumstances as well as bio fuel producer/distributor who could supply the operator with the bio fuel.

D4.2 Recommendations: Process (Related to Barrier-, Driver- and Action Fields)

- **Bio fuels policy** – The measure testing possibility of wide production and use of bio fuels should be realized only, if there is a general pro bio-fuels policy on both national and city level. Otherwise the implementation phase can encounter several barriers that impede and cause delays (lack of law regulations, lack of distribution network, lack of supplier, lack of vehicles suitable for testing bio fuels) as well as total lack of interest on the part of the key stakeholder. At least a policy commitment should be achieved in the preparation phase to guarantee an appropriate handling of the results and a promotion of pilot implementation after a theoretical pre-study.

E References

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