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## SUMMARY

The aim of the evaluation report is to give an overall picture of how the evaluation was carried out for the pilot activities, what the main challenges were, that had to be overcome, and how the final results could contribute to the set goals and vision.

It describes the evaluation process through the pilot implementation and how the involved partners and experts contributed to this process as well as the final conclusions, recommendations, performance, satisfaction with and success of the activities and results.

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## 1. SET-UP OF THE EVALUATION PROCESS

For the evaluation of the pilots a team of experts from within the partners and the observers, called e-MAB who would proactively carry out the evaluation was put together.

The appointed members were as follows:

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| ***secretary:*** | | |
| RSE | Cristina Cavicchioli | ITA |
| ***external members*** | | |
| Italian Ministery of Transport | Gian Piero di Muro | ITA |
| German Federal Ministery of Traffic and Infrastructure | Christian Schlosser | DE |
| Ministrstvo za infrastrukturo | Matjaž Vrčko, M.Sc | SLO |
| State Agency for Electric Mobility and Fuel Cell technology Baden-Württemberg e-mobil BW GmbH | Wolfgang Fischer | DE |
| Provincial Government of Carinthia | Gerald Miklin | AUT |
| Austrian Ministery of Traffic | Ernst Lung | AUT |
| ***internal members*** | | |
| Laurent Cogerino | RAEE | FRA |
| Silvana di Matteo | Lombardy Region | ITA |
| Ludwig Karg | BAUM | DE |
| Blanka Odlazek | BSC | SLO |
| Wolfgang Hafner | Municipality of Klagenfurt | AUT |

The members were invited to all project partner meetings, where the current status of the pilots was presented. Then they were asked for any contributions they may have on the development of the pilots.
The meetings took place on the following occasions:

- Partner Meeting in Strassbourg, 5. July 2017
- Partner Meeting in Bled, 22. January 2018
- Partner Meeting in Bad Reichenhall, 18. October 2018

Details on the pilot presentations and any comments, as well as the attendance of the e-MAB members including the attendance of substitutes can be found in the minutes (including presentations and signature lists) of these mentioned meetings. The responsibility for carrying out the meetings, collecting statements from e-MAB and the documentation was with the LP.

The members of the e-MAB were also invited to discuss and share any contributions on the e-Moticon web platform and informed and invited to share their views occasionally in between meetings via email.

Additionally the project partners themselves especially the leaders of the work packages and the pilot leaders but also all partners involved in the implementation contributed to the evaluation process through especially dedicated coordination meetings:

- WP coordination meeting in Munich, 13. April 2017
- WP coordination meeting in Brescia, 22.November 2017

Furthermore pilot internal coordination and adaption processes evaluating the day-to-day status of the implementation and circumstances took place throughout the whole implementation period which led to changes in the pilot implementation if needed.

## 2. DESCRIPTION OF THE KPI DEVELOPMENT

One main element in the evaluation of the pilots was the definition of key performance indicators (KPI) to check whether the pilots reach the set goals and contribute to the tasks, they were designed for.

It was intended to have a definition on the KPIs from the e-MAB members early in the project. Still the process turned out to be more complicated than expected.

Thus a suggestion on a potential list of joint KPIs for all three pilot activities was made by the WP T3 leader as part of the roadmap and presented at the Strasbourg Meeting to ease the decision for the e-MAB members.

The list was as follows:

1. Number of upgrades to interoperable technical standards for existing E-CS
2. Number of new interoperable E-CS
3. Number of new non-interoperable E-CS
4. Number of planned E-CS
5. Number of funded E-CS
6. Increase in tracked charging processes at interoperable E-CS
7. Number of pro-active requests for support made to the people responsible for the pilot actions/named experts
8. Number of conversations / informed people via one-on-one meetings, group meetings, events
9. Number of cooperation talks attended and/or initiated
10. Number of site clicks on virtual points of access and information associated/relevant for the pilot actions
11. Number of positive feedback statements from reached stakeholders

It was stressed by the WP T3 leader during the meeting in Strasbourg that the e-MAB members have to check and improve the criteria of the monitoring indicators of the eMoticon pilots and the attendants agreed to this during the discussion. (see minutes Strasbourg meeting)

As no active contributions were received during the next weeks, the e-MAB was further supported in the definition of the KPIs by the WP T3 lead by starting a discussion on the internal web-platform, asking them to:

- vote for the KPIs you want to use
- state which KPIs to skip
- suggest different/new KPIs

Two e-MAB members contributed to the online discussion.
One member added comments on which KPIs may be suitable for the pilot e-TRAIL, the other made more general comments.

The results from the inputs were as follows:

- KPI numbers 1, 2, 6, 8, 9, 10, 11 may be suitable for various pilot activities.
- KPI numbers 1, 2, 6, 8 may be suitable for e-TRAIL.
- A comment that the KPIs should fit to the strategy and guidelines which is difficult to make sure as long as these outputs are not completed.

As this online discussion did not lead to a final decision on the KPIs, the topic was brought up again at the meeting in Bled, where the decision was made that the pilot action leaders should be responsible for defining the KPIs for their pilot activities to come to a reasonable and final decision, as they are the experts for their topics.

The KPIs defined for the pilot P&L by the pilot action leader with contributions and feedback from the partners involved in the pilots were the following:

1. Tracked charging processes of interoperable E-CS
2. Analysed charging processes of interoperable E-CS
3. Number of cooperation talks attended and/or initiated
4. Number of questionnaires elaborated
5. Number of questionnaires disseminated
6. Number of EV users and stakeholders reached with questionnaires
7. Number of vehicles monitored
8. Number of planned E-CS
9. Number of funded E-CS
10. Number of stakeholders involved in P&L (municipalities, regional authorities, investors, companies…)

## 3. EVALUATION DURING THE START-UP OF ACTIVITIES

The most important evaluation task during the start-up of the pilot activities was the definition of tasks to be carried out with respect of the current state of e-mobility development and framework conditions in the involved countries and regions in mind.

To support this activity which resulted in outlining the planned pilot activities in the roadmap, an internal evaluation discussion with the pilot action leaders and 3 of the e-MAB members was held in Munich resulting in the following conclusions.

One first task given to the pilot action leaders was to check whether all the partners are located in the fitting pilot activities with the implementation ideas voiced at the drafting and start of the project. The check resulted in a confirmation overall.

In the case of P&L the fast changes in the e-mobility and charging sector since the first draft of the project have a huge influence on what activities can be useful to contribute to a better localization of E-CS. For example in Germany funding programs have been established in the meantime which already triggered the investment and installation of several E-CS often without concerns about the best localisation, but additionally there are also funding programs for the development of e-mobility concepts which are taking localization issues into account. Furthermore there are regions with already existing charging infrastructure and according data in some cases provided by public bodies, in some cases by specialized businesses who target the most lucrative locations. Considering these developments and using them to create an added benefit with the pilot activities is crucial. Then the findings can have added value and create an advantage for regions not yet as developed in terms of E-CS by supporting them from the start to develop the best locations and use all necessary means to foster the development.

These findings were considered during the draft of the activities for the roadmap, defining the planned activities and the adjacent implementation of the P&L pilot activities.

Another evaluation task during the start-up was feedback from the e-MAB board on the general set-up of the pilots and the definition of KPIs after the roadmap was introduced in Strasbourg. The decision process on the KPIs was carried well into the implementation phase of the pilots as already described in chapter 2. Lots of statements of the e-MAB board voiced during the meeting in Strasbourg were on general project issues including the dissemination, strategy etc. but there were some comments and statements relevant for the pilots, which were kept at the backs of partners minds during the implementation, which can be summarized as follows:

- Knowledge on how to attract end-users and involve e-mobility producers is needed
- Potential risk that investments in charging infrastructure may be unbalanced compared to the number of e-vehicles
- PAs need to know what the investors' interests and industrial developments, including the meaning of interoperability, are to act accordingly
- The development of e-mobility is also related to other developments in the mobility sector → mobility as a service

- The state of the art in the different countries as well as current developments and the vision for the future need to be kept in mind to ensure a reasonable development of E-CS
- The role of the PAs as a planning and regulation authorities is to be kept in mind

## 4. EVALUATION DURING THE IMPLEMENTATION OF ACTIVITIES

During the implementation of the pilot activities the e-MAB members were provided with an interim status of the pilot activities and KPI development via email in November 2017 and in person at the meeting in Bled end of January 2018.
The further development in the KPI discussion and solution to it, passing it to the pilot action responsibles is already outlined in chapter 2. To the current state of the pilot implementation no comment or recommendation was given by the e-MAB members.

The partners involved in the pilot actions themselves though had to revaluate their plans continuously during the implementation as they were confronted with new challenges, developments and findings, some of the which could be solved and some of them which could not be resolved and led to changes on the way.

Main challenges for P&L, which became apparent during the implementation, was as follows:

- Changing responsibilities and external dependencies prohibited the collection and use of initially foreseen data thus making some of the intended analyses impossible.

Thus flexibility, giving things time to unfold, creativity in finding different solutions, collecting own data and forging strong cooperations to be less dependent on external data and vulnerable to changing conditions were found to be key to the implementation of P&L activities.

## 5. FINAL EVALUATION

For the final evaluation next to the KPI table to be filled in, a set of questions was developed for the e-MAB members but also all involved partners and presented together with the initial goals from the roadmap and the pilot activities status report in Bad Reichenhall. On the one hand the questions were designed to consider the success of the pilot activities in terms of fulfilling the original vision defined within the project:

1. Do the results we achieved contribute to make our vision come true? Travel through the Alpine Space with eVs conveniently?
2. Did we succeed in executing our strategy to empower PAs and companies to initiate and implement measures?
3. Do our pilot actions as we carried them out help tackle challenges arising during the development of emobility?
4. Do the activities test and assess measures to enable stakeholders in building an interoperable E-CS network?
5. Did we analyse E-CS solutions, test ideas and create knowledge?

On the other hand the questions intended to collect personal impressions, experiences and satisfaction with the results:

6. Which results do you consider more significant ?
7. Are results aligned with your expectation ? Anything missing ?
8. Recommendations to ensure long term implementation of results ?
9. Do you believe recent developments in e-mobility sector impact current project and the use of the results of the pilots (relevancy? change in direction?) ?
10. KPIs reflecting project goals ? Progress on KPIs within expectation ?
11. Do the pilot results support the guidelines? Is it clear how they can do that?
12. General feedback ?

Due to a lack of time during the meetings, as well as to give additional time to think, people were asked to provide their answers via email.

The response rate was low probably due to a high workload of the people invited to answer in the weeks and months after the Bad Reichenhall meeting, still some answers came in painting the following picture:

Concerning fulfilling the vision of travelling through the Alps with E-CS conveniently (1) a formal yes would be to ambitious but the activities in the project clearly helped to get one step closer to this vision by fostering and contributing to the implementation of interoperable E-CS. As far as the success to empower PAs and companies (2) goes, it can be said that at the sphere of influence of partners and the project the partnership succeeded although it is an ongoing process. The knowledge and capacities of informed and involved stakeholders to deal with e-mobility could be improved significantly. The answer to the question whether the pilot actions helped tackle the challenges at hand (3) was a clear yes. As the pilots clearly contributed to raising awareness and knowledge concerning the roles of different stakeholders and giving them a boost in developing e-mobility and interoperable charging further. The activities could also help in testing and assessing measures (4) on different levels and do provide the according information in the final reports. The implemented activities and results created are beneficial for the diffusion of e-mobility and brining interoperability one step further. Analyses of E-CS solutions, testing ideas and creating knowledge (5) was an essential part of the activities though it did not happen globally at this point of time but for the scales project partners could influence during their activities providing a basis and a contribution for a more global and transnational picture though.

A clear answer to which results were considered most significant (6) cannot really be given as this actually varies a lot, also depending on the needs of different regions which also led to an according engagement in one activity or the other in the first place. Thus a whole bundle of results can be offered to interested parties to pick from depending on their existing needs. The expectations (7) were met in many cases although due to the various challenges that had to be faced which also led to changes along the way not all expectations could be fulfilled. The main recommendation (8) from e-MAB is to ensure that the started activities and development are carried on, involving the right people and fitting current and future needs. The results of the project are considered to go along the current developments in the e-mobility sector (9), although in some regions the general development is ahead of the regional implementations which gives those regions time to learn and avoid mistakes. The produced results, the experience and knowledge gained through the pilot activities can be

used for the guidelines (11) and contribute to sharing these insights, thus contributing to helping others in the implementation of E-CS and learn from the results. All in all the satisfaction with the results is high. (12)

Those direct insights came from members of the e-MAB. Most project partners though shared their insights relevant for the evaluation especially concerning recommendations and long-term implementation (11) and KPIs (13) through contributions in the final report and filling the KPI tables.

The activities carried out within the pilot P&L faced the most difficulties due to the continuing development of E-CS networks, many players in the field installing E-CS and lots of external factors such as political will, company cooperation, external data, which are in many cases not controllable by local PAs and stakeholders invested in fostering an E-CS network serving public interests. These circumstances led to a major delay and also the need to change original plans. The challenges though were mastered by high creativity, flexibility, endurance and patience in carrying out the tasks, leading to satisfactory results and outcomes in the end which provide great potential for learning and thus involving stakeholders in getting involved in e-mobility and building better E-CS networks.

As main recommendations and conclusions from the pilots the following can be derived:

- Monitoring existing E-CS and analyses of their back-end data can give valuable clues for locating new E-CS at suitable high frequency places but also reconsidering existing E-CS locations in terms of mid- and long-term suitability.
- The involvement of users in E-CS infrastructure planning can improve the quality of the network and thus increase usage and success of e-mobility.
- Companies (even when providing private and semi-private E-CS) can contribute to the overall network and acceptance of e-mobility, thus their involvement should be fostered to reduce the necessity of an unnecessary large number of public E-CS provided by PAs.
- Relevant data for planning E-CS infrastructure should be provided together in one place to ensure location decisions are founded on solid basis considering all sorts of influencing factors.

In terms of reaching the goals set for the implementation of the pilot activities the final fulfilment of the KPIs looks as follows:

| **Indicator name** | **Target value** | **Baseline** | **Reached value** |
|---|---|---|---|
| Tracked charging processes of interoperable E-CS | 20.000 | 0 | 27.670 |
| Analysed charging processes of interoperable E-CS | 20.000 | 0 | 27.670 |
| Number of cooperation talks attended and/or initiated | 5 | 0 | 10 |
| Number of questionnaires elaborated | 4 | 0 | 4 |
| Number of questionnaires disseminated | 1000 | 0 | 1370 |
| Number of EV users and stakeholders reached with questionnaires | 100 | 0 | 330 |

| | | | |
|---|---|---|---|
| Number of vehicles monitored | 20 | 0 | 23 |
| Number of planned E-CS | 5 | 0 | 5 |
| Number of funded E-CS | 5 | 0 | 3 |
| Number of stakeholders involved in P&L (municipalities, regional authorities, investors, companies…) | 50 | 0 | 30 |

The KPI fulfilment shows that the main goals were reached even over-achieved in some cases as with the changes in plans and circumstances, even though delays occurred, more analyses, questionnaires and vehicle trackings could be realized. Still in terms of fulfilling impact goals such as involved stakeholders and funded E-CS the difficulties in attracting stakeholders to participate actively and the dependency on external factors out of direct control of the partners shows. Nevertheless the achieved results are satisfactory as the satisfaction of the stakeholders who got actively involved is very high and the results are useful for long-term use providing the chance to attract more stakeholders in the near future to get involved in similar activities as the ones tested during the pilot implementation thus leading to achieving the aspired KPI target values even after the closure of the project. For example one stakeholder who dropped out of the P&L activities due to internal restructuring processes renewed the declaration of interest after the pilot activities were finally closed.