New challenges and approaches for sustainable freight transport in the Alpine Space

Results from the European Project SusFreight

The SusFreight ("Sustainable Freight Transport – Now and Tomorrow") project was carried out in the framework of the Alpine Space Programme - European Territorial Cooperation 2007 - 2013 (INTERREG IV B), funded by the European Regional Development Fund (ERDF) and national co-funding. It does not necessarily reflect the opinion of the European Union.

PREFACE

The Alps are a major natural bottleneck in Europe. At the same time, they are an area of dynamic economic activities and growth. Freight transport as transit traffic crossing Europe in North-South direction as well as traffic occurring from the business activities in the Alps have a huge impact on the environment as a whole. Transport through the Alps therefore represents threats and opportunities at the same time.

For many years, actors in the Alpine Space have been coping with the complex issues related to transport in the region. Various projects were realised, and they produced results in all categories that have relevance for freight transport. They related to economic activities, technical solutions, legal and policy frameworks, behavioural changes, stakeholder involvement, spatial planning, data mapping and collection, ecological protection and so on.

This recommendation paper aims to provide the reader with information on how the results of former projects were sampled and analysed. Consequently and based on the political, economic and scientific framework, it derives recommendations to follow up current achievements towards sustainable freight transport.

The findings of this work are meant to contribute to a more focused and effective work in the Alpine Space. Its aim is to enhance the content of future projects with a long-term impact in the funding period 2014+, building on the broad experience gained in all projects so far. The project recommendations address both the new Alpine Space Programme and may also help other transport-related projects with an additional dimension to consider.

German Association for Housing, Urban and Spatial Development – Lead Partner

CONTENT

Executive summary

The project "SusFreight, Sustainable Freight Transport – now and tomorrow", is a project co-financed by the Alpine Space Program and aims at addressing the most critical issues related to transport through the Alpine Region. Transport is essential for mutual economic growth and development of the dynamic regions composing the Alpine Space. However, its negative impacts must be considered properly and mitigated effectively in such sensitive natural and human environment.
The SusFreight project mapped the relevant stakeholders as well as projects and initiatives in the Alpine Space and beyond. The aim was to valorise and capitalise the experiences of previous projects. The project synthesises former results and provides for the first time an overall summary of the conducted activities in the past years. As a result of this analysis, a number of thematic fields has been identified where future action is required, with the aim of increasing sustainability of freight transport.
Through capitalizing former project experience, SusFreight has paved the way towards a potentially more focused project implementation in the Alpine Space in the funding period 2014+. The experience of former activities and science-based discussions have shown that certain approaches were unrewarding and should not be repeated, such as the top-down oriented planning and policy implementation which sometimes led to solutions, not considering the customer-focused and market-oriented thinking of companies.
An example is the focus on logistic companies as target groups in certain projects, whereas those kinds of companies in reality have no capacity to partake in regional planning and networking activities due to their short-term planning approach, solely oriented towards flexibility and the customers' needs.
Arguing from this point of view, with its results produced, the SusFreight project gives recommendations to the public sector. Recommendations address and fill relevant gaps, thus suggesting a more consistent and effective framework to support future policies and projects and reshape EU Programmes – Alpine Space 2014+ in particular - in the field of sustainable transport and mobility. It addresses general policies with a stronger focus on incentives for political, public and economic actors and an advisory, rather than restrictive attitude. As a major capitalisation result, the

report lists 18 recommendations that can help improving future projects and recommending to develop a more effective way of implementing European policies. The list of recommendations is not exhaustive, but it covers all major thematic fields related to freight transport. Figure 1 shows a cluster of the recommendations.

Figure 1: cluster of recommendations,

Source: SusFreight Project

Zusammenfassung

Das Alpenraumprojekt „SusFreight, Sustainable Freight Transport – Now and Tomorrow", gefördert durch den Europäischen Fonds für Regionale Entwicklung, thematisiert die größten Herausforderungen im Bereich Güterverkehr, insbesondere des alpenquerenden Verkehrs. Es zieht aus vergangenen Projekten Schlüsse für künftige Projekte und Ansätze, die zur Nachhaltigkeit im Güterverkehr beitragen können. Gütertransport ist eine wichtige Komponente des Wirtschaftswachstums und der Entwicklung dynamischer Regionen im Alpenraum wie auch darüber hinaus. Allerdings müssen in einer sensiblen Umwelt auch die negativen Auswirkungen berücksichtigt und kompensiert werden.
Das Projekt SusFreight bildet sowohl die relevanten Akteure als auch Projekte und Initiativen innerhalb und außerhalb des Alpenraums ab. Ziel war es, die Erfahrungen vergangener Projekte auszuwerten und sich diese zu Nutze zu machen. Das Projekt bündelte die bisherigen Ergebnisse und verschaffte erstmals eine Gesamtübersicht durchgeführter Aktivitäten der vergangenen Jahre. Als Ergebnis der Analyse wurden jene Themengebiete herausgefiltert, in denen künftig besonderer Handlungsbedarf entsteht, wenn der Güterverkehr nachhaltiger werden soll.
Im Ergebnis der Zusammenfassung und Auswertung vergangener Erfahrungen können künftige Projekte im Alpenraum (in der neuen Förderperiode) und darüber hinaus inhaltlich und methodisch andere oder neue Schwerpunkte setzen. So konnten sie bisher bestimmte Herangehensweisen, wie etwa die „top-down"-orientierte Planung oder das kunden- und marktorientierte Denken der Unternehmen nicht immer abbilden.
Ein anderes Beispiel ist der Fokus auf Logistikunternehmen als Zielgruppe von Verkehrsprojekten. Tatsächlich verfügen Logistikunternehmen nur über geringe Kapazitäten, um an zusätzlichen Aufgaben wie Regionalplanung oder an Netzwerkaktivitäten mitzuwirken. Dies ist vor allem auf den kurzfristigen Planungshorizont, die ausschließliche Orientierung an Flexibilität und Kundenbedürfnissen zurückzuführen.
Mithilfe der gewonnenen Ergebnisse konnte das SusFreight-Projekt Empfehlungen insbesondere für die öffentliche Hand und damit auch explizit für die Vorbereitung von Projekten mit EU-Förderung geben. Sie schlagen eine stringentere inhaltliche Fokussierung vor, so dass sich

insbesondere das Förderprogramm „Alpine Space 2014+" verstärkt auf nachhaltigen Transport und Mobilität konzentriert und darauf hinwirkt, dass ausgewählte Maßnahmen effektiver in die Projektarbeit übertragen werden.
Als Hauptergebnis listet der Bericht 18 Empfehlungen auf, die dabei helfen können künftige Projekte zu verbessern und in diesem Zusammenhang auch den Kombinierten Verkehr voranzubringen. Die Liste an Möglichkeiten deckt alle relevanten Themenfelder des Gütertransports ab. Abbildung 1 beinhaltet eine thematische Übersicht dieser Themenfelder.

Abbildung 1: Gruppierung der Empfehlungen;

Quelle: SusFreight Projekt

Introduzione

Il progetto SusFreight, Sustainable Freight Transport- now and tomorrow, è un progetto co-finanziato dal Programma Spazio Alpino che affronta le maggiori problematiche relative al trasporto nella regione alpina. Le attività di trasporto sono essenziali per la crescita economica e lo sviluppo delle regioni di tutta la regione alpina, ma al tempo stesso gli impatti negativi prodotti dalle stesse in un ambiente naturale e sociale così delicato devono essere adeguatamente presi in considerazione attraverso delle strategie efficaci di mitigazione.
Il progetto Susfreight capitalizza le esperienze prodotte dai principali progetti europei già realizzati sul tema della sostenibilità del trasporto merci, così come dalle maggiori politiche e programmi europei, e non solo con riferimento allo Spazio Alpino. In primo luogo, esso identifica i principali fabbisogni nella regione alpina, attraverso un'estesa analisi e mappatura dei principali attori istituzionali ed economici (stakeholders). I risultati più importanti prodotti dai progetti precedenti vengono consolidati e conseguentemente, attraverso una gap analysis, vengono identificati i maggiori limiti ed insufficienze degli stessi, nonché le sfide future in seno alla regione alpina.
Attraverso la capitalizzazione delle esperienze precedenti, il progetto SusFreight indica la strada per un'implementazione maggiormente focalizzata dei progetti nell'ambito del periodo di programmazione 2014+. Le esperienze realizzate, nonché gli approfondimenti tecnico-scientifici realizzati nel progetto, hanno mostrato come determinati approcci risultino scarsamente efficaci e non debbano essere riproposti, come ad esempio gli approcci top-down ai processi di pianificazione e di implementazione delle politiche, i quali non tengono in dovuta considerazione l'orientamento al mercato ed alle esigenze delle imprese delle soluzioni proposte.
Sulla base dei risultati prodotti, il progetto SusFreight identifica un insieme di raccomandazioni finali rivolte ai soggetti pubblici. Le raccomandazioni si riferiscono e cercano di colmare i principali gap identificati nelle progettazioni precedenti, suggerendo un quadro maggiormente coerente ed efficace di supporto alle politiche ed ai progetti futuri nonché al ridisegno dei programmi europei – il programma Spazio Alpino 2014+ in particolare – sul tema del trasporto sostenibile e della mobilità. Susfreight affronta politiche di carattere generale con un maggiore focus

sugli incentivi per gli attori politici, pubblici ed economici utilizzando un approccio consultativo piuttosto che restrittivo. Il principale risultato del progetto consiste, dunque, in un set di 18 raccomandazioni come base per un miglioramento dei progetti futuri e per una più efficace implementazione delle politiche europee. L'elenco delle raccomandazioni evidentemente non ha pretesa di esaustività, ma sicuramente va a coprire le maggiori priorità tematiche relative al trasporto merci. La figura 1 indica, in modo riassuntivo, lo schema delle raccomandazioni.

Figura 1: schema delle raccomandazioni;

fonte: Progetto SusFreight

Povzetek

Projekt Trajnostni tovorni promet – danes in jutri (ang. Sustainable Freight Transport »SusFreight«), je sofinanciran iz programa Alpine Space. Namenjen je reševanju najbolj kritičnih vprašanj, povezanih s prevozom preko Alp. Promet je ključnega pomena za medsebojno gospodarsko rast in razvoj dinamičnih regij, ki sestavljajo alpski prostor. Vendar pa je treba njegove negativne vplive ustrezno obravnavati in učinkovito blažiti v tem občutljivem naravnem in človeškem okolju.

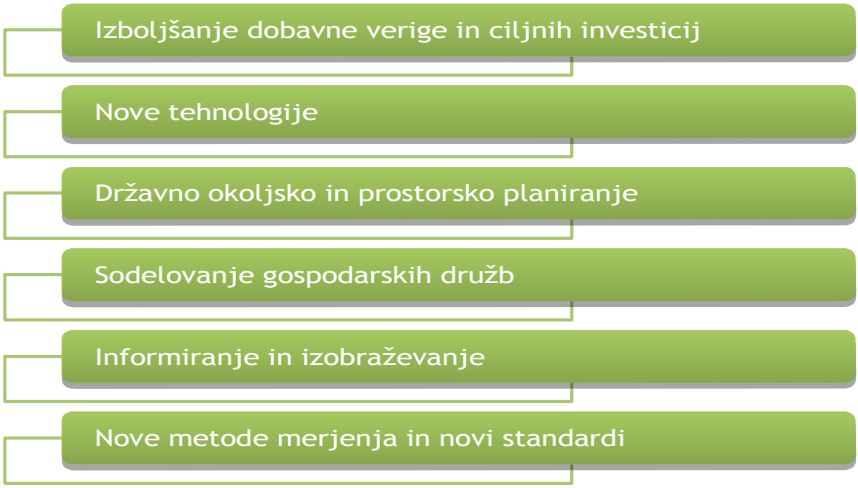
Projekt Trajnostni tovorni promet – danes in jutri se osredotoča na relevantne deležnike v transportni panogi alpskega prostora in širše. Cilj projekta je bil ovrednotenje izkušenj preteklih projektov. Projekt sintetizira rezultate že izvedenih projektov ter povzema izvedene aktivnosti preteklih let. Rezultati projekta opredeljujejo tematska področja in ukrepe v prihodnosti, s ciljem povečanja trajnosti tovornega prometa.

V primerjavi s preteklimi izkušnjami projektov, je projekt Trajnostni tovorni promet – danes in jutri utrl pot k potencialno bolj osredotočenem izvajanju projektov alpskega prostora v obdobju financiranja 2014+. Izkušnje preteklih aktivnosti, zasnovane na znanstvenih izsledkih so pokazale, da določeni pristopi niso bili pravilni ter da je nedopustno, da se odzgoraj navzdol usmerjeno načrtovanje in izvajanje politike ponovi. Aktivnosti morajo biti usmerjene k potrošniku in v skladu z tržnimi gospodarskih družb.

Gospodarske družbe v logistični dejavnosti v praksi nimajo razpoložljivih zmogljivosti, da bi se udeležile regionalnih dejavnosti in razvijale strateško načrtovanje. Njihov pristop je kratkoročen in naravnan h končnemu porabniku. Izsledki pa tudi kažejo, da imajo logistične gospodarske družbe svojevrsten pogled na večino rešitev tovornega prometa. S slednjimi je mogoče doseči in spremeniti obstoječe dosedanje vzorce v tovornem prometu.

Projekt zato iz tega vidika navaja tudi priporočila za javni sektor. Osredotočenost je na spodbude političnega odločanja, javnosti in gospodarskih družb, kakor tudi svetovanje, namesto restriktivnih odnosov. Kot ključni rezultat poročilo navaja 18 priporočil, ki lahko prispevajo k izboljšanju prihodnjih projektov. Razviti je treba učinkovitejši način za izvajanje evropskih politik. Seznam priporočil ni izčrpen, vendar pa zajema vsa glavna tematska področja, povezana s tovornim prevozom. Slika 1 prikazuje povzetek priporočil za nadaljnje raziskovanje.

Slika 1: Povzetek priporočil za nadaljnje raziskovanje,



Vir: SusFreight Projekt

1. THE ALPINE SPACE AS NATURAL BOTTLENECK FOR FREIGHT TRANSPORT

The Alps are a unique region in the heart of Europe, to be protected and remain attractive for its inhabitants. However, the Alps are also a major natural bottleneck, increasingly challenging the dynamic economies in the region and their transport demand. The constantly growing transport flows across the Alps, in particular freight transport, has over decades led to an environmentally as well as economically threatening situation. Freight transport is heavily affecting the Alpine Space. On the one hand, freight transport is essential for economic growth and development of an area situated in the heart of Europe. On the other hand, its negative impacts such as noise and air pollution are damaging the human living environment and the sensitive ecosystem.

The Alps are a transit area and at the same time an obstacle in the European transport network. A large number of countries and regions are affected. As an example in terms of European freight transport, over 10 million trucks use the alpine roads to cross the Alps every year.

For the next years a significant growth in traffic volume has been forecasted. Due to this development, the already limited road capacities will decrease further and burden the environment even more than now. One major way to cope with this trend and the challenges resulting from it is the development of optimal and sustainable freight transport in Europe and especially in the Alpine Space.

One way to deal with the environmental and economic threatening situation is the enhancement of rail-bound freight transport. Rail transport is one of the most environmentally friendly ways to cross the Alps. In contrast to the scarce capacities on the road, the rail sector has still unused capacities while it is a marketable product at the same time as modal split figures of Switzerland show for example. A comparison with other (Alpine) countries shows that there is still a difference between the modal split and thus the use of railways for freight transport.

Several projects of the Alpine Space Programme tackled the challenges of freight transport and developed concepts for an increased sustainability. They followed different approaches, such as political measures, socio-economic, environmental, practical or technical priorities. An initial exchange between projects had been started in the TRANSITECTS project. However, putting together the approaches and their main findings with regard to

political and strategic recommendations into one comprehensive picture had been missing. Nevertheless, this picture is essential to follow promising approaches in the future regarding sustainable freight transport, changing its (legal) framework where necessary and bearing in mind future challenges on national and EU level.
Therefore, the project SusFreight focused on strategic policy development regarding sustainable freight transport by capitalizing previous project results. As a result, an analysis of different projects, strategies and feedback from practice was developed. These recommendations are intended to support the design of projects, programmes and/or policies.

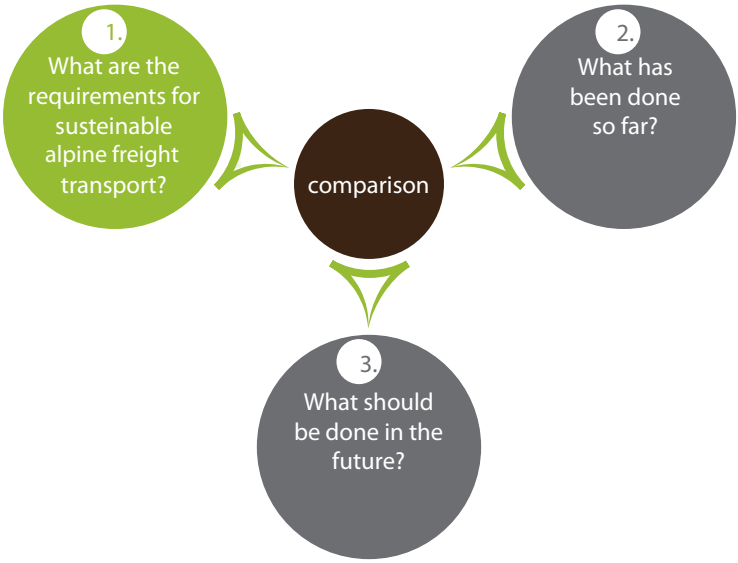
2. THE SUSFREIGHT APPROACH

The main objective of the SusFreight project was to define and adopt concrete recommendations in order to challenge both the environmental and economic problems related to the existing bottlenecks in the Alpine Space, providing focused and target-oriented inputs for the upcoming programme period 2014+.

What is the structure of SusFreight?

Requirements for sustainable Alpine freight transport

Figure 2: Step 1 - Focus on requirements



Source: LKZ Prien GmbH

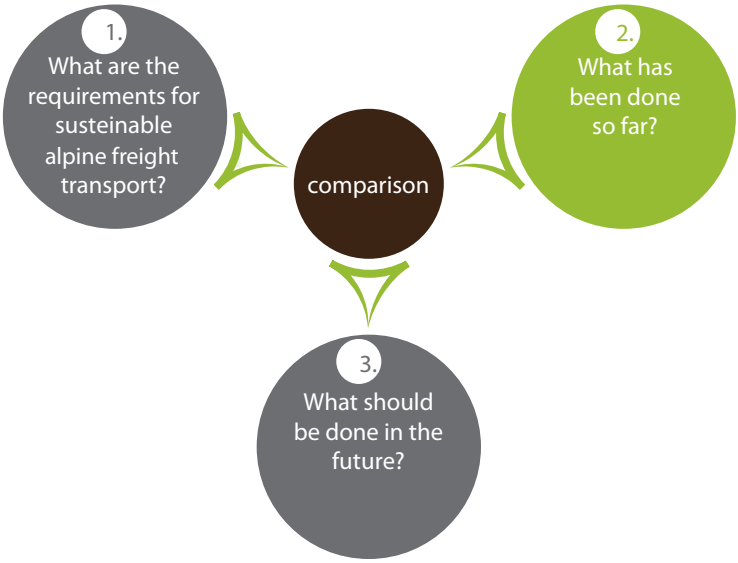
As a first step, it is important to collect the main requirements for sustainable Alpine freight transport. Therefore, the policies of the Alpine Space countries and the European Union play an important role. Furthermore, the EU Commission´s Green Book and White Book served as sources for the requirements. Most of the time there is a large gap between requirements of theory and practice. Because of this, practical experience from many years were identified and the requirements derived from them.

What has been done so far?

An analysis of previous projects in and outside the AS has shown useful results

In a next step, it was examined which contributions were done so far in order to support sustainable freight transport.

Figure 3: Step 2 - Focus on analysis



Source: LKZ Prien GmbH

Therefore, different Alpine Space projects as well as projects outside the region, studies and strategies were analysed regarding in how far they met the requirements of sustainable freight transport in the Alps. The table below provides an overview about the projects analysed within SusFreight.

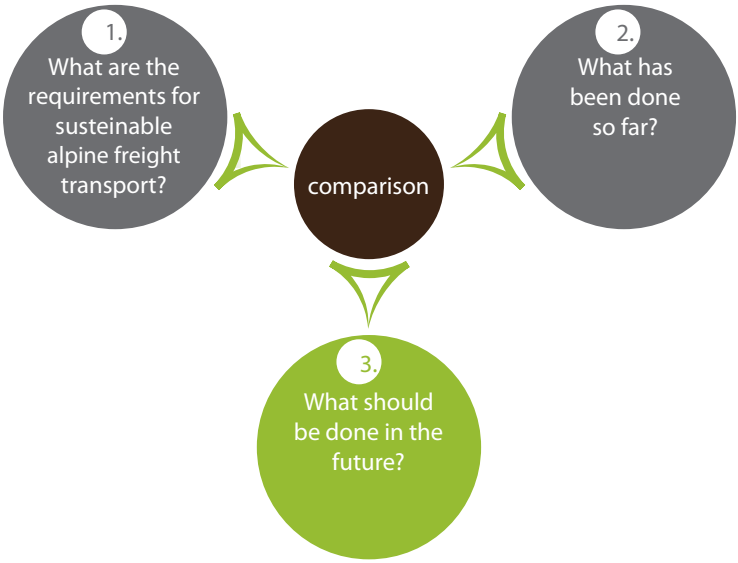
Figure 4: Analyzed Projects and Studies

Source: LKZ Prien GmbH

What should be done in the future?

Derivation of recommendations, comparing achieved outputs & requirements

Figure 5: Step 3 - Focus on recommendations



Source: LKZ Prien GmbH

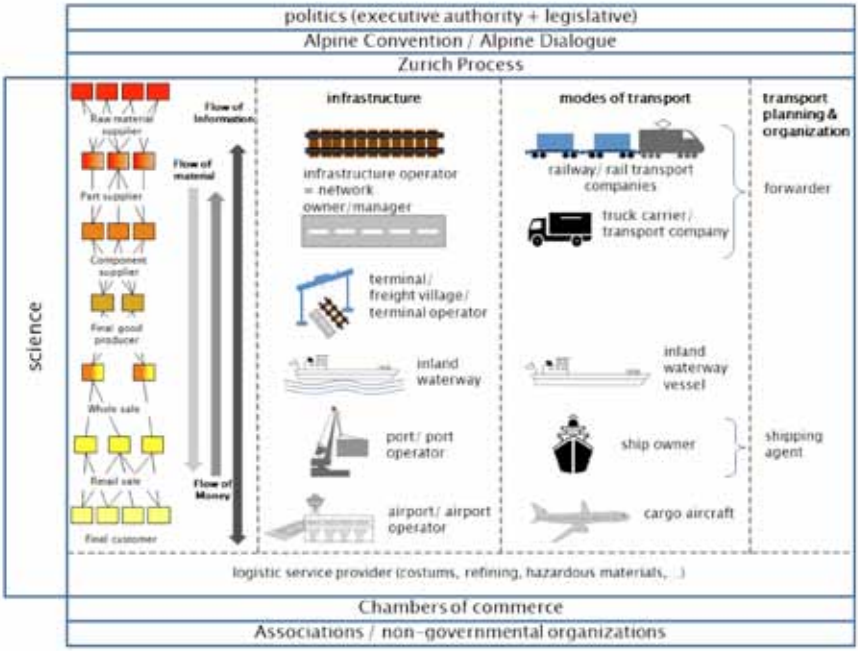
The projects analysed have developed good solutions and already contributed considerably to a toolbox for sustainable freight transport. However, a comparison of these projects and study outputs with the requirements of sustainable freight transport showed that there are still requirements which have not been met yet.
Based on these "gaps" between project outputs and requirements to be met, the recommendations of the project SusFreight (see chapter "Lessons learned – New approaches are paving the way for sustainable freight transport") were developed and discussed with experts.

Who is responsible?

The stakeholder analysis shows that every target group has different requirements which have to be taken into consideration for the recommendations.

As a last step, the stakeholders directly or indirectly involved in the freight transport system were analysed. The analysis in the figure below shows the different stakeholder groups in the intermodal supply chain. Furthermore, the stakeholder analysis grouped the identified stakeholders into different categories – depending on their role or responsibility in the supply chain. In addition, it is important not to develop isolated but rather harmonized (with all stakeholders) solutions in order to improve the whole supply chain.

Figure 6: Stakeholders of the intermodal supply chain



Source: LKZ Prien GmbH

3. LESSONS LEARNED – NEW APPROACHES ARE PAVING THE WAY FOR SUSTAINABLE FREIGHT TRANSPORT

Combined Transport is a suitable way to design sustainable freight transport in the European and especially Alpine area and to combine economic growth with protection of the environment.
Therefore, the following recommendations developed within the SusFreight project focus on the whole framework that is necessary in order to improve the circumstances and preconditions for the further growth of Combined Transport. Figure 8 shows a clustering of the recommendations. They are listed in order of relevance and importance according to the project aims.

Figure 7: Clustering of recommendations

Source: SusFreight 2014

Each recommendation has been briefly categorised with short facts. These facts provide a quick overview about the dimensions necessary (time, costs, efficiency), and as a consequence the priority of the recommendation. The statements do not intend to give specific dates or figures but rather an overview. The short facts base on the subjective assessments of the SusFreight project partners.

Time needed to implement recommendation
The amount of clocks demonstrates the estimated duration for implementation
(1 clock = short-term / 2 clocks = medium-term / 3 clocks = long-term)

Cost factor to implement recommendations
The amount of € signs demonstrates the estimated amount of money to reach the implementation
(1 € = low costs / 2 clocks = medium costs / 3 € = high costs)

Efficiency factor when recommendation is implemented
The amount of flags demonstrates the estimated contribution to the goals of sustainable freight transport (1 flag = medium efficiency / 2 flags = high efficiency / 3 flags = very high efficiency)

Priority is the result of the combination of needed time, cost factor and efficiency rate.
The amount of exclamation marks (!) demonstrates the suggested order for implementation (!!! = highest priority / !! = high priority / ! = average priority)

Before the focus is directed to each particular recommendation, there is a general recommendation: Many previous projects have delivered useful and important results. However, it is now time to come to the next step and capitalize on these project results. Therefore, it is important to realize projects that aim at implementing results and to also evaluate future projects regarding their efficiency (i.e. can most of the results be put into practice?). Only in this way, the aims of the Alpine Space Programme (as for example improvements for the environment like CO2 reduction) can be achieved.

1. Development of an optimal Supply Chain model for illustrating the processes of Combined Transport to have a common basis of understanding and decision making

Combined Transport is a complex sequence of processes with many stakeholders and interfaces. Very few people or possibly even no one has an overview about this whole "building" or a comprehensive presentation of the Combined Transport business processes. Because of this situation, a general overview is missing and thus decisions (e.g. about improvement measures for logistics activities) are usually taken from a singular point of view. As in this case only one single aspect but not the whole supply chain is taken into consideration, one measure might at one point improve the situation but might make it worse in three other details. The reason is that there is no model of the complete transport chain and no method by which improvement measures can be demonstrated, tested and by which the consequences can be simulated.
This reason leads to the recommendation of setting up a comprehensive way to illustrate and provide an overview of the Combined Transport processes relevant for the Alpine Space (e.g. comparison of Combined Transport with production in a company). This overview can provide a basis for understanding the entire Combined Transport logistics chain and the identification of specific leverages and measures leading to improvement or simulating consequences along the whole chain. Thus, investment for improvement measure can be done more target-oriented in the future of Combined Transport.

Time	Cost	Efficiency	Priority

Figure 8: The optimal supply chain model enables a more efficient decision-making process

Source: LKZ Prien GmbH

2. Openness for technologies for Combined Transport, leading to a balance of environmental protection and sustainable economic growth

As the development of solutions for the shift of non-craneable trailers from road to rail – a significant precondition for strengthening Combined Transport – has been carried out by a lot of companies (see also the Alpine Space projects TRANSITECTS or Scandria for the analysis of different approaches and technologies) integration into the existing transport network is required right now. However, decision-makers should have a close look at which technology really brings a benefit for the attractiveness of Combined Transport and make sure that a network instead of patchwork will be developed. As the project TRANSITECTS showed, there are certain requirements for the successful implementation of a system for shifting non-craneable trailers from road to rail. These requirements are as follows: The solution should be flexible, it should be applicable as soon as possible and not cause high investments in existing terminals – i.e. making the Combined Transport too expensive so that nobody will use this technology. In order to achieve quick effects from the transfer of non-craneable trailers from road to rail, existing standards must be taken into consideration – otherwise, additional investments will be necessary that cost time and money and will therefore not be accepted by the market.
Thus, new technologies for Combined Transport should be fostered and supported, so that economic growth can be harmonised with the protection of the environment. The support of such systems however needs to take into consideration that possible solutions may not cause significant additional costs and are in line with the existing standards. Only in this case, a competitive alternative to road transport can be offered. A harmonised application all over Europe should be on the political transport agendas.

Time	Cost	Efficiency	Priority

3. Development of new business models tailored to the needs of SMEs for the participation in combined transport

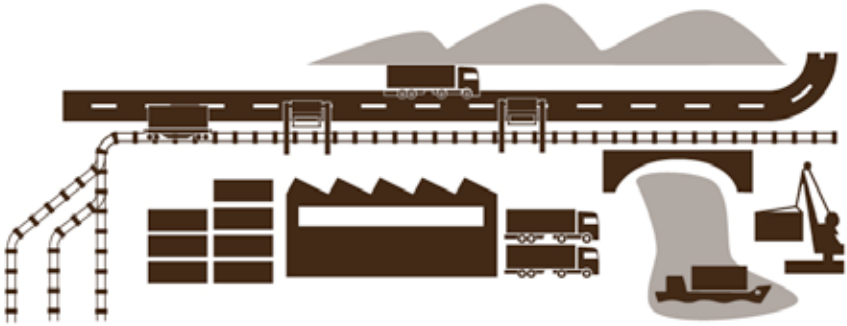
SMEs represent a significant share in the structure of transport industry – not only but also in the Alpine countries. For example, approximately 80 % of all transport companies own ten or less trucks. The goal of making goods transport more environmentally friendly can in particular be achieved by Combined Transport covering the main distance of goods transport on rail. However, particularly small transport companies are confronted with a number of challenges: e.g. shortage of drivers, increasing road tolls and additional demands on documentation. The SME transport companies must cope with these challenges – and this only for road transport. The use of an additional Combined Transport interface like rail transport would bring even new tasks resulting from new requirements and business processes of Combined Transport. Most companies cannot fulfil such additional tasks.
For this reason, new business models need to be developed in order to facilitate participation of transport industry SMEs in the Combined Transport market. The integration of those SME transport companies (the majority of enterprises in the road transport industry) is a key and leverage for a way towards more environmentally-friendly road transport in Europe and especially in the Alpine region.

			
Time	Cost	Efficiency	Priority

4. Development of best practice concepts for an optimal freight village and terminal design and layout

Today, many existing freight terminals and freight villages are not tailored to the needs of current requirements. Their blueprints were designed decades ago. At that time, logistics processes and standards did not look like as they do today (e.g. increase in share of containers). Currently, business processes must keep to the "old-fashioned" design but should actually be designed more efficiently. This is the case for example concerning the handling of empty containers to separate storage areas causing many additional, cost-intensive movements in freight terminals, or the networking of logistics companies with research institutes or the planning administration in freight villages. Given the high cost pressure in the logistics sector, such inefficient processes must be avoided in order to make Combined Transport affordable for the market and to provide a competitive, environmentally friendly alternative to road transport. In this way, the focus can be on efficiency and cost reduction – an important trigger in times of reduced funds. Furthermore, logistics processes tend to require a higher flexibility in the future.
For these reasons, a best-practice guideline for the design of loading and transfer terminals as well as freight villages based upon state-of-the-art processes and existing standards is needed. Additionally, this guideline should show a constant improvement process of their design. By developing such guideline, the way towards more efficient processes in Combined Transport will be paved and the attractiveness of Combined Transport offers will increase (due to better processes and lower costs). In this way, a solid basis for a raise in the share of combined traffic (i.e. railway transport) and thus environmentally friendly transport can be created.

Figure 9: By developing a guideline for the design of loading and transfer terminals more efficient processes in the CT are possible



Source: LKZ Prien GmbH

Time	Cost	Efficiency	Priority

5. Involvement of public and private implementing partners in projects developing specific market-oriented products to support sustainable freight transport

In particular in previous Alpine Space projects, many ideas for fostering Combined Transport in the Alpine area were developed. Examples are concepts for specific railway offers for Combined Transport developed in the project TRANSITECTS. However, projects often stopped at the time when further implementation should actually take place. Consequently, capitalization and implementation of promising project results need to have high priority in future. Only concepts will not help if the market feedback and acceptance is required. It is the companies that need to take up the concepts and translate them into daily business. Only in this case, full benefit from previous projects can be achieved.
As a recommendation, also market players (i.e. companies) should be involved in the next projects to ensure a market implementation of project results. Not to forget that also the involvement of public implementing stakeholders is important since implementation of specific projects only happens in close dialogue or cooperation between public and private sector. However, the involvement of companies is a key to foster Combined Transport services and take them to market.

			
Time	Cost	Efficiency	Priority

6. Stronger connection of logistics aspects and spatial planning policies to optimize transport flows and land use in Alpine Space regions

Today, spatial planning often focuses on aspects like for example prioritising areas for specific designated purposes. Logistics aspects are often neglected in most cases. As a result, the traffic connections between the areas are not planned well. Thus, traffic connections or transport flows are not very effective and cause for example congestions or complicated ways to send and deliver goods in a specific region or area. Additionally, especially in Alpine Space the available (new) areas suitable for logistics activities are hard to find. Given this reason, the planning of new areas must necessarily be connected to logistics aspects in order to find the most efficient land use method so that nothing of the rare resource "area" is wasted.
In this context, it should be taken into account that logistics operators work in a very competitive environment. This is the result of deregulation as a political will of the past decades. It is understood that, while the system as a whole became more productive than under regulation, each move is a result of a negotiation process involving many factors. It may thus look sub-optimal from a transport and spatial planning perspective. However, spatial planning can influence the factors towards overall efficiency.
Thus, especially in Alpine Space spatial planning should integrate the logistics aspect in order to find a balance between optimal transport flows, effective and efficient transport ways and sustainable land use. In this way, economic development and protection of the environment can be realized at the same time.

			
Time	Cost	Efficiency	Priority

7. Redesign of funding guidelines and implementation of task-oriented subsidies for Combined Transport

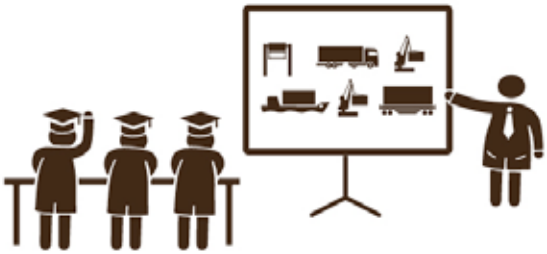
The public funding of freight terminals is an important aspect for fostering and promoting Combined Transport. Some of the funding guidelines for freight terminals indirectly influence the design and thus the business process efficiency of these buildings. As mentioned before, the requirements for freight terminals have changed over the years, though. By considering the funding guidelines (which is necessary to obtain the funds), these terminals are tailored to the mandatory design which does not match with the requirements of today's logistics processes anymore. Therefore, a redesign of funding guidelines adapted to the business requirements of today is strongly recommended.
To sum it up, the redesign of funding guidelines should be done in order to build effective and efficient freight terminals that lead to competitive Combined Transport services for sustainable and environmentally friendly transport of goods.

			
Time	Cost	Efficiency	Priority

8. Development and promotion of educational programmes to increase sustainability and competitiveness of (Alpine Space) combined transport

Regarding education and job attractiveness, the logistics industry is currently facing the following challenges: Alike other industries, also the logistics sector experiences a shortage of qualified labour because of the demographic change. Other industries carry out many marketing measures and show the benefit of working in this industry – among others by special educational programmes. The logistics industry however – and this is the second challenge – does not have a specific and practice-oriented pool of collected expertise, especially regarding multimodal transport. A good example for this situation is the manager of a rail siding (i.e. a link giving private companies access to the railway network). His profession – and consequently the knowledge – has been lost over the years and must now be re-developed and collected by hard work.
An important recommendation is therefore to develop practice-oriented educational programmes for employees in the logistics industry (e.g. in freight villages) and achieve in this way two benefits: at first the collection, saving and further development of required knowhow of Combined Transport and second: the increase of job attractiveness in the logistics area.

Figure 10: It´s important to develop practice-oriented educational programmes in the logistics industry to increase sustainability and competitiveness of Combined Transport



Source: LKZ Prien GmbH

Time	Cost	Efficiency	Priority

9. Collection of all existing standards in European rail transport in a knowledge pool as basis for harmonizing standards

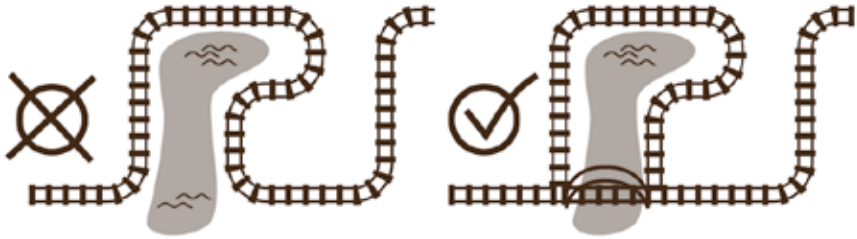
The European Union and European Commission together with the responsible organizations have done a lot of work in order to pave the way to common standards and guidelines for the European railway transport. However, rail transport is still characterized by various, often national regulations regarding safety & security or different dimensions in trains or tracks. In everyday business, these different regulations make it very hard to enable a smooth transport process – already as early as in the planning phase. The differences cause many extra adjustments to the national standards and regulations – and thus extra time and money causing an increase of the costs for combined traffic.
A recommendation for the improvement of this situation is a collection and practice-oriented presentation of the different standards for decision-makers and stakeholders from everyday business. Based on this knowledge pool, a guideline for harmonizing different standards can be developed. As result an improvement of business processes – saving costs and making rail and Combined Transport more competitive – and also an improvement of the framework for future innovations in Combined Transport can be achieved.

			
Time	Cost	Efficiency	Priority

10. Identification of and undertaking low, focused investments in infrastructure bottlenecks with high leverage effects for railway transport

In railway connections for goods transports there are often small gaps in the infrastructure (e.g. longer passing loops, small bridges not allowing high weights, etc…), especially in regional areas, whose removal would lead to a significant improvement of transport efficiency.
Thus, following steps are recommended: collection of such small subjects that result in infrastructure bottlenecks, and then development of a brief method for defining a cost-benefit ratio. This provides a basis for undertaking comparably low investments with a quite strong effect for railway goods transport efficiency.

Figure 11: Sometimes it´s possible to gain high leverages only with small investment in infrastructure bottlenecks



Source: LKZ Prien GmbH

Time	Cost	Efficiency	Priority

11. Optimization of IT flows along the supply chains by electronic and standardized data exchange among terminals

In recent times of intelligent communication devices, cloud solutions and electronic data transfer are state-of-the-art in many business environments. Also logistics processes should follow this technological development and not only optimise the physical flow of goods but also the information flow along the supply chain. As the supply chain has a large number of different actors, the big challenge here is to find a balance between the setting up of new systems and integrating existing systems by offering interfaces. In this way, not only big companies but also SMEs (the majority of the transport companies) can take part in the electronic data supply along the supply chain – a critical factor for the success of such systems that should give access to most of the concerned stakeholders in the supply chain.
This electronic data exchange can lead to faster, more reliable (cost-efficient) business processes – especially between freight terminals – and thus to a higher customer satisfaction and willingness to take part in Combined Transport.

			
Time	Cost	Efficiency	Priority

*12. Optimize empty container management**

Empty movements tie up transport and storage capacities and thereby reduce the flexibility and productivity of the supply chains, with costs incurred by the container transport industry at around USD 33 billion globally (2008 census). The negative environmental and social effects of empty container repositioning and storing (e.g. noise, air pollution and land use) in urban areas are immense. Although measures to mitigate negative effects exist, practical application is often difficult. The reason is that a complex multi-stakeholder environment characterises the (empty) container transport chain. There is a number of reasons for empty repositioning and conflicting interests. Key players rather optimise their own system than the overall transport chain. As mentioned above, these problems have to be considered in the layout of freight villages and freight terminals. Providing information to the transport sector on empty flows, reasons and impacts, as well as on measures to improve empty container logistics could be a way to face this challenge. Through raising awareness on negative impacts resulting from empty movements and undertaking analysis on how to make empty flows to/from the region and within the port area more transparent the overall efficiency of the transport chain will increase.
The establishment of a stakeholder platform or "coordination tower" would aim to optimize the container supply chain. Financial support for concrete case studies and implementation of measures to coordinate empty containers enhances the process towards a more effective transport chain and the optimisation of empty container management. Moreover, it mitigates negative impacts of empty flows in the Alpine Space and around.

			
Time	Cost	Efficiency	Priority

*13. Improvement of interfaces between national networks and transnational corridors**

The bottlenecks in rail infrastructure in the Alpine Space and Europe means, inter alia, an insufficient supply with high quality transport infrastructure and interoperability problems. General challenges, such as the forecast of freight transport increase need to be reflected in the national investment plans as well as in the European Commission's ambitions to create a genuine Single European Transport Area. In the Alpine Space region there are still some links missing that would provide access to the TEN-T network, especially with regard to freight transport.
It is necessary to improve the network infrastructure, connect national transport networks and European Corridor segments, connect the relevant authorities at EU and national levels and promote a transnational context of measures in the interconnecting infrastructure rather than using EU-funds to realise solely national plans.
In order to define joint sets of actions, a more detailed analysis in terms of their strategic significance and feasibility need to be carried out. A dialogue with the Commission and the relevant national authorities is under realisation with the purpose to: (1) support links interconnecting the transnational multimodal transport corridors in the TEN-T comprehensive network and accelerate investment process; (2) better address the transport capacity problems deriving from the bottleneck situation in north south direction through the Alps (e.g. along the Scandinavian-Mediterranean corridor); (3) better address the environmental impacts, caused by the concentrated traffic through the alps; (4) Ensure financial support for the implementation of the needed infrastructural components in the 2014-2020 programming period (including European funding, but in particular ear-marking of national funds).
Only a more integrated, sustainable and robust transport network in the Alpine Space can increase infrastructural capacity of and seamless transport flows, improve internal and external accessibility and in general lead to an increase of intermodal transport with emphasis on rail transport, the key to the future transport scheme in the Alpine Space.

			
Time	Cost	Efficiency	Priority

*14. Support approaches to corridor planning and coordination (in the frame of the new TEN-T) and thus increase potential for combined transport**

Poor knowledge about the impact of infrastructure improvements on logistics operations and strategic actions of the business stakeholders has caused a lack of coordination of Combined Transport and corridor planning. Single investment decisions were meant to tremendously increase the volume of Combined Transport – while other bottlenecks were neglected and led to no increase of transport volumes at all. Moreover, the long-term processes of realising investments and thus incurring potential benefits from investments do not create incentives for fast and effective cooperation among responsible players.
The analysis of flows and distribution chains performed in the corridor by commercial actors is essential for boosting intermodal transport. Tailoring transnational infrastructure investments to the needs of the business community operating in a particular corridor (through more coherent and business-oriented approaches) would benefit the economic efficiency of such investments. Therefore those corridors in the Alpine Space need to be identified where the need for and benefits from logistics aspects in the corridor planning are assumed to be the greatest.
In order to enhance corridor planning and coordination, investments in the selected transnational transport corridors as well as the most relevant commercial groups of interest operating in the corridor (e.g. cargo owners, road/rail/maritime transport operators etc.) have to be investigated, aiming at a dialogue on the identified investments.
As a result a package of proposals can be developed, perceived by the business sector the most significant from the intermodality point of view (infrastructure improvements and interrelated tax, fee or regulation harmonisation measures etc.) which will mitigate the risk for scattered and ineffective investments in the Alpine Space. As a result, a more coherent and business-oriented approach to corridor planning in support of increased intermodality will create overall benefits for the environment and the economy.

Time	Cost	Efficiency	Priority

*15. Establish long-term governance structures for transnational transport corridors**

There is a strong need for integrated governance structures to develop the transport network and corridors. It provides stronger commitment from all different stakeholders (see also 13 & 14) to remove obstacles that hinder efficient flows along the transnational transport corridor. Efforts to maintain and improve the competitiveness of transnational transport corridors and at the same time to develop and deploy a green transport corridor strategy require appropriate stakeholder management approaches at the transnational level. Corridor management has the important tasks to: (1) assess the corridor viability, i.e. to clarify present and future transport volumes through market analyses; (2) list and plan the necessary improvements of infrastructure and terminals; (3) improve and harmonize the administrative and legal procedures governing transport in the corridor; (4) develop a business plan to improve co-modal and intermodal business models in the corridor and (5) establish and maintain stable rules and incentives for using the corridor. Identifying relevant key stakeholders in a transport corridor community, including their roles, responsibilities and interactions and creating a platform for communication and coordination as an instrument for corridor development will create the means to support a long-term governance structure. This aim is supported by the establishment of a corridor partnership with participation of public and private stakeholders from the transnational transport corridor community. Its joint objective is to facilitate the provision of efficient transport services and removal of physical and non-physical barriers along the corridor and in its hinterland.

			
Time	Cost	Efficiency	Priority

*16. Follow-up the potential of dry ports in the systems of the TEN-T corridors**

A dry port is defined as an intermodal terminal situated some 30 – 200 km into the hinterland, connected with one or several ports by rail and/or road transport. It offers all logistics facilities needed for shipping and forwarding in a port (e.g. customs clearance, sorting, long/short time storage). In a dry port, shippers can leave and collect their goods in intermodal loading units as they would do directly at a seaport. The concept may offer many benefits: help to consolidate volumes; improve logistics competitiveness of the hinterland regions; reduce the volume of the empty container transports between the sea port and hinterland; expand the market share of locally based enterprises and make the hinterland logistics more efficient (by saving CO2 and decreasing transport costs); reduce spatial pressure in the ports.
Through the creation of a knowledge base of successful dry port development and showcases as well as the exploration of the feasibility of establishing multi-level governance mechanisms, a great step towards an integrated transport system in the Alpine Space is taken. The awareness of the benefits of the dry port concept as an important component of sustainable transport policies and competitive business practices needs to be promoted continuously.
By promoting the utilization of existing road, rail and terminal infrastructures, future investments in new infrastructure can be targeted more effectively. To increase the acceptance and promote the concept of dry ports, public-private pilot cases with dry port investments are regarded as a good solution. Further incentives are expansion areas offered for seaports with limited space. In general, this will reduce the problems caused by increasing truck transport close to the seaports, increase logistics competitiveness of the hinterland regions and help new business models as well as open new markets for transport and logistics companies.

			
Time	Cost	Efficiency	Priority

17. Definition of a specific standard for the measurement of CO2-emissions as basis for the evaluation of projects and economic activities in Alpine Space

Different (Alpine Space) projects and initiatives have developed and used methods for the measurement of environmental consequences of goods transports – not only, but especially in the Alpine area. However, these different methods do not always lead to the same results and messages. This makes it hard to compare the effects of different projects for example intended to improve transalpine goods transport.
In order to come to comparable results, a guideline should be developed in which a harmonised method and harmonised parameters are defined. This will lead to a new quality and benefits for Alpine Space projects. For example, discussion about the project results can focus on real contents instead of discussing questions about which methods and parameters were applied. Additionally, the Alpine Space Programme has a standardised tool which can be provided to project partners and which will enable the Alpine Space Programme to measure the results very specifically and equally (i.e. make results comparable).

			
Time	Cost	Efficiency	Priority

18. Development of both necessary and appropriate data collection (in cooperation with economy and politics) in the combined transport sector

There is a large number of different data and data sources (e.g. national and European statistics) in the logistics and especially the Combined Transport sector. With these available data the research goals of projects or research questions cannot be achieved in some cases as a reliable statement or comparison is not possible. An example is the comparison of the amount of semi-trailers transported by the ROLA system and the amount of semi-trailers transported by the unaccompanied Combined Transport. The ROLA system provides data counting the specific number of semi-trailers. The unaccompanied traffic however does not count the number of semi-trailers but the transported weight in ton kilometers. Thus, an equal comparison is hardly possible.
Based on these facts, a further recommendation is the request of further kinds of data – in addition to the already existing one – in order to enable stakeholders and projects to come to more practice-oriented and suitable statements and better comparisons. This adding of further data should be done after taking up the data requirements of all involved stakeholders. With the set-up of this additional data there is the chance to better demonstrate the effects and specific benefits of Combined Transport as a method to realize environmentally friendly transport.

			
Time	Cost	Efficiency	Priority

4. CONCLUSION

Sustainable freight transport has always been a major issue in the Alpine Space and was addressed through various projects over the past years. Now, for the first time a summary of major measures and results was done. The aim was to derive recommendations for structure and content of potential future Alpine Space projects on freight transport (in the new funding period 2014+). In addition, relevant results from projects not directly related to the Alpine Space were taken into consideration. Many results of former projects are forward-looking, some were already implemented in the past funding periods. In general, however, several approaches for sustainable freight transport have not been considered yet and should in future complement the content of selected transport-related projects.

Parts of this gap have now been closed with the extracted recommendations the SusFreight partners published as result of the one-year project. With the start of a new EU funding period European funding instruments are expected to contribute to the policy objectives of smart, sustainable and inclusive growth. The recommendations mentioned above will help to meet these goals and to focus on the core targets during the future project work.

On the other hand, there is also the challenge of the ever-growing freight transport. Innovation, logistics and service do not only lead to economic opportunities but also cause a variety of problems for the environment and the economy. The increase of sustainability in the overall system is therefore a crucial issue and has to be a main goal for future transport strategies.

The recommendations aim at public institutions that will provide the framework for freight transport. They stress, among others, the importance of Combined Transport and will hopefully contribute to the future content design of transport projects in the Alps. The European Commission is especially interested in the projects results. To include the 18 recommendations and SusFreight findings in future policies opens a real opportunity to improve sustainable freight transport in the Alps. Furthermore the projects results proved a grown understanding for the economic demands and companies issues. In particular the inclusion of companies in future projects and their grown importance not only as target group but as project partner with valuable knowledge and contribution to the Interreg objectives will trigger the execution and implementation of future projects and increase their effectiveness.

FACTS AND FIGURES

Partnership
6 partners from 4 countries

Duration
September 2013 to December 2014

Project budget
Total budget: 518.000,00€
ERDF Contribution: 393.640,00€

Funding
SusFreight, Sustainable Freight Transport – Now and Tomorrow, is a project co-financed by the Alpine Space Programme under the 5th Call for Proposals. SusFreight aims at addressing the environmental problems related to transport through the natural bottleneck represented by the economically dynamic regions composing the Alpine Space.

* Recommendation derived from the collaboration with Baltic Sea actors, particularly laid down in the "Macroregional Transport Action Plan", put together in the frame of the TransBaltic project (BSR)

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LOGISTIK KOMPETENZ ZENTRUM