Work Package 8

Quality Assessment report of JITES impact on ASP Transport security policies and economy

Final version

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Executive Summary

Mobility plays a major role in the life of European citizens and the European economy. Transport policies therefore need to focus on the needs of the public and deliver, among other things, a high standard of safety and security. Transport infrastructure which runs through the Alpine region plays an important role in the implementation of the single market and the development of an efficient trans-European network\(^1\).

\(^1\) [http://www.zurich-process.org/goals/](http://www.zurich-process.org/goals/)
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Introduction

More than ever business and economies are dependent of undisturbed and on-scheduled exchange of goods. Traffic plays and important role: Traffic is the basis of the economic system – without traffic there will not be any economic, no export implicate no economic growth and thus no prosperity. Therefore it is valid: The greater the prosperity, the more traffic. Business and economies are depended on traffic.

In Europe, the Alps playing a special role: They are a unique resource and are living space of millions of people. Furthermore the Alps are a highly sensitive ecosystem. But to maintain the social welfare, the exchange of goods and thus the economic growth, traffic has to pass the Alps.

New road constructions or expansions of main traffic lines are no alternative. The consequences for the Alps and their citizens would be too heavy on economical, ecological and social: Regions will loose their economic power and additional traffic without any use would arise. On costs of the rural population the agglomeration areas would gain advantage. Thus, more future related traffic innovations have to be found because anyway, the traffic will triple till 2015. The following figure will visualize the development of traffic of the most important transit point in the Alps.

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2 http://www.invent-online.de/de/projekte.html
3 http://doku.cac.at/vcoe_factsheet_infrastruktur.pdf
4 http://doku.cac.at/vcoe_factsheet_infrastruktur.pdf

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To maintain economic power, a possible solution in a modern information society will be communication and cooperation. Indeed, communication and cooperation will be an imperative of the 21st century and are sources for continuously economic growth. Thus productive, effective and efficient communication and cooperation are key qualifications for future developments. Special in traffic management, traffic telematics systems provide appropriate solutions to solve the challenge of the increased traffic on alpine crossing streets. Furthermore traffic telematics systems provide the opportunity for required increased communication, cooperation, collaborative decisions, etc.

**Challenge for TranSAFE-Alp**

Natural as well as technical caused catastrophes, accidents, construction sites as well as route congestions of individually roads- and road sections are main causer of traffic blocking. For example, in Germany traffic jam causes loss of ~ 33 million liter of fuel, 13 million hours

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6 http://www.invent-online.de/de/projekte.html
of time and an economical loss of ~ 250 million of EURO Problem description. The challenges in the alpine space can be summarized as follows:

- Intensive traffic volume (south – north, and vice versa)
- Limited number of alternatives
- Agglomeration areas with intensive traffic volume / rural areas with low intensive traffic volume
- Extreme weather conditions
- Pronounced need for environmental protection of the citizens of the Alps

To keep the traffic ongoing and respect the social needs of the citizens, special activities have to be done. Therefore the European Union (EU) implemented the Alpine Space Program. Among others, TranSAFE-Alp is a supported project. TranSAFE-Alp is an innovative project aiming at improving joint decision-making for emergency and rerouting actions under critical events (e. g. crisis, major disruption, etc.) on major cross-border road sections of the Alpine transport network.

TranSAFE-Alp is the first project developing a Decision Support System (DSS) called JITES (Joint integrated ICT Technologies for Emergency and Security management) which will be able to generate, simulate and share a critical intervention scenario like a tunnel fire, an explosion or a natural disaster with considerable impact on Alpine road network.

Overall objectives of TranSAFE-Alp

Transnational cooperation on transport crisis management due to incidents in tunnels and rare strong natural events is an outstanding challenge for Alpine Space security and

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7 Anm.: per day in Germany; http://www.invent-online.de/de/projekte.html


10 TranSAFE-Alp survey report, elaborated by Steinbeis-Innovationszentrum Logistik und Nachhaltigkeit (SLN)
emergency authorities. TranSAFE-Alp aims at capitalizing innovative decision making tools already developed in previous Alpine Space projects for the creation of an integrated ICT-share area for jointly support and coordinated intervention plans of Civil Protection and Transport Operators.

A replicable decision-making shared area called JITES (Joint Integrated ICT-Technologies for Emergency and Security -management) will be able to collect real-time data on critical transport segments of the Alpine Space Transport network and generate critical intervention scenarios.

JITES will be an innovative simulation environment that will test efficiency and timeliness of traffic, security and communication management systems with the implemented emergency plans of infrastructure operators and Civil Protection Operative Centres.

**Initial Point / Basis**

As mentioned, TranSAFE-Alp is an Alpine Space project and is subjected to

- regulations of the Alpine Space Program and
- regulations of the European Union.

Summarized to a minimum, the Alpine Space goal is to maintain the Alpine Space as an economical, ecological and social powerful area. In traffic management the Alpine Space contract foresees the following objective: “Coordinated actions for the improvement of transport security (e.g. in tunnels, both railway or road, be it for passenger or goods transportation)”11. Further Alpine Space objectives are:

- to establish the Alpine Space as a powerful area in the European network of development areas: this requires a common understanding of the role of the Alpine

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Space in terms of sustainable spatial development and to promote actively this by carrying out various activities and measures\textsuperscript{12}

- to initialize and support sustainable development initiatives within the Alpine Space under consideration of the relationship between the alpine core region and the fringes of the Alps. This would cover transnational activities in various sectors from Community to municipal level by focusing on the most important issues of the Alpine development\textsuperscript{13}

- to find efficient solutions in the domains of accessibility and transport by promoting sustainable modes of transport and communication\textsuperscript{14}

- to safeguard the diversity of the natural and cultural heritage and to protect the population and infrastructure from natural hazards by the development of common tools, exchange of methods and information\textsuperscript{15}

Regulations on the European Union level are stated out in the “PROTOCOL ON THE IMPLEMENTATION OF THE 1991 ALPINE CONVENTION IN THE FIELD OF TRANSPORT”. Relevant paragraphs identified for the TranSAFE-Alp project are\textsuperscript{16}:

- Article 1, § 1 sec. 1 a): reduce the negative effects of and risks posed by intra-Alpine and transalpine transport to a level which is not harmful to people, flora and fauna and their environments and habitats, \textit{inter alia}, by transferring an increasing amount of transport, especially freight transport, to the railways, in particular by creating appropriate infrastructures and incentives in line with market principles;

- Article 1, § 1 sec. 1 d): ensure the movement of intra-Alpine and transalpine transport at economically bearable costs by increasing the efficiency of

\textsuperscript{12}http://www.alpine-space.org/programmed451.html?&L=58239
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transport systems and promoting modes of transport which are more environmentally-friendly and more economic in terms of natural resources;

- Article 3, § 1 sec. c (aa): increase the profitability of the transport sector and internalise external costs;

- Article 3, § 1 sec. c (bb): encourage optimum use of existing infrastructures;

- Article 7, § 2 sec. d: greater transport safety.

Quality assessment report of JITES on ASP Transport security policies and economy

TranSAFE-Alp partners are convinced that an improvement of the current situation in the Alpine Space Transport network goes through the establishment of the JITES-platform - Joint Integrated ICT-Technologies for Emergency and Security. The basic idea of TranSAFE-Alp is therefore to create a common software platform to be used by different transport & logistic stakeholders as a so called system of system (SoS) tool. TranSAFE-Alp aims at improving the coordination capacity of cross-border infrastructure operators responsible for emergency intervention, and the elaboration of intervention plans in a critical situation. The project is addressed to the need of reducing risks to environment and population as well as to manage traffic management actions in case of a disaster. Following it will be described how TranSAFE-Alp respectively the output JITES contribute to above mentioned goals.

- “Coordinated actions for the improvement of transport security […]”.

JITES contribute to this task because of the advanced capability of user of communication, cooperation and collaboration. JITES is a WebGIS platform developed to facilitate the coordination of transnational actions for safety-, security- and emergency measures that should be undertaken when a natural or technical event impacts the flow of vehicular traffic on one of the Alpine crossings. In case of

traffic interruption due to a natural calamity, a technical damage or a car accident, the system should be able to:\n\n- enable the visualization of all resources and organizations that are involved in the management plan for security and emergency of transports;
- enables the localization and classification of the interruption;
- give accessibility to all operators involved into the list of actions implemented in the decision-making chain;
- provide a checklist of actions to be undertaken on the basis of existing action plans
- allow rerouting of traffic on other itineraries on the basis of different parameters (shortest, quickest, best from an environmental protection point of view etc.)

- Establish the Alpine Space as a powerful area in the European network […] Communication, cooperation and collaboration are the imperative of the 21st century. These attributes maintain and improve economic growth and thus social welfare and the establishment of the Alpine Space as a powerful area in the European network. JITES aims to guarantee a stable traffic flow – also during the occurrence of a major disruption. Through borderless comprehensive cooperation, collaboration and communication disruptions will be removed faster. Basic pillars are the advanced know-ledge and information sharing (scenario & incident planning, training, etc.) and the alpine comprehensive collaboration before, during and after a disruption hit.

- Initialize and support sustainable development initiatives within the AS […] The system allows the simulation of emergency situations and allows managing events resulting from blocked roads due to natural causes, accidents or planned interventions. Shared information on the flow of cross-border traffic and their graphical representation geo-referenced enables local authorities to take early important decisions for the safety of traffic flow and the areas traversed by them. The knowledge of these flows may suggest interventions on infrastructure in order to minimize the inconvenience to the people involved and will evaluate possible

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19 TranSAFE-Alp, O5.1 A0_JITES_specific_description, FBK
20 http://www.alpine-space.org/programmed451.html?&L=58239
21 http://www.alpine-space.org/programmed451.html?&L=58239
alternative routes in order to minimize the overall risk to the transport of dangerous substances. In the presence of special events, the competent authorities have a tool that can simplify the choices of action and information to the people involved\(^{22}\).

- Find efficient solutions in the domains of accessibility and transport by promoting sustainable modes of transport and communication\(^{23}\).

JITES is focus on an increased cooperation, collaboration and communication between all stakeholders involved in the safety-, security- and emergency response. This communication focus on advanced planning (prevention, and preparedness measures) as well as real-time communication in case of the occurrence of a hazard. Therefore JITES is a sustainable tool for cooperation, collaboration and communication and increases the transparency of preparedness, response and recovery measurements if disruption of critical alpine comprehensive infrastructure occurs.

- Safeguard the diversity of the natural and cultural heritage and to protect the population and infrastructure from natural hazards by the development of common tools, exchange of methods and information\(^{24}\).

Currently JITES only exist in the English language version. Later, through improvements, JITES will be available in local languages. Through standards and definitions a common understanding will be developed – although the exchange of tools (intervention plans, scenarios, etc.) as well as information and best-practices will be increased.

- Article 1, § 1 sec. 1 a): reduce the negative effects of and risks posed by intra-Alpine and transalpine transport […].

JITES aims for a continuously, constant and fluid traffic. Theoretically and practically, these aims decrease the negative impacts of emission and noise to the minimum level which increases the living standard in the Alpine Space. Through the common IT-infrastructure, faster interventions and collaborative emergency response on critical traffic infrastructures is possible. Road network users will take advantage from

\(^{22}\) TranSAFE-Alp, O5.1 A0_JITES_specific_description, FBK
\(^{23}\) http://www.alpine-space.org/programmed451.html?&L=58239
\(^{24}\) http://www.alpine-space.org/programmed451.html?&L=58239
real-time information, faster removal of the issue, lower transport time, decrease traffic jam hours, increased travel comfort, etc. Citizens of the Alpine space take advantage of coordinated traffic action, less divisionary traffic through their residential area and consequently less negative impact occurred by traffic. The road operators and stakeholders in traffic management will take advantage of a collaborative IT-system which allows increased knowledge sharing, common emergency planning, testing, exercising and coordinated actions before, during and after a real disruption occurred.

- Article 1, § 1 sec. 1 d): **ensure the movement of intra-Alpine and transalpine transport at economically bearable costs by increasing the efficiency of transport systems [...];**
  Like above mentioned, a continuously, constant and fluid traffic decreases the economic costs for privates and communities. Through this reduction the traffic and transport systems get more efficient. The rerouting option in JITES also allows a rerouting on different modes (rolling motorway, multimodal transports, etc), different routes, etc which increases the environmental friendly use of natural resources.

- Article 3, § 1 sec. c (aa): **increase the profitability of the transport sector** and internalise external costs;
  Through communication, cooperation and collaboration of the stakeholders in traffic and emergency management, in case of disruption, the profitability of the transport sector will increase. The transport sector mainly will gain advantage in JITES of faster, more effective and efficient intervention during and after the occurrence of a disruption in traffic. The transport sector can calculate with less traffic jam with shorter waiting times, increased traffic and safety and security and thus increased travelling comfort. Also JITES allows the transport sector to get real-time information about several accidents and provides a tool to make advanced route planning.

- Article 3, § 1 sec. c (bb): **encourage optimum use of existing infrastructures;**
  Regarding the re-routing option in the JITES system, in case of a disruption the existing infrastructures will be used optimal. Also regarding to the
increased safety and security on traffic management, critical infrastructure will achieve its quantity equilibrium. Thus, through the application of JITES the existing infrastructures will be used by optimum.

Regarding all the positive impacts of JITES in traffic management, safety-, security- and emergency management, scenario and incident planning, in summary JITES will be an important milestone to increase the transport safety and to fulfill the goals of Article 7, § 2 sec. d: greater transport safety.

Impact assessment of the JITES pilot applications on Fréjus and Arlberg axes

To successfully build Alpine cross-border cooperation in transport telematics through the JITES system, all involved partners and stakeholders must fulfill their tasks. TranSAFE-Alp strategic support in joint cross-border transport security decision making in the Alpine Space is based on:

- active involvement of national and regional authorities dealing with transport and environment in the harmonization of decision-making processes to reduce natural and technological risks;
- sharing of a joint vulnerability and intervention scenario for a transnational coordination of emergency deployment;
- identification and improvement of ICT technologies and re-routing services.

Additional, the Alpine Space consists by more diverse traffic than the low-lands or urbanized areas. The traffic in the Alpine Space includes, for example, the urban transport in cities Alps as well as the traffic in sparsely populated, remote areas, and commuting distances, such as catchment areas of major cities outside the Alpine Convention area. The different geographic circumstances of individual states have a significant influence on their transport policy, whereby the transfer of strategies and targets for the use of telematics in transport and transport between countries is difficult. Further questions provide the data needs, the public-private collaboration, commercialization, assessment of telematics applications and the

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25 Paolo Santinello, final conference (25th of July): From the idea to reality – JITES HAPPENS. Villa Contarine – Piazzola sul Brenta, PAdoa Italy
protection of personal data in many areas have not been satisfactorily answered. Therefore further study and research needs are required. The use of a comprehensive safety and security tool like JITES can be pointed out as follows:

- Receiving of additional information / knowledge sharing
  The users of the JITES platform will get advanced information through collaborative planning, deposited scenarios and tight communication. This increases the profitability of the transport sector and internalise external costs.

- Advanced incident report
  The JITES platform is an optimal tool to document safety-, security- and emergency incidents. Thus reports can be produced and distributed easily.

- Strategically distribution of the traffic flow
  Through the tight cooperation and collaboration in JITES, the users are able to distribute the traffic flow in occurrence of an accident strategically.

- Increase of the network capacity on alternative routes
  Regarding the strategically distribution of the traffic flow, the network capacity on alternative routes get well utilized and increases the transport safety and security.

- Consistency of information
  The users of the JITES platform will have the same information (data) in the right quality and in the same time. An increased incident planning and a faster invention is possible.

- On-trip information / Off-board navigation
  Through the easy accessibility of JITES (internet) the users will get provided regularly with relevant data and on-trip information and off-board navigation.

- Increased knowledge-sharing about safety and security measures
The increased communication, cooperation and collaboration in JITES will cause an increase in knowledge of every JITES user. Scenarios, Case studies, best-practices, etc. can be distributed.

- Increased effectively and efficiency in communication, cooperation and collaboration
  The first use will be an adjustment for the users. But after a short time, the whole JITES-network will gain an experience an increase in communication, cooperation and collaboration. Consequently the individual JITES user as well its network will be more effective and efficient than before.

- Increased cost effectiveness
  Regarding to above point, the organization will experience increased cost effectiveness.

- Increased mobility execution

**Summary / Conclusion**

This report assessed the impacts of JITES on Alpine Space transport security policies and economy. The TranSAFE-Alp consortiums as well as trained stakeholders have the conviction that the JITES system has several impacts on the Alpine Space policies and economy. Summarized these impacts are:

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<td>reduce the negative effects of and risks</td>
<td>support sustainable development</td>
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<td>creating appropriate infrastructures</td>
<td>increasing the efficiency of transport systems</td>
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<td>ensure the movement of intra-Alpine and transalpine transport at economically bearable costs</td>
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<td>Obtain the Alpine Space as economical powerful area</td>
<td>increase the profitability of the transport sector and internalise external costs</td>
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<td>decreases additional traffic without any use</td>
<td>encourage optimum use of existing infrastructures</td>
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Furthermore, in this report the impacts of real scenarios (Frejus & Arlberg) got assessed. Summarized the impacts of JITES to real scenarios are: Stakeholders receive additional information / knowledge sharing. Through this, it is possible for

- Advanced incident reporting
- Strategically distribution of the traffic flow
- Increase of the network capacity on alternative routes
- Consistency of information
- On-trip information / Off-board navigation
- Increased knowledge-sharing about safety and security measures
- Increased effectively and efficiency in communication, cooperation and collaboration
- Increased cost effectiveness
- Increased mobility execution

Summarized, a platform for a collaborative handling of incidents, threats and disruptions like JITES will enhance the action possibilities and scopes of involved stakeholders. Through the implementation of JITES the whole Alpine Space will get strengthened and thus the policies and guideline of the Alpine Space and the European Union will get implemented.

**List of Literature**

**Internet**

http://doku.cac.at/vcoe_factsheet_infrastruktur.pdf


http://www.alpine-space.org/programmed451.html?&L=58239

http://www.invent-online.de/de/projekte.html

Internal documents


Deliverable: O5.1 A0_JITES_specific_description, Project: TranSAFE-Alp, Author: FBK


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Annex

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TRANSLATION

PROTOCOL ON THE IMPLEMENTATION OF THE 1991 ALPINE CONVENTION IN THE FIELD OF TRANSPORT

Transport protocol

THE FEDERAL REPUBLIC OF GERMANY,

THE FRENCH REPUBLIC,

THE ITALIAN REPUBLIC,

THE PRINCIPALITY OF LIECHTENSTEIN,

THE PRINCIPALITY OF MONACO,

THE REPUBLIC OF AUSTRIA,

THE SWISS CONFEDERATION,

THE REPUBLIC OF SLOVENIA,

and

THE EUROPEAN COMMUNITY —

In accordance with their task, arising from the Convention on the Protection of the Alps (Alpine Convention) of 7 November 1991, of pursuing a comprehensive policy for the protection and the sustainable development of the Alpine region.

In compliance with their obligations under Article 2(2) and (3) of the Alpine Convention:

Aware that the ecosystems and landscapes of the Alpine region are particularly sensitive, that its geographical conditions and topography are likely to increase pollution and noise and that it contains unique natural resources and a unique cultural heritage;

Aware that, without appropriate measures, transport and the environmental damage which it causes will continue to increase owing to the further integration of markets, socioeconomic development and leisure activities;

Convinced that the local population must be able to determine its own social, cultural and economic development plan and take part in its implementation in the existing institutional framework;
Aware that transport is not without an environmental impact and that the environmental damage it causes produces increasing negative effects on and risks to the ecology, health and safety, which need to be tackled through a common approach.

Aware that enhanced safety measures are needed during the transport of hazardous materials.

Aware of the need to make comprehensive arrangements for observation, research, the provision of information and consultation in order to establish the links between transport, health, environment and economic development and to make clear the need to reduce environmental damage.

Aware that, in the Alpine region, a transport policy based on the principles of sustainability is in the interests of both the Alpine and extra-Alpine populations and that it is also necessary to preserve the Alpine regions as both a habitat and a natural and economic region.
Aware that on the one hand the present potential of modes of transport is to some extent not used sufficiently and on the other hand not enough account is taken of the importance of infrastructures for more environmentally-friendly transport systems (such as railway transport, shipping and combined transport) or of the transnational compatibility and operability of the various means of transport, and that it is therefore necessary to optimise such transport systems by a major strengthening of the networks inside and outside the Alpine region;

Aware that regional-planning and economic-policy decisions taken inside and outside the Alpine region have major repercussions for the development of Alpine transport;

Desiring to make a decisive contribution to sustainable development and to improvement of the quality of life by reducing the volume of traffic, managing transport in a more environmentally-friendly manner and increasing the effectiveness and efficiency of existing transport systems;

Convinced that it is necessary to balance economic interests, social needs and environmental requirements;

With due regard for the bilateral and multilateral conventions concluded between the Contracting Parties and the European Community, in particular in the field of transport;

Convinced that certain problems can only be resolved in a cross-border framework and require joint measures on the part of the Alpine States —

HAVE AGREED AS FOLLOWS:

CHAPTER I
GENERAL PROVISIONS

Article 1

Objectives

1. The Contracting Parties undertake to pursue a sustainable transport policy which will:

(a) reduce the negative effects of and risks posed by intra-Alpine and transalpine transport to a level which is not harmful to people, flora and fauna and their environments and habitats, inter alia, by transferring an increasing amount of transport, especially freight transport, to the railways, in particular by creating appropriate infrastructures and incentives in line with market principles;

(b) contribute to the sustainable development of the habitats and economic areas in which people living in the Alpine region dwell and work by implementing a transport policy which encompasses all modes of transport and is harmonised between the various transport systems which are more environmentally-friendly and more economic in terms of natural resources;

(e) ensure fair competition between modes of transport.

2. The Contracting Parties undertake to develop the transport sector while observing the precautionary principle, the preventive principle and the polluter-pays principle.

Article 2

Definitions

For the purposes of this Protocol:

‘Transalpine transport’ is transport made up of journeys whose points of departure and arrival are outside the Alpine region.

Transport made up of journeys whose points of departure or arrival are inside the Alpine region.
(c) help to reduce and, as far as possible, avoid any impact which might endanger the role and natural resources of the Alpine region, the importance of which goes beyond the boundaries of the Alpine areas, and threaten its natural and cultural heritage;

(d) ensure the movement of intra-Alpine and transalpine transport at economically bearable costs by increasing the efficiency of transport systems and promoting modes of transport which are compatible with the environment.

'Bearable negative effects and risks' are negative effects and risks to be defined through environmental-impact assessment and risk analysis with the aim of putting an end to any further increase in negative effects and risks and, where necessary, reducing them by means of appropriate measures in the case of both new building works and existing infrastructures which have a significant impact on the land.


'Sustainable transport and mobility

1. To enable transport to develop in a sustainable manner, the Contracting Parties undertake to contain, by means of a concerted transport and environmental policy, the negative effects and risks due to transport by taking account of:

(a) the importance of the environment so that:

(aa) the use of natural resources is reduced to a level which, as far as possible, does not exceed their natural capacity for regeneration;

(bb) harmful emissions are reduced to a level which is not detrimental to the absorption capacity of the environments concerned;

(cc) the input of substances into the environment is limited so as to avoid harming environmental structures and natural materials cycles;

(b) the requirements of the population so as to:

(aa) allow accessibility for persons, labour, goods and services, while effectively preserving the environment, saving energy and space and meeting the essential needs of the population;
The precautionary principle is the principle whereby measures intended to avoid, control or reduce serious or irreversible effects on health and the environment should not be postponed by arguing that scientific research has not yet strictly proven the existence of a cause-and-effect relationship between the substances concerned and their potential harmfulness to health and the environment.

The 'polluter-pays' principle, including the acceptance of liability for effects caused, is the principle whereby the costs of preventing, controlling and reducing environmental damage and restoring the environment to an acceptable state are to be paid by polluters. The latter should, as far as possible, pay the entire cost of the impact of transport on health and the environment.

'Advisability study' is an investigation, in accordance with national laws, during the planning of new, large-scale building works, or major alterations or extensions of existing transport infrastructures concerning the advisability of projects from the

(bb) avoid endangering human health and reduce the risks of environmental disasters and the number and severity of accidents;

(c) the importance of economic criteria so as to:

(a) increase the profitability of the transport sector and internalise external costs;

(bb) encourage optimum use of existing infrastructures;

(cc) guarantee employment in undertakings which are performing well in the various sectors of the economy;

(d) the need to take enhanced measures against noise because of the special topography of the Alps.
2. In keeping with the national and international transport legislation in force, the Contracting Parties undertake to develop national, regional and local strategies, objectives and measures which:

(a) take account of the different environmental, economic and socio-cultural data and different needs;

(b) make it possible to reduce environmental damage due to transport by putting in place economic tools combined with measures for regional and transport planning.

**Article 4**

Taking the objectives into account in other policies

1. The Contracting Parties undertake to take account of the objectives of this Protocol in their other policies as well.

2. The Contracting Parties undertake to anticipate and evaluate the effects of other policies, strategies and concepts on transport.

**Article 5**

Participation of regional and local authorities

1. The Contracting Parties shall encourage international cooperation between the competent institutions in order to find the best possible cross-border harmonised solutions.

provided for in this Protocol because of special situations relating in particular to their natural areas or on grounds of public health, safety or protection of the environment.

**CHAPTER II**

**SPECIFIC MEASURES**

(A) STRATEGIES, CONCEPTS, PROJECTS

**Article 7**

**General transport-policy strategy**

1. In order to ensure sustainability, the Contracting Parties undertake to promote rational, safe transport management in a harmonised, cross-border network that:

(a) ensures coordination between different carriers, modes and types of transport and encourages intermodality;

(b) optimises the use of existing transport systems and infrastructures in the Alps, including through the use of electronic data transmission, and charges external and infrastructure costs to polluters in line with the damage caused;

(c) encourages, by means of structural and regional planning measures, the transfer of the carriage of passengers and goods to more environmentally-friendly means of transport and to intermodal transport systems;

(d) recognises and utilises the opportunities for reducing traffic volume.
2. Each Contracting Party shall define, within its institutional framework, the best level of coordination and cooperation between the institutions and regional and local authorities directly concerned so as to encourage solidarity of responsibility, in particular in order to exploit and develop synergies when implementing transport policies and the resulting measures.

3. The regional and local authorities directly concerned shall be parties to the various stages of preparing and implementing these policies and measures within the limits of their competence and within the existing institutional framework.

Article 6
Reinforced national regulations

In order to protect the ecologically sensitive Alpine region and without prejudice to international conventions in force, the Contracting Parties may take measures going beyond those

2. The Contracting Parties undertake to adopt the necessary measures so as to ensure as far as possible:

(a) the protection of communication routes against natural hazards;

(b) in areas particularly damaged by transport, the protection of persons and of the environment;

(c) the gradual reduction of emissions of harmful substances and noise by all modes of transport, including through the use of the best technologies available;

(d) greater transport safety.
Article 8
Evaluation and intergovernmental consultation procedure
1. In the case of new, large-scale building works and major alterations or extensions of existing transport infrastructures, the Contracting Parties undertake to carry out advisability studies, environmental impact assessments and risk analyses and to evaluate the results in the light of the objectives of this Protocol.

2. The planning of transport infrastructure in the Alps must be carried out in a coordinated, concerted manner. In the case of projects with a significant cross-border impact, each Contracting Party undertakes to carry out, at the latest once the studies have been presented, prior consultations with the other Contracting Parties concerned. These provisions shall be without prejudice to the right of each Contracting Party to construct transport infrastructure which has been adopted in accordance with their internal legal order at the time of adoption of this Protocol or the need for which has been established in accordance with the law.

3. The Contracting Parties shall encourage the increased consideration of transport policy in the environmental management of undertakings in their countries.

(b) TECHNICAL MEASURES

Article 9
Public transport
In order to maintain and improve the settlement pattern and the economic organisation of the Alps as well as their attractiveness for recreation and leisure purposes in a sustainable manner, the Contracting Parties undertake to encourage the creation and development of user-friendly, environmentally-adapted public transport systems.

(c) the adoption of measures designed in particular to transfer the long-distance carriage of goods to rail and to further harmonise transport-infrastructure user charges;

(d) intermodal transport systems and the further development of rail transport;

(e) the increased use of rail and the creation of user-friendly synergies between long-distance passenger transport, regional transport and local transport.

2. In order to reduce the volume of transit goods carried by land, the Contracting Parties shall encourage additional efforts to increase the use of shipping.

Article 11
Road transport
1. The Contracting Parties shall refrain from constructing any new, large-capacity roads for transalpine transport.

2. Large-capacity road projects for intra-Alpine transport may be carried out only if:

(a) the objectives set out in Article 2(4) of the Alpine Convention can be attained by means of appropriate precautionary and compensatory measures as determined by the environmental impact assessment;

(b) the transport requirements cannot be met by making better use of existing road and railway capacity, by extending or constructing new railway transport and shipping infrastructures, by improving combined transport, or by any other transport organisation measures;
Article 10

Rail transport and shipping

1. In order to make better use of the particular suitability of the railways for meeting the requirements of long-distance transport, and use of the railway network for economic activity and tourism in the Alps, the Contracting Parties shall, within the limit of their competences, promote:

(a) the improvement of railway infrastructure by constructing and developing the major transalpine railway routes, including connecting routes and suitable terminals;

(b) the further optimisation and modernisation of railway undertakings, in particular for cross-border transport;

(c) the results of the advisability study have shown that the project is economically viable, the risks are contained and the result of the environmental impact assessment is positive;

(d) regional planning and/or programmes and sustainable development are taken into consideration.

3. However, in view of the geography and the settlement pattern of the Alpine region, which cannot always be efficiently served by public transport alone, the Contracting Parties shall recognise the need, in these remote areas, to create and maintain sufficient transport infrastructures for private transport to function.

Article 12

Air transport

1. The Contracting Parties undertake to reduce as far as possible the environmental damage caused by air transport, including aircraft noise, without transferring it to other regions. Taking account of the objectives of this Protocol, they shall make efforts to limit or, where appropriate, prohibit airdrops in places other than airfields. In order to protect the wild fauna, the Contracting Parties shall take appropriate measures to impose time and place limits on non-motorised air transport for leisure purposes.

2. The Contracting Parties undertake to improve public transport systems from airports on the fringes of the Alps to the various Alpine regions so as to be able to satisfy transport demand without further damage to the environment. In this context, the Contracting Parties shall restrict as far as possible the construction of new airports and any major extension of existing airports in the Alps.

Article 13

Tourist facilities

1. The Contracting Parties undertake to evaluate, in the light of the objectives of this Protocol, the transport impact of new tourist facilities and, if necessary, to take precautionary or compensatory measures to fulfill the objectives of this or other Protocols. Priority shall be given in this case to public transport.

2. The Contracting Parties shall support the creation and maintenance of low-traffic and traffic-free areas, the exclusion of cars from certain tourist sites and measures to encourage tourists not to arrive by car or use cars.

(C) MONITORING AND CONTROL.

Article 15

Supply and use of transport infrastructure

1. The Contracting Parties undertake to record and periodically update in a reference document the state, development, and use of or improvement in large-capacity transport infrastructure and transport systems and the reduction in environmental damage. They shall use a uniform presentation for this purpose.

2. On the basis of the above reference document, the Contracting Parties shall consider the extent to which implementing measures have contributed to the achievement and further development of the objectives of the Alpine Convention and, in particular, this Protocol.

Article 16

Environmental quality objectives, standards and indicators

1. The Contracting Parties shall lay down and implement environmental quality objectives for the establishment of sustainable transport.

2. They agree on the need to have suitable standards and indicators for the specific requirements of the Alpine region.

3. The application of these standards and indicators is intended to measure damage to the environment and health caused by transport.
Article 14
Real costs
In an attempt to influence the routing of transport by taking greater account of the real costs of the various transport modes, the Contracting Parties agree to apply the "polluter-pays" principle and to support the establishment and use of a system to calculate infrastructure costs and external costs. The objective is gradually to introduce transport-specific charging systems to cover such real costs in an equitable manner and to:

(a) encourage the use of the most environmentally-friendly modes and means of transport;

(b) achieve a more balanced use of transport infrastructure;

(c) provide incentives to make more use of opportunities for the reduction of environmental and socioeconomic costs by means of structural and regional planning measures which have an impact on transport.

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(d) reach agreement, prior to any major transport-policy decisions, in particular in order to incorporate them in a harmonised cross-border regional planning policy.

Article 17
Coordination and information
The Contracting Parties agree, where necessary, to hold joint meetings in order to:

(a) evaluate the impact of measures taken under this Protocol;

(b) consult each other prior to any major transport-policy decisions which are likely to have an impact on the other Contracting States;

(c) encourage exchanges of information on the implementation of this Protocol, giving priority to the use of existing information systems;

Monitoring of compliance with Protocol obligations
1. The Contracting Parties shall regularly report to the Standing Committee on measures taken under this Protocol. The reports shall also cover the effectiveness of the measures taken. The Alpine Conference shall determine the intervals at which the reports must be submitted.

2. The Standing Committee shall examine these reports in order to ensure that the Contracting Parties have fulfilled their obligations arising from this Protocol. It may also ask for additional information from the Contracting Parties concerned or have recourse to other information sources.

3. The Standing Committee shall draw up a report on compliance by the Contracting Parties with the obligations arising from this Protocol, for the attention of the Alpine Conference.

4. The Alpine Conference shall take note of this report. If it finds that obligations have not been met, it may adopt recommendations.

Evaluation of the effectiveness of the provisions
1. The Contracting Parties shall regularly examine and evaluate the effectiveness of the provisions of this Protocol. They shall initiate appropriate amendments to this Protocol where necessary in order to achieve objectives.
5. The Contracting Parties shall support research into the applicability of methods for intermodal strategic environmental impact assessment in the Alps.

Article 19

Training and provision of information to the public

The Contracting Parties shall encourage basic and further training and the provision of information to the public on the objectives, measures and implementation of this Protocol.

CHAPTER IV

MONITORING AND EVALUATION

Article 20

Implementation

The Contracting Parties undertake to ensure the implementation of this Protocol by taking any appropriate measures within the existing institutional framework.

2. The regional and local authorities shall be associated with this evaluation within the existing institutional framework. Non-governmental organisations active in this field may be consulted.

CHAPTER V

FINAL PROVISIONS

Article 23

Links between the Alpine Convention and the Protocol

1. This Protocol constitutes a Protocol to the Alpine Convention within the meaning of Article 2 and any other relevant articles of the Convention.

2. Only Contracting Parties to the Alpine Convention may become a party to this Protocol. Any denunciation of the Alpine Convention also implies denunciation of this Protocol.

3. Where the Alpine Conference discusses matters relating to this Protocol, only the Contracting Parties to this Protocol may take part in the vote.

Article 24

Signature and ratification

1. This Protocol shall be open for signature by the signatory States of the Alpine Convention and by the European Community on 31 October 2000 and in the Republic of Austria, as the depository, from 6 November 2000.

2. This Protocol shall enter into force for the Contracting Parties which have expressed their agreement to be bound by the said Protocol three months after the date on which three States have deposited their instruments of ratification, acceptance or approval.

3. For Parties which later express their agreement to be bound by the Protocol, the Protocol shall enter into force three months after the date of deposit of the instrument of ratification, acceptance or approval. After the entry into force of an amendment to the Protocol, any new Contracting Party to the said Protocol shall become a Contracting Party to the Protocol, as amended.

Article 25

Notification

The depository shall, in respect of this Protocol, notify each State referred to in the Preamble and the European Community of:

(a) any signature;

(b) the deposit of any instrument of ratification, acceptance or approval;

(c) any date of entry into force;

(d) any declaration made by a Contracting Party or signatory;

(e) any denunciation notified by a Contracting Party, including the date on which it becomes effective.

In witness whereof, the undersigned, being duly authorised thereto, have signed this Protocol.
Done at Lucerne this thirty-first day of October two thousand, in the French, German, Italian and Slovene languages, the four texts being equally authentic, in a single original which shall be deposited in the Austrian State Archives. The depositary shall send a certified copy to each of the signatory States.

For the Federal Republic of Germany,
For the French Republic,
For the Italian Republic,
For the Principality of Liechtenstein,
For the Principality of Monaco,
For the Republic of Austria,
For the Swiss Confederation,
For the Republic of Slovenia,
For the European Community.