REGALP

QLK5-CT-2001-02329

Work package 4

Developing integrated cultural landscape scenarios in the Alps for the year 2020

Work Package Report

Benedetta Castiglioni
Javier Grossutti
Antonio Massarutto
Stefania Troiano
Tiziana Virgilio

Udine, 12.01.2004

Dipartimento di Scienze Economiche
Università di Udine
Via Tomadini 30/A I-33100 Udine

Regional Consulting, Vienna
University of Berne, Institute for Geography
Cemagref, Groupement de Grenoble
Alpenforschungsinstitut Garmisch Partenkirchen
University of Udine, Department of Economic Science
Urban Planning Institute of the Republic of Slovenia, Ljubljana

Table of contents

1. SUMMARIES

1.1. English summary

In the context of REGALP Project, "scenarios" for Total Alps in 2020 are intended not as an attempt to produce detailed "forecasts", but as a basis for discussion both within the scientific community and with stakeholders in the pilot regions in work package 5.

The most important objectives to achieve in the scenario building process with this respect are:

- To identify the main development trends between 2000 and 2020 on European level and to integrate them into scenarios of future spatial development and cultural landscape change in the Alps
- To develop integrated scenarios for the selected pilot regions on the basis of Total Alps scenarios, that is to describe "likely" future situations, building on the information that has been accumulated and elaborated in the previous WPs.

Starting from the results of the previous work packages of REGALP and of other researches, the first step of the general scenarios building process was to individuate the future distribution of different development situations in the alpine space. The driving forces and the actual trends projected into the future are determining a different grouping (clusters) and a different distribution of areas with homogeneous peculiarities with respect to the present one. Actually, alpine space is a complex system, it is a mosaic of many different development situations and of many different landscapes. So, the starting point of their description, at present as well as for the future, concerns in identifying the main tesserae of this mosaic and their relative distribution. To achieve this objective a model has been drafted.

The second step for the scenarios building process was a general description of the regions belonging to each cluster, with regard to their socio-economic features. The contents of these descriptions were coming on one hand from the analysis of the so called "*macro-trends*", that are intended as the external factors that can modify in the future the patterns of regional development, and as the set of opportunities or disadvantages that each alpine community has to face. They are not directly linked to cultural landscape nor to the Alps, but operate as exogenous factors causing further pressure to change. On the other hand the results of the previous work packages, especially WP2, that had analysed the relationship between regional development and cultural landscape change in the past decades, give important information for the description of realistic and coherent scenarios in each cluster.

Clustering models:

Among the very different hypothetical situations that can be imagined for the Alps in 2020, the research team decided to define only two different scenarios. They are not imagined as a completely "pink"- positive situation opposite to a completely "black"- negative situation, but as two "likely futures", different from each other on the basis of the different aims and weight of policies concerning alpine space.

We are thinking at one scenario in which policies don't turn significantly to sustainability and don't have many sustainable effects and therefore we are calling it "inertial" scenario. The

second scenario, on the other hand, considers a situation of stronger effects of policies: it is not an "ideal" scenario, or a point of reference, but we imagine a situation in which the basic references of sustainability (Alpine Convention, European Landscape Convention, European Spatial Development Perspective) are going to be integrated into policies at different level. We are calling this second scenario "towards sustainability" scenario.

The clustering of regions in the Alps for the scenarios is based on the results of WP2, where BÄTZING's typology of alpine communities has been used and developed further. In WP2 we found 6 main development trends with 9 further sub-trends (see Annex 2 to work package 2 report). For the scenarios the communities have been clustered in a modified way taking into account the sub-trends of WP2.

The most significant development trends coming from WP2 results (and from the most of other researches[1]) can be nevertheless summarised in this way:

- Increasing polarisation between as well as within central and peripheral regions
- Growth of urban areas and of their suburban and "dormitory" areas
- Metropolisation of the border alpine regions, that are "attracted" by/polarised towards the metropolitan areas like Vienna, Munich, Torino, Milano, Venetian Plain;
- Marginalisation and decline of peripheral areas
- Growth of main touristic areas at higher altitudes.

It is assumed that in the inertial scenario the present trends will keep or will grow in intensity, while in the other one they will attenuate.

The trends mentioned above act in different ways in the alpine space in dependence on some general driving forces. The most important of them are:

- Suburbanisation
- Increase of private motorisation
- Decrease of services or their concentration in the central areas.

Local factors

The development of the different areas in the alpine space is also connected with two important local factors:

- Alpine remoteness: it comprehends different items, such as the distance from the centres of services and economic activities, the altitude, topographic features, difficulties in transfer, etc., strictly connected with mountain environment
- Local presence and use of endogenous resources: it comprehends different items, such as physical presence of resources, policies that allow and/or encourage their use, local attitudes of using resources.

[1] See Work Package 2 Report.

The different clusters

Combining development trends, driving forces and local factors in the alpine space, some groups of areas can be identified, as they have many common peculiarity in their development situations. These groups of areas are called **clusters**.

Thinking in particular of an alpine region (i.e. the pilot regions) in 2020 (either in the inertial or in toward sustainability scenario) and combining the ways in which development trends, driving forces and local factors will act, it has been possible to define, to which of these clusters the different parts of the region will belong to.

The three main clusters are:

- Local centres and areas that gravitate on them
- Peripheral areas (more "remote")
- Touristic areas.

Further zonings are listed in the chart, together with some of their peculiarities in both scenarios:

Table 1: General features of the main clusters

Cluster	General peculiarities	Inertial Scenario	Toward Sustainability Scenario
Local centres	Alpine towns in which most of the population, of the economic activities and of the services are concentrated. They are disappearing in border alpine regions with strong influence from metropolitan areas outside the Alps.	Fewer in number but bigger in importance than in 2003	The same number as in 2003
Commuter areas with own activities	They gravitate on the local centres, but they have some local activities (in different sectors). They are areas of in- as well as of out-commuting. Quality of life could be better than in the local centres.	Not wider than in 2003	They are wider than in the inertial scenario. Different sectors of economic activities are present ("polifunctional growing areas")
Residential commuter areas	Typical areas of out-commuting, often losing services and local identity	Wider than in 2003	Not wider than in 2003. Local services and local transport network are quite good

Growing peripheral areas	To be in a peripheral position in some cases can be a "resource". Soft tourism, multifunctional agriculture, protection of nature and/or other activities give to these areas a good chance for development	Potentials can not be realised	Wider than in 2003
Steady peripheral areas	Areas in which the difficulties due to alpine remoteness are in some way counterbalanced by local activities and economic resources	Less wide than in the toward sustainability scenario; less wide than in 2003 because of the strong decrease of services in peripheral areas that causes depopulation	Wider than in 2003; poli-functionality among different sectors of economic activities can be a good chance to maintain steady conditions
Decline peripheral areas	They are areas of out-migration as well as of out-commuting. Services as well as local economic activities are decreasing. Re-naturalisation characterises large areas	Wider than in 2003	Less wide than in 2003, as in many areas new local resources can be used for "sustainable" economic activities
Touristic areas	They are situated at the highest altitudes and linked to winter sports, most of all. Some of them are growing (due to a massive presence of immigrants, tourists and entrepreneurs), some other are facing crises.	There are some important growing areas, but a large number of touristic communities on lower sea level are facing a serious crisis.	Some strong classical touristic areas, soft tourism is a real alternative. Other economic activities help

Source: own elaboration

1.2. Zusammenfassung

Die Alpen-Szenarien, die im Rahmen von REGALP für das Jahr 2020 entwickelt wurden, sind nicht als detaillierte Vorhersagen mit Wahrheitsanspruch zu sehen, sondern als Versuch, ´mögliche Wirklichkeiten´ zu beschreiben. Sie sollen in erster Linie der Diskussion dienen, einerseits innerhalb der Wissenschaft und andererseits zwischen Wissenschaft, Planung, Verwaltung und den lokalen Akteuren in den Pilotregionen, u.a. im Rahmen der Workshops im Arbeitspaket 5.

Im Rahmen von REGALP wurden Szenarien für zwei räumliche Einheiten entwickelt:

(1) Für die gesamten Alpen und ihre unterschiedlichen Teilräume

(2) Für die sieben REGALP-Pilotregionen.

Grundlage für die Erstellung der Szenarien waren:

- Die Ergebnisse der vorangegangenen Arbeitspakete, insbesondere die räumlichen Entwicklungstypen, die wir im Arbeitspaket 2 identifiziert haben
- Eine Literaturrecherche zu einzelnen Themenbereichen, die im sogenannten Macrotrend-Reader (s. REGALP, WP4 Report, Annex 4.1) zusammengefaßt wurde.

Zunächst haben wir die im Arbeitspaket 2 identifizierten räumlichen Entwicklungstypen überarbeitet. Für die Szenarien ergibt sich über den gesamten Alpenraum ein kleinräumiges Mosaik unterschiedlicher Raumtypen, die wir als ´Cluster´ bezeichnet haben. In diesen Clustern prägen sich die einzelnen räumlichen Merkmale wie etwa Bevölkerungs- und Siedlungsentwicklung, Wirtschaft, Verkehr, Flächennutzung etc. unterschiedlich aus.

In einem zweiten Schritt haben wir die einzelnen Merkmale in den verschiedenen Clustern näher beschrieben. Dabei haben wir insbesondere auf den Macrotrend-Reader zurückgegriffen, in dem die generellen zukünftigen Entwicklungen im gesamteuropäischen Kontext beschrieben sind.

<u>Zwei unterschiedliche Szenarien</u>

Das Forschungsteam hat sich in mehreren Workshops auf die Erstellung von zwei unterschiedlichen Szenarien geeinigt:

- Beim ´Inertial´ Szenario (´Polarisierungs-Szenario´) gehen wir davon aus, dass die Politik nicht imstande ist, wesentliche Impulse in Richtung Nachhaltigkeit zu setzen, die bestehenden Gegensätze zwischen begünstigten und benachteiligten Gebieten werden größer, Konkurrenz geht vor Kooperation.
- Beim ´Towards Sustainability´ Szenario (´Unterwegs zur Nachhaltigkeit´) nehmen wir an, dass es der Politik gelingt, den Weg in Richtung Nachhaltigkeit einzuschlagen und dass sich dabei auch sichtbare Erfolge einstellen. Wir nehmen an, dass die Ziele des Europäischen Raumordnungskonzepts (EUREK), der Alpenkonvention und der Europäischen Landschaftskonvention zum zumindest annähernd umgesetzt werden können. Dies führt u.a.

zu einer Abschwächung der Polarisierungseffekte und zu einem gewissen regionalen Ausgleich.

Wir haben bewußt keine Extreme gewählt, die beiden dargestellten Szenarien sollen eine Bandbreite möglicher zukünftiger Entwicklungen aufzeigen.

Räumliche Entwicklungstrends

Die wichtigsten Phänomene der räumlichen Entwicklung im Alpenraum, die im Arbeitspaket 2 identifiziert wurden – und die sich auch mit den Erkenntnissen einiger anderer Alpen-forscherInnen decken – sind[2]):

- Zunehmende Polarisierung zwischen begünstigten und benachteiligten Gebieten
- Zunehmendes Wachstum der Agglomerationsgebiete und angrenzender ´Wohn- und Schlafregionen´
- Zunehmender Einfluss ausseralpiner Metropolen wie Wien, München, Mailand, Turin, Lyon u.a. auf die Alpenrandgebiete
- Zunehmende Schwächung peripherer Regionen
- Stagnation des Tourismus und Konzentration des touristischen Wachstums auf die bereits heute hochentwickelten Tourismusgebiete in größerer Seehöhe.

Diese Entwicklungstrends werden durch folgende allgemeine Triebkräfte verstärkt:

- Zunahme des motorisierten Individualverkehrs
- Rückgang der öffentlichen Dienstleistungen im Zuge der Deregulierung und Privatisierung.

Lokale Einflussfaktoren

Neben den externen Einflussfaktoren spielen die lokalen Rahmenbedingungen für die zukünftige Entwicklung eine wichtige Rolle. Zu diesen lokalen Rahmenbedingungen zählen:

- Alpine Lageverhältnisse: dazu zählen alle Einflussfaktoren, die aufgrund der Morphologie und der alpinen Charakteristik zum Tragen kommen, so z. B. die Seehöhe, die morphologischen Verhältnisse, die damit verbundene Entfernung zu den Dienstleistungs-einrichtungen in den Agglomerationsgebieten
- Die Verfügbarkeit lokaler Ressourcen und die Möglichkeiten, diese Ressourcen auch tatsächlich zu nutzen. Dazu zählen u.a. die natürlichen Rohstoffe wie Holz und Wasser, aber auch ökonomische und/oder soziale Rahmenbedingungen für die Ressourcennutzung wie etwa gesetzliche Bestimmungen, lokale Organisationsformen und Werthaltungen etc.

[2] Siehe WP2 Work Package Report.

Regionale Cluster

Aus der Kombination der räumlichen Entwicklungstrends, der lokalen Rahmenbedingungen und der externen Triebkräfte haben wir für die Szenarien 2020 folgende drei Haupt-Cluster definiert:

- Ballungszentren und ihr Umland
- Periphere Gebiete
- Tourismusgebiete.

Diese drei Haupt-Cluster haben wir noch näher untergliedert. Zudem haben wir angenommen, dass beim Szenario ´Unterwegs zur Nachhaltigkeit´ ein Raumtyp auftritt, den es beim ´Polarisierungsszenario´ nicht gibt: die entwicklungsstarken peripheren Regionen:

Tabelle 1: die Cluster und ihre generellen Merkmale

Cluster	Merkmale	´Polarisierungs-szenario´	Szenario ´Unterwegs zur Nachhaltigkeit´
Ballungs-zentren	Alpenstädte, in denen sich Bevölkerung, Arbeitsplätze und Dienstleistungen konzentrieren. Am Alpenrand erfahren diese Städte aufgrund des zunehmenden Einnflusses außeralpiner Metropolen einen Bedeutungsverlust	Geringere Anzahl, aber größere Bedeutung als 2003	Ähnlich wie 2003
Entwick-lungsstarke Umland-gebiete	Die Umlandgebiete sind stark auf die Städte bezogen, entwickeln jedoch zunehmend auch ein eigenes Profil. Sie sind geprägt von starken Aus- und Einpendlerströmen. Punkto Lebensqualität können sie die Städte sogar übertreffen	Kleiner als 2003	Bedeutender als im Polarisierungsszenario: multifunktionale Wachstumsgebiete mit breitgestreuten wirt-schaftlichen Aktivitäten
Wohn- und Schlafregio-nen ohne eigenem Profil	Auspendlergebiete, die zunehmend an Pontential und Identität verlieren	Größer als 2003	Nicht größer als 2003, lokale Dienstleistungen und das Infrastrukturnetz funktionieren zufriedenstellend
Entwick-lungsstarke periphere Gebiete	Gebiete, denen es gelingt, trotz nachteiliger Standortverhältnisse die vorhandenen Potentiale in Wert zu setzen, z.B. im Rahmen neuer touristischer Angebote, oder durch Kombinationen von Landwirtschaft und Naturschutz	-	Größer als 2003

Cluster	Merkmale	´Polarisierungs-szenario´	Szenario ´Unterwegs zur Nachhaltigkeit´
Stabile periphere Gebiete	Gebiete, denen es gelingt, trotz nachteiliger Standortverhältnisse durch lokale Ressourcen und Aktivitäten eine gewisse Stabilität zu erlangen	Kleiner als 2003 und kleiner als im Szenario ´Unterwegs zur Nachhaltigkeit´, vor allem bedingt durch den Rückgang öffentlicher Dienstleistungen und durch die damit verbundene Abwanderung	Größer als 2003. Breitgestreute wirtschaftliche Aktivitäten verhelfen diesen Gebieten zu einer gewissen Stabilität
Periphere Gebiete in der Krise	Auspendler- und Abwanderungsgebiete mit einem starken Rückgang in der lokalen Versorgung. Zuwachsen bzw. Aufforstung großflächiger Ge biete	Größer als 2003	Kleiner als 2003. Durch die Inwertsetzung vorhandener Ressourcen können Entwicklungsimpulse gesetzt werden
Tourismus-gebiete	Diese Gebiete liegen zumeist auf großer Seehöhe, der Wintertourismus ist ein dominanter Wirtschaftsfaktor. Manche dieser Gebiete befinden sich in einem kontinuierlichen Wachstumsprozess, andere stagnieren bzw. erleben sogar einen leichten Abschwung.	Infolge der Konzentrationsprozesse sind nur einige wenige Gebiete wirklich erfolgreich, die anderen (vor allem Gebiete in geringerer Seehöhe) geraten hingegen zunehmend in die Krise	Einige Tourismuszentren sind weiterhin mit klassischen Konzepten erfolgreich, die Mehr-zahl stützt sich hingegen auf einen breiteren Branchenmix und alternative Entwick-lungsoptionen

Quelle: eigene Bearbeitung

1.3. Résumé

Dans le contexte du projet REGALP, les « scénarios » des Alpes en 2020 n'étaient pas destinés à produire des « prévisions » détaillées, mais plutôt à être une base de discussion pour les chercheurs et les partenaires des régions pilotes dans le work package 5 (WP5).

Les objectifs principaux de la construction des scénarios étaient :

- D'identifier les tendances principales de développement entre 2000 et 2020 au niveau européen, puis de les intégrer dans des scénarios de développement spatial et d'évolution du paysage pour les Alpes.
- De développer des scénarios pour les régions pilotes, définis sur la base des scénarios généraux des Alpes (« Total Alps scenarios ») ; ils doivent décrire des situations futures « probables » de développement régional et d'évolution du paysage, construites à partir d'informations cumulées et élaborées dans les WP précédents.

La première étape du processus de construction des scénarios à l'échelle des Alpes s'est appuyée sur les résultats des WP précédents du programme REGALP ainsi que sur d'autres recherches. Elle a consisté à définir la distribution future des différentes situations de développement de l'espace alpin. L'étude des forces d'entraînement et des tendances actuelles projetées dans le futur a permis de déterminer un regroupement et une distribution de zones ayant les mêmes particularités de développement (clusters). L'espace alpin est en effet un système complexe avec une mosaïque de situations de développement et d'évolution du paysage très variées. L'identification de leur distribution dans l'espace alpin a constitué le point de départ de la description de l'espace alpin, tant pour le présent que pour le futur.

La deuxième étape du processus de construction des scénarios était par ailleurs de décrire les régions appartenant à chaque cluster et leurs caractéristiques socio-économiques. Les contenus de ces descriptions se sont basés d'une part sur l'analyse des tendances macroscopiques de développement, encore appelées « *macrotrends* ». Ces tendances sont définies comme des facteurs externes qui peuvent modifier à l'avenir les modèles de développement régional et qui doivent donc être considérés comme un ensemble d'opportunités ou de facteurs limitants à prendre en compte par chaque collectivité alpine. Ces tendances ne sont pas directement liées au paysage ni aux Alpes, mais fonctionnent comme des facteurs exogènes se traduisant dans des pressions de changement. D'autre part, les résultats des précédents work packages, spécifiquement ceux de WP2 qui analyse la relation entre développement régional et évolution du paysage des 20-30 dernières années, fournissent une information importante pour la description de scénarios réalistes et logiques dans chaque cluster.

<u>Modélisation des clusters</u>

Parmi les différentes situations hypothétiques qui peuvent être imaginées pour les Alpes en 2020, l'équipe de recherche a décidé de définir seulement deux scénarios différents. Ils ne sont pas imaginés comme l'un complètement « rose »- situation positive opposée à un scénario complètement « noir »- situation négative, mais comme deux situations « futures probables », différentes l'une de l'autre sur la base des politiques concernant l'espace alpin, leurs objectifs et leur poids.

Le premier scénario appelé *scénario tendanciel* est un scénario dans lequel les politiques ne se modifient pas de manière significative et ont des effets limités. Le deuxième scénario appelé *scénario soutenu* considère une situation avec des effets plus marqués des politiques : ce n'est pas un scénario « idéal », ou un point de référence, mais une situation dans laquelle les références de base (Convention Alpine, Convention Européenne du Paysage, Perspectives de Développement Spatial Européen) sont intégrées dans les politiques aux différents niveaux territoriaux.

Le regroupement des régions alpines par clusters pour chacun de ces scénarios s'est basé sur les résultats du WP2 en en utilisant la typologie Bätzing. 6 principales tendances de développement avec 9 sous-tendances ont été développées en détail (cf. Annexe 2 dans le rapport WP2). Pour les scénarios, les communes ont été regroupées de manière à tenir compte des sous-tendances du WP2.

Les tendances de développement les plus significatives d'après les résultats WP2[3] peuvent être résumées de cette façon :

- Augmentation de la polarisation augmentant le contraste entre régions centrales et les régions périphériques *(je ne suis pas sûre de la traduction)*
- Croissance des zones urbaines et périurbaines et des zones « dortoirs »
- « Métropolisation » des régions en bordure des Alpes, qui sont « attirées » par les grandes zones métropolitaines (Munich, Turin, Milan…)
- Marginalisation et déclin des zones périphériques
- Croissance des principales zones touristiques, situées en haute altitude.

Ces tendances sont supposées se maintenir ou se développer fortement dans le scénario tendanciel, et au contraire s'atténuer dans le scénario soutenu.

Les tendances mentionnées au-dessus dépendent de différentes forces d'entraînement. Les plus importantes sont :

- La péri-urbanisation,
- L'augmentation de la motorisation privée,
- La diminution des services ou leur concentration dans les zones centrales.

Facteurs locaux :

Le développement des différentes zones alpines est aussi lié à 2 facteurs locaux importants :

- L'isolement alpin : il comprend différents critères, comme la distance des centres de services et des activités économiques, l'altitude, des caractéristiques topographiques, les difficultés des transferts etc., strictement liés à l'environnement montagnard.
- La présence et l'utilisation des ressources endogènes locales : il comprend différents critères, comme la présence physique des ressources, la présence de politiques qui laissent ou qui encouragent leur utilisation, l'existence d'attitudes locales utilisant les ressources.

[3] Cf. Work Package Report

Les différents clusters :

L'espace alpin a pu être compartimenté en plusieurs types de zones en combinant les tendances de développement, les forces d'entraînement et les facteurs locaux. Chaque groupe de zones de cette typologie présente des particularités communes de développement. Ces groupes de zones sont appelés **clusters**.

Pour une région particulière telle que les régions pilotes, il est possible de définir leur cluster d'appartenance en 2020 en combinant la façon dont les tendances de développement, les forces d'entraînement et les facteurs locaux agiront, tant dans un scénario tendanciel qu'un scénario soutenu.

Les trois principaux clusters sont :

- Les centres locaux et les zones qui gravitent autour,
- Les zones périphériques (plus « éloignées »),
- Les zones touristiques.

L'ensemble des types de zones est listé dans ce tableau, ainsi que leurs particularités dans les deux scénarios :

Table 1 : Caractéristiques générales des principaux clusters

Cluster	**Particularités générales**	**Scénario tendanciel**	**Scénario soutenu**
Centres locaux	Villes alpines dans lesquelles une majorité de la population, des activités économiques et des services sont concentrées. Ce type disparaît à la frontière des régions alpines, à cause d'une forte influence des métropoles proches des Alpes.	Moins en nombre mais plus gros en importance qu'en 2003	Le même nombre qu'en 2003
Zones de banlieues avec leurs propres activités	Elles gravitent autour des centres locaux, mais elles ont quelques activités locales (dans différents secteurs). Elles sont autant des zones de migration positive que négative. La qualité de vie peut être meilleure que dans les centres locaux.	Zones d'ampleur limitée.	Elles sont plus larges que dans le scénario tendanciel. Différents secteurs économiques sont présents (« zones poly-fonctionnelles en croissance »).
Zones de banlieue résidentielle	Zones-type de banlieue, perdant souvent leurs services et leur identité locale.	Plus large qu'en 2003.	Pas plus large qu'en 2003. Les services locaux et les réseaux des transports locaux sont

Cluster	Particularités générales	Scénario tendanciel	Scénario soutenu
			développés.
Zones périphériques en croissance	Etre en position périphérique dans certains cas peut être une « ressource ». Tourisme doux, agriculture multi-fonctionnelle, protection de la nature et autres activités donnent à ces zones une bonne chance de développement.	N'existent pas	Plus large qu'en 2003.
Zones périphériques stables	Ce sont des zones dans lesquelles les difficultés dues à l'éloignement alpin sont d'une certaine manière contrebalancées par des activités locales et des ressources économiques.	Moins large que dans le scénario soutenu ; moins large qu'en 2003 en raison d'une forte diminution des services dans les zones périphériques pour cause de dépopulation.	Plus large qu'en 2003. L'existence d'un plus grand nombre de secteurs économiques peut être une bonne chance pour maintenir des conditions stables.
Zones périphériques en déclin	Ce sont des zones de migration négative. Les services et les activités économiques locales diminuent. La plus grande partie de ces zones est re-naturalisée.	Plus large qu'en 2003	Moins large qu'en 2003, car dans certaines zones, de nouvelles ressources peuvent être utilisées pour des activités économiques « durables ».
Zones touristiques	Elles sont situées en haute altitude et sont souvent liées aux sports d'hiver. Certaines connaissent une croissance (due à la présence massive des étrangers, des touristes et des entrepreneurs), d'autres font face à des crises.	Zones en forte croissance ; mais un grand nombre de communes touristiques en basse altitude peuvent faire face à des sérieuses crises.	Plusieurs zones touristiques classiques existent mais le tourisme doux est une réelle alternative. D'autres activités économiques peuvent ainsi aider.

Source : REGALP

1.4. Riassunto

Nel contesto del Progetto REGALP, gli "scenari" al 2020 per l'intero arco alpino sono intesi non come un tentativo per presentare previsioni, ma come una base per la discussione sia con la comunità scientifica, sia con i rappresentanti delle comunità locali nel work package 5.

Gli obiettivi principali da raggiungere nel processo di costruzione degli scenari sono:

- Identificare i principali trend di sviluppo tra il 2000 e il 2020 a livello europeo e integrarli nello scenario del futuro sviluppo spaziale e nel cambiamento del paesaggio culturale nelle Alpi.
- Sviluppare gli scenari integrati per le regioni pilota selezionate sulla base degli scenari dell'intero arco alpino, cioè descrivendo situazioni future "probabili", costruite in base alle informazioni che sono state accumulate ed elaborate nei precedenti work packages.

Partendo dai risultati dei precedenti work packages di REGALP e di altre ricerche, il primo passo nel processo di costruzione degli scenari generali riguarda la futura distribuzione delle diverse situazioni di sviluppo nello spazio alpino. Le *driving forces* e gli attuali trend proiettati nel futuro determinano un differente raggruppamento (*cluster*) e una diversa distribuzione delle aree con caratteristiche omogenee in riferimento al presente. Di fatto lo spazio alpino è un sistema complesso, un "mosaico" di molte situazioni differenti di sviluppo e di molti paesaggi diversi. Così, il punto di partenza della loro descrizione, nel presente come nel futuro, riguarda l'identificazione delle tessere principali di questo mosaico e della loro relativa distribuzione. Per raggiungere questo obiettivo abbiamo costruito un modello.

Il secondo passo nel processo di costruzione degli scenari riguarda una descrizione generale delle regioni appartenenti a ciascun *cluster*, con particolare attenzione alle loro caratteristiche socio-economiche. I contenuti di queste descrizioni provengono da un lato dall'analisi dei cosiddetti "*macro-trends*", che possiamo considerare come i fattori esterni che possono modificare in futuro i modelli di sviluppo regionale e come l'insieme delle opportunità o degli svantaggi che ciascuna comunità alpina ha di fronte. Essi non sono direttamente collegati con il paesaggio culturale né con le Alpi, ma operano come fattori esogeni causando un'ulteriore pressione sul cambiamento. Dall'altro lato i risultati dei precedenti work packages, in particolare del WP2, che hanno analizzato l'interrelazione tra sviluppo regionale e cambiamento del paesaggio culturale nei decenni passati, forniscono importanti informazioni per la descrizione di scenari realistici e coerenti in ciascun *cluster*.

Modelli di *cluster*:

Tra le situazioni ipotetiche molto differenti che possiamo immaginare per le Alpi nel 2020, il team di ricerca ha deciso di considerare due diversi scenari. Essi non si devono ritenere l'uno come completamente "rosa" - situazione positiva -, in opposizione all'altro completamente "nero" - situazione negativa -, ma vanno considerati come due "possibili futuri", diversi l'uno dall'altro soprattutto in base ai diversi effetti che le politiche riguardanti lo spazio alpino potranno avere.

Abbiamo dunque pensato ad uno scenario nel quale le politiche non si indirizzino in modo significativo e con efficacia verso la sostenibilità ambientale e l'abbiamo chiamato scenario "inerziale".

Il secondo scenario, invece, considera una situazione in cui gli effetti delle politiche abbiano un peso e un'importanza maggiori: esso non è uno scenario "ideale" o un punto di riferimento, ma immaginiamo una situazione nella quale i riferimenti di base della sostenibilità (Convenzione delle Alpi, Convenzione Europea del Paesaggio, Prospettiva di Sviluppo dello Spazio Europeo) si integreranno con le politiche a diversi livelli. Abbiamo chiamato questo secondo scenario "verso la sostenibilità".

La suddivisione delle regioni alpine in *cluster* si basa in parte sui risultati del WP2, nel quale è stata utilizzata la classificazione dei comuni alpini effettuata da W. Bätzing, sviluppata ulteriormente. Nel WP2 sono stati identificati 6 principali trend con 9 ulteriori sub-trend (v. allegato 2 al Report del Work Package 2). Per gli scenari abbiamo raggruppato i comuni in un modo diverso, prendendo in considerazione i sub-trend del WP2.

I più significativi trend di sviluppo derivanti dai risultati del WP2 (e di numerose altre ricerche)[4] possono essere tuttavia riassunti in questo modo:

- Incremento della polarizzazione e crescita delle aree urbane, delle loro aree suburbane e delle aree "dormitorio".
- Metropolizzazione delle regioni alpine di confine, che sono "attratte" da/polarizzate verso le aree metropolitane come München, Torino, Milano, la pianura Veneta.
- Marginalizzazione e declino delle aree periferiche meno accessibili
- Crescita delle principali aree turistiche, alle altitudini più elevate.

Si presume che nello scenario inerziale si manterranno i trend attuali o cresceranno di intensità, mentre nell'altro scenario essi si attenueranno.

I trend suddetti agiscono in modo differente nello spazio alpino, sulla base di alcune *driving forces* generali. Le più importanti sono:

- La suburbanizzazione
- L'incremento della motorizzazione privata
- Il decremento dei servizi alla popolazione o loro concentrazione nelle aree centrali.

[4] V. report del Work Package 2.

Fattori locali

Lo sviluppo di aree diverse nello spazio alpino è collegato anche a due importanti insiemi di fattori locali:

- Il grado di "alpinità" **:** con questo termine si fa riferimento sia alla distanza dai centri di servizi e di attività economiche (e quindi il grado di marginalità di un'area), sia all'altitudine, alle caratteristiche topografiche, alle difficoltà di trasferimento e a tutti quei caratteri che sono strettamente connessi con l'ambiente montano
- la presenza in loco di risorse endogene e loro uso**:** questo fattore comprende differenti elementi, come la presenza fisica di risorse, l'esistenza di politiche che consentano e/o incoraggino il loro uso, le attitudini locali all'utilizzo delle risorse.

I diversi *clusters*

Considerando in modo integrato le tendenze attuali, le *driving forces* e i fattori locali all'interno dello spazio alpino, si possono identificare alcuni gruppi di aree con caratteristiche di sviluppo comuni . Questi gruppi di aree sono chiamati *clusters*.

Pensando poi ad una particolare regione alpina (ad es. le regioni pilota) nel 2020 (nello scenario inerziale e in quello verso la sostenibilità) e mettendo insieme i modi in cui le tendenze attuali, le forze guida e i fattori locali vi agiranno, potremmo definire a quali di questi clusters le diverse parti della regione apparterranno.

I tre clusters principali sono:

- Centri locali e aree che gravitano su di essi
- Aree periferiche (più "alpine")
- Aree turistiche

Ulteriori suddivisioni sono elencate nella tabella seguente, insieme con alcune delle loro peculiarità in entrambe gli scenari.

Tabella 1: Caratteristiche generali dei principali *clusters*

Cluster	**Caratteristiche generali**	**Scenario inerziale**	**Scenario verso la sostenibilità**
Centri locali	Città alpine nelle quali sono concentrate la maggior parte della popolazione, delle attività economiche e dei servizi. Essi stanno scomparendo nelle regioni alpine di confine con forte influenza dell'area metropolitana esterna alle Alpi.	Pochi per numero ma di maggior importanza rispetto al 2003	Lo stesso numero del 2003
Aree di pendolari con attività	Gravitano sui centri locali, ma hanno alcune attività locali (in diversi	Non sono molto estese	Sono più vaste che nello scenario inerziale. Sono presenti diversi settori di

Cluster	Caratteristiche generali	Scenario inerziale	Scenario verso la sostenibilità
proprie	settori). Esse sono aree di pendolari in entrata e in uscita. La qualità della vita potrebbe essere migliore che nei centri locali.		attività economiche ("aree polifunzionali in crescita")
Aree di pendolari residenti	Tipiche aree di pendolari in uscita, spesso perdono servizi e identità locale.	Più estese rispetto al 2003	Non sono più estese che nel 2003. Servizi locali e rete di trasporti sono abbastanza buoni
Aree periferiche in crescita	Essere in una posizione periferica in alcuni casi può essere una "risorsa". Turismo "soft", agricoltura multifunzionale, protezione della natura e/o altre attività danno a queste aree delle buone *chances* per lo sviluppo	E' molto improbabile che possano essere presenti	Più estese rispetto al 2003
Aree periferiche stabili	Aree nelle quali le difficoltà dovute alla "alpinità" sono in alcuni casi controbilanciati dalle attività locali e dalle risorse economiche.	Meno estese che nello scenario verso la sostenibilità; meno estese rispetto al 2003 poiché il consistente decremento dei servizi nelle aree periferiche causa spopolamento	Più estese rispetto al 2003; la polifunzionalità tra i diversi settori di attività economica può essere una buona *chance* per mantenere stabili le condizioni
Aree periferiche in declino	Sono aree di emigrazione e di pendolarismo in uscita. I servizi e le attività economiche locali sono in diminuzione. Caratteristiche di ri-naturalizzazione in diverse aree.	Più estese rispetto al 2003	Meno estese rispetto al 2003, in molte aree le nuove risorse locali possono essere usate per attività economiche "sostenibili"
Aree turistiche	Sono situate ad elevate altitudini e legate soprattutto agli sport invernali. Alcune di loro sono in crescita (dovuta alla massiccia presenza di gente non del luogo, turisti e imprenditori), altre presentano aspetti di crisi e sono dunque in declino.	Ci sono alcune importanti aree in crescita, ma un certo numero di comuni turistici ad una altitudine non elevata è in seria crisi.	Vi sono alcune "classiche" aree turistiche forti, ma il turismo "soft" è una reale alternativa. Altre attività economiche possono essere una buona opportunità per mantenere stabili le condizioni o per un ulteriore sviluppo.

Fonte: nostra elaborazione

1.5. Povzetek

Scenarije za Alpe v letu 2020 smo v projektu REGALP izdelali kot osnovo za razpravo v znanstveni sferi in z deležniki v delovnem paketu 5, nikakor pa ne gre za poskus oblikovati "napovedi".

Najpomembnejši cilji, ki smo si jih zastavili v procesu oblikovanja scenarijev, so:

- Opredeliti glavne razvojne trende v obdobju 2000-2020 na ravni Evrope in jih strniti v scenarije prihodnjega prostorskega razvoja in sprememb kulturne krajine v Alpah.
- Na osnovi splošnih scenarijev za vse Alpe razviti celovite scenarije za izbrana pilotna območja, se pravi opisati "verjetna" prihodnja stanja ob upoštevanju informacij, zbranih in obdelanih v delovnih paketih 1, 2 in 3.

Izhajajoč iz rezultatov dela, opravljenega v projektu REGALP in v drugih raziskavah, smo za prostor Alp najprej opredelili območja s pričakovanimi skupnimi pogoji in značilnostmi prihodnjega razvoja. Če projiciramo delovanje gonilnih sil in sedanjih trendov razvoja v prihodnost, lahko predvidimo drugačno razvrščanje (grozdi) in prostorsko razporeditev območij s homogenimi značilnostmi kot danes. Prostor Alp je zapleten sistem, je mozaik številnih različnih razvojnih stanj in mnogih raznovrstnih krajin. Izhodišče za opis njihovih značilnosti in značilnosti prihodnjega razvoja je opredelitev poglavitnih kamenčkov tega mozaika in njihove porazdelitve. V ta namen smo oblikovali model za opis scenarijev.

Drugi korak pri izdelavi scenarijev je bil splošen opis območij, uvrščenih v posamezen grozd (cluster), glede na družbeno-gospodarske značilnosti in značilnosti kulturne krajine. Vsebina opisov temelji po eni strani na analizi tako imenovanih "makrotrendov", ki jih razumemo kot zunanje dejavnike, ki lahko v prihodnje vplivajo na vzorce regionalnega razvoja, in kot sklop priložnosti ali nevarnosti, s katerim se morajo soočiti vse skupnosti v Alpah. Makrotrendi niso neposredno povezani s kulturno krajino ali Alpami, ampak delujejo kot zunanji dejavniki, ki vzpodbujajo spremembe. Na drugi strani dajejo rezultati prejšnjih delovnih paketov, predvsem DP 2, kjer je bilo analizirano razmerje med regionalnim razvojem in spremembami kulturne krajine v zadnjih desetletjih, številne informacije, potrebne za izdelavo stvarnih in koherentnih scenarijev v vsakem grozdu.

Model za razvrščanje v grozde

Med množico zelo različnih stanj, ki si jih je mogoče zamisliti za Alpe v letu 2020, se je raziskovalna skupina odločila opredeliti zgolj dva različna scenarija. Scenarija nista mišljena kot čisto "roza" – idealno stanje v nasprotju s popolnoma "črnim" – negativnim stanjem, temveč kot dve verjetni smeri razvoja, ki se medsebojno razlikujeta glede na cilje in aktivno ali pasivno vlogo politik, ki zadevajo prostor Alp.

V enem od scenarijev, ki smo ga poimenovali "s tokom" (inertial scenario), politike ne prispevajo pomembno k trajnosti ali vsaj niso bolj učinkovite, kot politike danes. Drugi scenarij se nanaša na stanje, ko imajo politike večje učinke: ne gre za "idealni" ali referenčni scenarij, temveč za stanje, ko bodo temeljni dokumenti na področju trajnostnega prostorskega ravoja (Alpska konvencija, Evropska konvecija o krajini, Evropska prostorsko-razvojna perspektive) vključeni v politike na različnih ravneh. Ta, drugi scenarij imenujemo "k trajnosti" (towards sustainability).

Razvrščanje regij v Alpah v grozde temelji na rezultatih Delovnega paketa (DP) 2, kjer je bila uporabljena in dopolnjena Baetzingova tipologija skupnosti v Alpah. V DP 2 je bilo opredeljenih 6 poglavitnih razvojnih trendov z 9 podtrendi (priloga 2 k poročilu DP 2). Za potrebe izdelave scenarijev so bile skupnosti razvrščene na drugačen način, pri tem pa so bili upoštevani trendi, opredeljeni v DP 2.

Najpomembnejše razvojne trende, ki izhajajo iz rezultatov DP 2 – pa tudi iz številnih drugih raziskav[5] – je mogoče povzeti na naslednji način:

- Naraščajoča polarizacija razvoja med osrednjimi in obrobnimi območji, pa tudi znotraj njih;
- Rast urbanih, suburbaniziranih in "spalnih" območij;
- Metropolizacija robnih alpskih območij, na katere vplivajo metropolne regije, kot so Muenchen, Torino, Milano, Beneška ravnina;
- Marginalizacija ter stagnacija in/ali nazadovanje obrobnih območij;
- Rast glavnih turističnih območij na višjih nadmorskih višinah.

Predpostavljamo, da se bodo pri scenariju "s tokom" sedanji trendi nadaljevali ali okrepili, medtem ko bodo v drugem oslabeli.

Vpliv zgoraj omenjenih trendov na prostor Alp ni enoznačen, temveč je odvisen od nekaterih splošnih gonilnih sil. Najpomembnejše so:

- Suburbanizacija;
- Rast motorizacije (števila osebnih avtomobilov);
- Umanjševanje obsega javnih storitev ali njihovo zgoščanje v osrednjih območjih.

Lokalni dejavniki

Razvoj različnih območij v prostoru Alp je povezan tudi z dvema pomembnima lokalnima dejavnikoma:

- "Alpska odmaknjenost" zajema različne vidike, kot je oddaljenost od storitvenih in zaposlitvenih središč, nadmorska višina, topografske značilnosti, težave z dostopnostjo ipd., tesno povezane z gorskim prostorom;
- Prisotnost in raba lokalnih virov zajema vidike, kot so razpoložljivost virov, politike, ki dovoljujejo in/ali spodbujajo njihovo rabo, lokalni načini rabe virov.

Grozdi

Če upoštevamo razvojne trende, gonilne sile in lokalne dejavnike, lahko opredelimo več skupin območij s skupnimi razvojnimi značilnostmi. Te skupine območij imenujemo grozdi.

Za pilotna območja smo ob predvidevanju, kako bodo delovali razvojni trendi, gonilne sile in lokalni dejavniki, opredelili, h kateremu od grozdov bodo pripadali različni deli teh območij v letu 2020 v scenariju "s tokom" in v scenariju "k trajnosti".

Grozdi so:

- Lokalna središča in območja, ki gravitirajo nanje;
- Obrobna območja (bolj "odmaknjena");

[5] Glej poročilo Delovnega paketa 2.

- Turistična območja.

Tipi območij, ki tvorijo grozde, so navedeni v preglednici skupaj z nekaterimi značilnostmi v obeh scenarijih.

Preglednica: Splošne značilnosti grozdov

Grozd	Splošne značilnosti	Scenarij "s tokom"	Scenarij "k trajnosti"
Lokalna središča	Mestna naselja v Alpah, kjer živi večina prebivalstva in se nahaja pretežni del gospodarskih dejavnosti in storitev. V območjih, kjer je vpliv metropolnih območij izven Alp močan, mesta nazadujejo.	Manjše število kot leta 2003, a večji pomen.	Enako število kot leta 2003.
Območja dnevne delovne migracije z lastnimi dejavnostmi	Gravitirajo k lokalnim središčem, vendar imajo nekaj lastnih gospodarskih dejavnosti v različnih sektorjih. Dnevne delovne migracije so usmerjene iz teh območij, pa tudi vanje. Kvaliteta življenja je lahko boljša kot v lokalnih središčih.	Niso zelo razširjena.	Razširjena so bolj kot v scenariju "s tokom". Prisotne so gospodarske dejavnosti v različnih sektorjih – "rastoča večfunkcionalna območja".
Območja dnevne delovne migracije – "spalna naselja"	Značilna območja dnevne delovne migracije. Pogosto izgubljajo storitvene dejavnosti in lokalno identiteto.	Bolj razširjena kot v letu 2003.	Niso bolj razširjena kot v letu 2003. Opremljenost s storitvenimi dejavnostmi in lokalni prometni sistem sta dobra.
Rastoča obrobna območja	Obrobna lega je lahko v nekaterih primerih "vir" za razvoj. Mehke oblike turizma, večfunkcionalno kmetijstvo, varstvo narave in/ali druge dejavnosti dajejo tem območjem dobre možnosti za razvoj.	Zaradi različnih notranjih in zunanjih (politike) dejavnikov potencialov ni mogoče izrabiti.	Zaradi učinkovitejše izrabe lokalnih razvojnih potencialov bolj razširjena kot leta 2003.

Grozd	Splošne značilnosti	Scenarij "s tokom"	Scenarij "k trajnosti"
Stabilna obrobna območja	Območja, na katerih je mogoče težave, povezane z odročnostjo, uravnotežiti z lokalnimi dejavnostmi in gospodarskimi viri.	Manj razširjena kot v scenariju "k trajnosti" in zaradi močnega zmanjšanja obsega storitvenih dejavnosti v obrobnih območjih in s tem povezanega odseljevanja tudi manj razširjena kot v letu 2003.	Bolj razširjena kot v letu 2003. Kombinacija različnih sektorjev in razvojnih dejavnosti je lahko dobra priložnost za ohranitev stabilnih razmer.
Obrobna območja v upadanju	To so območja odseljevanja in dnevnih delovnih migracij. Zmanjšuje se obseg storitvenih dejavnosti in lokalnih gospodarskih dejavnosti. Za obsežna območja je značilno zaraščanje kulturne krajine.	Bolj razširjena kot v letu 2003.	Manj razširjena kot v letu 2003. Na mnogih območjih je mogoča raba novih lokalnih virov za "trajnostne" gospodarske dejavnosti.
Turistična območja	Nahajajo se na najvišjih nadmorskih višinah. Povezana so predvsem z zimskimi športi. Nekatera od njih zaradi priseljevanja, turistov in podjetnikov naraščajo, druga stagnirajo ali propadajo.	Nekaj najpomembnejših območij raste, veliko število turističnih območij – predvsem tistih na nižjih nadmorskih višinah – pa se sooča z resno krizo.	Nekaj močnih "klasičnih" turističnih območij, mehke oblike turizma so dejanska alternativa. Druge gospodarske dejavnosti služijo kot podpora turizmu.

Vir: lastna obdelava.

2. INTRODUCTION[6]

2.1. Objectives

WP4 is a core work package of REGALP. It makes the link between the two parts of the project, the one oriented to the analysis of the recent past and of the present trends (concerning Regional Development and Cultural Landscape change in WP2 and policies in WP1 and WP3), and the one oriented to the future, in order to elaborate strategies with local people (WP5) and to prepare suggestion for policy makers (WP6).

In this frame "scenarios" for Total Alps in 2020 are intended not as an attempt to produce forecasts, but as a basis for discussion both within the scientific community and with stakeholders in work package 5.

The most important objectives to achieve in the scenario building process with this respect are:

- To identify the main development trends between 2000 and 2020 on European level and to integrate them into scenarios of future spatial development and cultural landscape change in the Alps
- To develop integrated scenarios for the selected pilot regions on the basis of Total Alps scenarios, that is to describe "likely" future situations, building on the information that has been accumulated and elaborated in the previous WPs.

2.2. Total Alps Scenarios as a Regional Foresight Exercise

According to the literature and to other regional foresight[7] examples, REGALP scenarios allow to integrate into a simplified dynamic model the complexity of the situation that has been recognised in the previous steps of the project. This model can be further applied to the different local situations, as it organises multi-dimensional information and represents a way to "translate" them into comprehensible stories. As far as the Alpine space is a very large region with deep differences inside, the model is a very useful tool to understand local and global dynamics and their reciprocal relationships at the same time.

The scenarios building process relates both to the internal dynamics of the region and to what is happening outside the region itself (that is what are called *macrotrends*). Moreover it requires rational thinking as well as "creativity" and "wise intuition", as it is not a prediction, but a way to improve a perspective and future oriented vision, focused on managing changes.

As a matter of fact, this foresight exercise is strictly oriented to what is going to happen in WP6, when all the remarks that are coming out from scenarios analysis and from the discussion with stakeholders in the pilot regions (WP5) will contribute to suggest policies adjusting at local, national and European level.

[6] The contents of this paper come from a large discussion that involved all the Italian team, including Prof. Guglielmo Scaramellini of the University of Milano and Vincenzo Barone of Eco & Eco, Bologna.
[7] Foresight can be defined as "a systematic, participatory process, involving gathering intelligence and building vision for the medium-to-long-term future, and aimed at informing present-day decisions mobilising joint actions" (Practical Guide to Regional Foresight, page 8).

2.3. Defining two different scenarios

Among the very different hypothetical situations that can be imagined for the Alps in 2020, the research team decided to define only two different scenarios. They are not imagined as a completely "pink"- positive situation opposite to a completely "black"- negative situation, but as two "likely futures", different from each other on the basis of the different aims and weight of policies concerning alpine space.

We are thinking at one scenario in which policies do not contribute significantly to sustainability and don't have many sustainable effects and therefore we are calling it "inertial" scenario. The second scenario, on the other hand, considers a situation of stronger effects of policies: it is not an "ideal" scenario, or a point of reference, but we imagine a situation in which the basic references of sustainability (Alpine Convention, European Landscape Convention, European Spatial Development Perspective) are going to be integrated into policies at different level. We are calling this second scenario "towards sustainability" scenario.

Some basic hypotheses for the two scenarios are summarised in the chart (Table 1):

Tab. 2: Basic hypotheses for the two scenarios.

Policy	Scenario 1 "inertial"	Scenario 2 "towards sustainability"
Agricultural policies	Less directed to multi-functionality	More directed to multi-functionality
Subsidies for mountain farming	Decrease	Constant
Infrastructure investment	Focus on road	Focus on rail
Land use control by spatial planning	Weak	Strong
Environmental control	Constant	Increase
Services for residential population	Decrease in peripheral areas and gathered together at the local centres	More accessible services also in peripheral areas

Source: own elaboration

The "inertial" scenario follows an "exploratory" approach, as it tries to understand what is going to happen in the next 17 years, starting from present on the basis of extrapolating past trends and causal dynamics; as "what if?" is the general question in this approach, the "inertial" scenario answers to the specific question "what if nothing is going to be improved in the policies that directly or indirectly influence the Regional Development and Cultural Landscape change in the Alps?"

The "toward sustainability" scenario follows the same approach, with the specific question "what if policies will turn to a more sustainable approach, as a general trend as well as a specific

attention for the alpine Regional Development and Cultural Landscape?". In this second scenario we can also recognise a more normative approach, because there is the awareness that it is more desirable than the first, and mostly because it is oriented (in the following work packages) to define "how" (in the sense of defining policies' suggestions) to achieve these kinds of objectives.

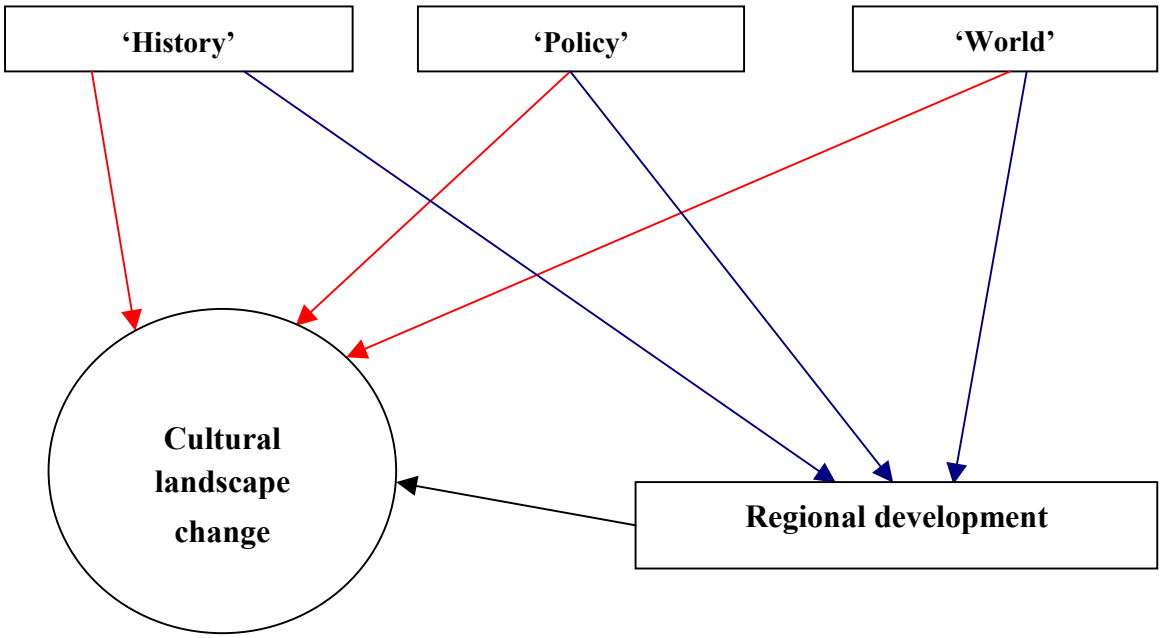
3. METHODOLOGY

3.2. A conceptual model for scenarios

The conceptual model underlying the REGALP approach for analysing cultural landscape (CL) change is described in figure 1. CL results from the interaction of three distinct elements:

- "History": the *development trends* of CL indicators, that can be interpreted as the "ceteris paribus" adaptation process of each community to the existing opportunities for economic and social development.
- "Policy": the direct and indirect action of *public policies* having a deliberate impact on CL, either because they have Alpine CL (defined in some way) as their main object (e.g. spatial planning, agricultural policy) or because they deliberately pose constraints on the impact that other policies have on CL (e.g. EIA).
- "World": the impact of *macro-trends* that are not directly linked to CL nor to the Alps, but operate as exogenous factors causing further pressure to change.

Fig. 1 : Conceptual model for scenarios



Source: own elaboration

The three elements affect CL change in two ways:

- Directly (because they generate a direct impact on CL)
- Indirectly (because they generate an impact on regional development; the latter, according to the causal relationships that have been analysed in WP2, is then reflected by change in the CL).

As it was mentioned above, the scenario building process concerns with future spatial development trends and cultural landscape change: developing scenarios for the future requires this conceptual model to be made operational in order to enlighten the way the three independent variables ('history', 'policy', 'world') affect regional development and CL change.

3.3. The results of the previous work packages

"History" and "policy" of the conceptual model are strictly connected with the previous work packages.

Concerning development trends, WP2 has provided a picture of 2-3 decades (1981, 1991 and in some cases 1971) of the change of cultural landscape and of the development trends. This data set is not sufficient in order to forecast future scenarios with quantitative statistical methodologies for projecting the trends to the future. On the other hand, a lot of qualitative information comes from WP2, about the different development types of the alpine communities, their changes in the considered periods and their links with a great number of cultural landscape indicators.

Concerning public policies, both WP1 and WP3 have provided an insight on the desired effects of public policies (WP1), their actual functioning and results (WP3). At present only some general remarks coming from the policy analysis can be integrated in the general scenario building process, but many interesting results will be available at the local level, for the pilot regions scenarios.

3.4. Macrotrends analysis

While WP1 and WP3 have focused on the policies that deliberately assume RD and CL in their main objectives, this last element focuses on future external variables, trends and policies that, while not having a deliberate impact on CL, are expected to have an influence.

In conceptual terms, while the "spontaneous trend" (WP2) assumes a "ceteris paribus" hypothesis, and assumes that the patterns of territorial specialisation and competition among territorial areas continues in a similar way as in the past, the aim of this part of the study is to remove the ceteris paribus assumption and understand how external factors can modify in the future the patterns of regional development, and namely the set of opportunities or disadvantages that each alpine community has to face.

Here the focus is not the alpine dimension, but the macro dimension. In other words, the first question is how some global processes will evolve on general level.

The second question concerns the translation of the evolution in general terms into the alpine space and it consists substantially in "wise intuition" process[8]. As the final objective of WP4 is the building of two different scenarios, in this phase each subject considered in the macrotrends analysis is projected to the future in two different ways when necessary, according to the

[8] For example, the trend concerning demography consists in the analysis of the general trends of the European and World population, patterns of immigration to Europe, patterns of ageing of the society, patterns of urbanisation / de-urbanisation, patterns of retirement, increase or decrease of the average family size etc. These trends of course will have different meaning and impact in different geographical situations, considering both the Alps as a whole and different regions inside the Alps (according to the cluster model presented below).

reference frame of the "inertial" scenario and of the "toward sustainability" scenario. In the tables 2, 3, 4, 5, 6, and 7 this "macrotrends summary" is presented.

The list of subjects analysed as macrotrends is the following:

- Population and demography
- Environment and climate change
- Economic development, technical change and "new economy"
- Welfare state reform, structural funds, public money
- Alpine-resource-based goods and services
- Transport infrastructure and mobility.

This analysis is based on literature review, especially official reports and studies by international institutions (e.g. OECD, European Commission, specialised representative NGOs). The complete analyses (macrotrend reader) is available as Annex 1.

Table 3 : Summary of macro trends: population and demography

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Population	3 demographic trends (low, medium, high) are assumed	Projection of present trends: "medium" demographic trend adjusted to the alpine situation = medium-low trend	Policies oriented to the improvement of life and services quality in the mountain space: demographic trend slightly higher that the medium one
Fertility rate		The current rate remains constant (1.47 in europe in 2001)	Little increase
Mortality and life expectancy		Constant: 81 years for women, 75 for men Constant infant mortality	Little increase: 83 years for women, 78 years for men Constant infant mortality
Migration:		In the alps the presence of immigrated workers will grow a little, because they can occupy "empty niches"	A change of policies in a less restricted way can lead to a higher proportional presence of immigrated workers
Population structure:	Ageing	Ageing (less evident in alpine area because alpine population is already aged?)	Ageing (less evident in alpine area because alpine population is already aged?)
	Decrease of %age of young people		
	Ageing and beginning of the decrease of population in working age: it might be necessary to keep people working longer		
Internal migration	Suburbanization	Strong population increase in "central dominated" communities; population increase in hilly and prealpine areas, near large urban centres	Strong population increase in "centrally dominated" community; population increase in hilly and prealpine areas, near large urban centres
	Growth up of small-medium towns, decrease of large ones		
	Depopulation in very peripheral areas; increase of population in favoured areas	Depopulation in very peripheral areas	Depopulation in very peripheral areas
	Moving back to the birthplaces of retired people	Further proportional ageing of alpine population	Further proportional ageing of alpine population
Total population		Little increase 2000-2010; little decrease later	Increase with trends similar to the current ones

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Health expenditure:	Increase because of the ageing of population (60% of individual health expenditure is in the last year of life)	Health expenditure is cut in peripheral areas: cut of health services	Cut of health services could be less strong
Pensions	Pension expenditure has to decrease	Less amount of public money to supplement local incomes in alpine areas with many retired people	Less public money to improve local incomes in alpine areas with many retired people
Family structure	Decrease of average household size; increasing number of singles	"breaking up" of society; bigger burden of loneliness. Less "strength" of the family institution	"breaking up" of society; bigger burden of loneliness. Less "strength" of the family institution
	Young people are leaving their parent's home later		
	Decrease of marriages Increase of unmarried cohabitation Increase of divorces		

Source: own elaboration

Table 4 : Summary of macro trends: environment and climate change

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Environment		Little decrease of greenhouse gas	Effective policies to reduce emission of greenhouse gas
Data from switzerland			
Temperature	+0.1-0.2°c in a decade (trend 90ies)	Increase of 1-2°c	Increase of 03.-0.7°c
Precipitation	Increase	Increase (especially in winter)	Little increase
Extreme events	Increase trend		

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Glaciers	Retreat: Hazard because of mudflows and landslides More consistent water availability over the year for hydroelectric power generation in winter, but more costs because of sediments in the basins Loss of landscape peculiarity	Snow line ca. 200 m higher: less than 50% of actual glaciers	Snow line ca. 80 m higher: less than 15% of actual glaciers
Snow		Guaranteed snowfall altitude: 1.350-1.550m Below 1.200 m rare snowfalls	Guaranteed snowfall altitude: 1.250-1.300 m
Avalanches	Too difficult to predict		
Consequences for winter tourism	Concentration of sky areas at high altitudes: bigger impact in some areas and decline of areas at lower altitude	Concentration more evident in less wide areas at higher altitude	Concentration less evident
Vegetation	Shift to higher altitudes of vegetational zones (a very slow process; but faster in the alpine and nival zones) Reduction or disappearing of alpine and nival zones Extinction of endemic species	Upward shift of zones: 200-300 m More evident effects	Upward shift of zones: 80-100 m. Less evident effects
Biodiversity	Changes in ecosystems: Immigration of new species Emigration or extinction of previously indigenous species Expansion of some habitats and reduction of others Changes in the behaviour of migratory birds Extinction of species due to fast changes Loss of biodiversity, especially in the nival zone Natural reserves: they can be no more the suitable habitat for protect species	Probable strong changes, difficult to predict	Less abrupt changes, less intense effects

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Natural disasters	Flooding: More events of intense precipitation and larger influence of it on the fluvial regimes Higher probability of heavy rain precipitation in winter Less influence of spring thaw on fluvial regimes The concentration of settlements on the valley floors increases the hazard, independently from climate changes	Bigger intensity of effects	Lower intensity of effects
	Mudflows: More instability of slopes, covered by "weak" vegetation More instability of slopes where permafrost thaws More instability in general due to more intense rain precipitation Increase of hazard in places that never have been affected before Concentration of settlements in places potentially affected by mudflows	Bigger intensity of effects	Lower intensity of effects
Agriculture	Enlargement and upward shift of areas potentially cultivated Extension of growing period More affections by pests and diseases Higher probability of natural disasters Possibility of cultivation of new species in the alps (subtropical) Higher proportional weight of agriculture incomes, due to the decrease of tourism incomes	Considerable changes	Less considerable changes

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
"Alpine" data–austrian data			
Air quality	Decrease of pollution via no_x	Growing pollution in areas of more intense motorised transport	Little increase of pollution in areas of more intense motorised transport
Water	Changes in the water storage and in water transport of soils	Higher intensity of effects	Lower intensity of effects
	Better quality (reduction of water pollution, treatment of waste water)	Little improvement of quality	Improvement of quality
	Increase of utilisation for hydroelectric power	Little increase in utilisation	Increase in utilisation
Soil	Non renewable resource threatened by increase of pressure caused by different land uses, erosion, pollution	Bigger effects	Less considerable effects
Waste	Increase of quantity	Larger increase, especially in areas of more intensive pressure from human activity	Increase especially in areas of more intensive pressure from human activity
	Increase in recycling of substances Decrease of the rate of disposed waste	Lower intensity of effects	Higher intensity of effects
Noise	Some areas strongly affected by noise (traffic)	Increase of noise pollution in some areas	Little increase of noise pollution in some areas
Land use	2 trends: a) Abandonment of large agricultural surfaces; b) Concentration of agricultural production in some suitable "islands" (intensification) Extensification in other areas, biological production (organic farming), rural tourism	Increase of trend a more than b	Increase of trend b more than a

Source: own elaboration

Table 5 : Summary of macro trends: economic development, technical change and "new economy"

	Global trends	"Inertial" Scenario	"Towards Sustainability" Scenario
GDP growth	Average annual 2-3% in the past 30 years forecasts: reduced pace but growth continues	Concentration of growth in stronger alpine areas	Diversified opportunities for growth even in less favoured areas though on a smaller scale
Qualitative developments	Decline of heavy industry No new industrial development Outsourcing + decentralisation Increasing mobility of workforce Increasing part-time and flexibility	Decline of heavy industry and commodity-based agriculture Concentration of supply of touristic services Development in areas characterised by high accessibility Growth in areas able to valorise local products and specificity	Integrated development Development of environment-oriented agriculture Development of light tourism in less favoured areas Favoured areas continue present trends
Unemployment	Actual figures in the reach of 10% Higher figures in "marginal" areas	Increased polarisation between "strong" and "weak" mountain areas	Overall reduction of unemployment rates
Technological innovation	Main areas of innovation: Energy production and use Building techniques "appropriate technologies" for delivering public services Natural engineering for flood protection Artificial wetlands	Lower benefits than towards sustainability scenario	Higher benefits than inertial scenario
ICT and new economy	Increasing interdependence of economic areas Accessibility to ICT key of economic success Many new jobs in the ICT field Increasing distance working Increasing part-time and homeworking Increasing use of web-based marketing Increasing competition between touristic areas Improved capacity to sell out	Lower benefits than Toward Sustainability Scenario	Higher benefits than Inertial Scenario

Source: own elaboration

Table 6 : Summary of macro trends: welfare state reform, structural funds, public money

	Global trends	**"Inertial" Scenario**	**"Towards Sustainability" Scenario**
Monetary transfers to less developed regions	Reduction of money transfers Reform of pension system		
Public services	Privatisation and liberalisation Full-cost recovery	Reduction of quality and quantity of supply of most public services to less central areas	Policies aimed at improving accessibility to public services, lower reduction of quality and quantity than in inertial scenario
Commerce, private services	Concentration Reduction of small local shops Increased mobility for shopping and leisure		

Source: own elaboration

Table 7 : Summary of macro trends: alpine-resource-based goods and services

	General trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Tourism industry	The alps constitute one of the world's largest tourist regions, accounting for one tenth of the world's tourism	Tourism is concentrated in specific locations (lakeshores, valley heads) In summer people prefer coastal areas to mountain areas; in winter climate change has worsened the competitiveness of the foothill areas Conflicts between economic and ecological perspectives, that is between "hard" and "light" tourism	The concentration in specific locations decreases Increase of sustainable tourism development. People looking for a pleasant environment and a way to discover "other different things" and not a standard product, i.e. Agritourism
Products of local agriculture and craftsmanship			

	General trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Local craft products	Craft products require local resources and local labour competencies; their demand is increasing	Increase of demand of craft products with advantage for small and medium rural enterprises	Increase of demand of craft products with advantage for small and medium rural enterprises
Local agriculture products	The globalisation of markets has dramatic impacts on alpine agriculture. For mountain agriculture, recognition of the products' quality and of local products by consumers constitutes a mean to enhance the value of these products and then to compensate the difficulties due to globalisation	Increase of demand of local agriculture products with advantage for lowland agriculture	Increase of demand of local agriculture products with advantage for lowland agriculture. Increase the importance of mountain agriculture which can't compete with lowland agriculture but it allows preservation of its cultural aspect and of the attractive alpine cultural landscape
Environmental services and amenities			
Amenities	The role and the importance of agricultural amenities is recognised as a factor of rural development	Increase of rural areas, and so development of rural tourism because people consider it as a natural protected landscape	Increase of rural amenities because increase the importance to protect nature and cultural landscape
Environmental services	Rural areas are very important for environment	Increase of environmental zonings and of the interest to safeguard of environment	Increase of environmental zonings and of the interest to safeguard of environment
Wood and forestry products	Today the recognition of the multiplicity of functions of mountain forests is not always transferred to an accompanying structured policy for conservation and development. Existing policy have not always been correctly applied. Security and biodiversity are considered as common goods whose value can finally be too weak	Most of people don't consider that forests and so wood and forestry products may to dry up themselves	Increase of education to protect and to safeguard of landscape and in particular of forests

Source: own elaboration

Table 8 : Summary of macro trends: Transport infrastructure and mobility

	General trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Transport	Trends in transport are not sustainable. There must be changes in technology, operation and financing of transport systems	The present transport system keeps, with the consequence that pollution increases	Transport system changes and so increase of pollution is lower.
Motorisation (number of cars)	People will have more second and third cars, but now have realised that motorisation has not only brought freedom of movement but also air pollution, traffic noise and accidents	Increase	The present motorisation keeps or it decreases
Transport on roads	There will be a 20% increase of the number of cars and of individual road traffic	Two-thirds of passenger traffic and half of all goods are transported on roads, and this is in continuing development	Decrease if share of railway transport will increase (in particular for goods)
Passenger transport	Increase	Increase about 50% caused by use of private cars	Alternative transport modes (by air, by rail) increase
Transalpine traffic	The inner alpine traffic, import and export account for 90% of the alpine goods and 95% of the alpine passengers transport	Increase about 75% for goods transport and 36% for passenger transport	Increase of rail and air traffic
Infrastructure	According to transport development new roads will be built.	Increase of roads, present railway infrastructure keeps stable	Efficacious policies for increase of railway infrastructures
Railways	Decrease	Increase	Increase (i.e. Brennerbasistunnel)
Road network	Increase	Increase	The present road network keeps stable or it decreases lightly because of increase of other infrastructures
Trans-european network (TEN)[9]	In the trans-european transport network there are 14 priority projects named, known as the "projects of Essen"	High speed train / combined transport north-south (München –Verona, Brenner corridor); High speed train / combined transport France – Italy (Lyon – Turin – Milan – Venice – Trieste)	Other railway projects in the alpine region, i.e. East European high-speed train/combined transport from Stuttgart – München – Salzburg/Linz – Wien – Bucarest – Istanbul

[9] The Trans-European network comprises transport networks (roads, railways, airports, seaports, inland waterways and ports), energy and telecommunication networks.

	General trends	"Inertial" Scenario	"Towards Sustainability" Scenario
Increase of accessibility	The extension of transport infrastructure is linked to an increase of accessibility	Slight increase of present accessibility	The growth of accessibility is based on the realisation of the ten, mainly due to the high speed railway network. Regions situated near the brenner (d, a, i), simplon (ch, i), san bernardino (d, ch, i), st. Bernard (ch, i), mont blanc (f, ch, i) corridors show the highest increase rates
Telecommunication systems	New technologies will have an important role in passenger and goods transport	The present situation keeps stable	Telecommunication systems will be more often used to install an intelligent system on any transportation system as roads, railway, water and air with intention to use the existing infrastructure more efficient than today
Technologies in infrastructure and in transport modes	New technologies will have an important role in passenger and goods transport	Today speed restrictions on high-ranges roads are established which are connected to the traffic volume	A new toll system will be possible on high-ranged roads: tolls can be levied in subject to time or volume in traffic (so tolls are debited directly). According to the increase of freight transport there are ideas of shifting freight transport to air transport, and about the transport of goods in pipelines, too
Automotive technologies	The automotive industry has realised that efforts must be taken to reduce fuel use; this reduction has already begun and will continue	The development of automatic driving cars in progress. To reduce air pollution fuel cells for private cars are developed	Increase of fuel cells for private cars; it will be possible that only water vapour leaves the car's exhaust pipe

Source: own elaboration

3.5. Clustering models for the Alps

3.4.1. Clustering and describing clusters

Once the three "CL change elements" have been clarified and completed, the development of future scenarios requires an understanding of the way they interact.

Actually, alpine space is a complex system, it is a mosaic of many different development situations and of many different landscapes. The interaction of the driving forces depends on this complex mosaic with other peculiar forces acting in the alpine space, too. So, the starting point of the description of the Alps, at present as well as for the future, concerns in identifying the main tesserae of this mosaic and their relative distribution.

Therefore, the first step of the general scenarios building process is to individuate the future clustering of different regions in the alpine space. This individuation will be different in the two scenarios. The second step for each scenario is the description of the regions belonging to each cluster, with regard to their socio-economic features and their cultural landscape. The contents of these realistic and coherent descriptions are coming both from the analysis of macrotrends and from the results of WP2, combined with "wise intuition" and "creativity" as suggested above.

In such a way, each scenario is described area by area with charts in which the different items occupy the lines, and with brief introducing texts that help to better describe the different items.

3.4.2. The current development trends

The clustering of regions in the Alps for the scenarios is based on the results of WP2, where BÄTZING'S typology of alpine communities has been used and developed further. In WP2 we found 6 main development trends with 8 further sub-trends (see Annex 2 to work package 2 report).

For the scenarios the communities have been clustered in a modified way taking into account the sub-trends of WP2.

The most significant development trends coming from WP2 results (and from the most of other researches[10]) can be summarised in the following way:

- **Increasing polarisation** between as well as within central and peripheral regions
- Growth of urban areas and of their suburban and "dormitory" areas
- **Marginalisation** and decline of peripheral areas
- **Growth of main touristic areas** at higher altitudes.

It is assumed that in the inertial scenario the present trends will keep or will grow in intensity, while in the other one they will attenuate.

[10] See Work Package 2 Report.

3.4.3. Two main factors for clustering

As a matter of fact, the current development trends identify a kind of zoning in the alpine regions, dividing central areas (the centre with its large surroundings that gravitate on it) from peripheral areas and from touristic areas. This zoning cannot be considered in a rigid way and it is not possible to define exactly the border between the zones, a belt of transition is always existing.

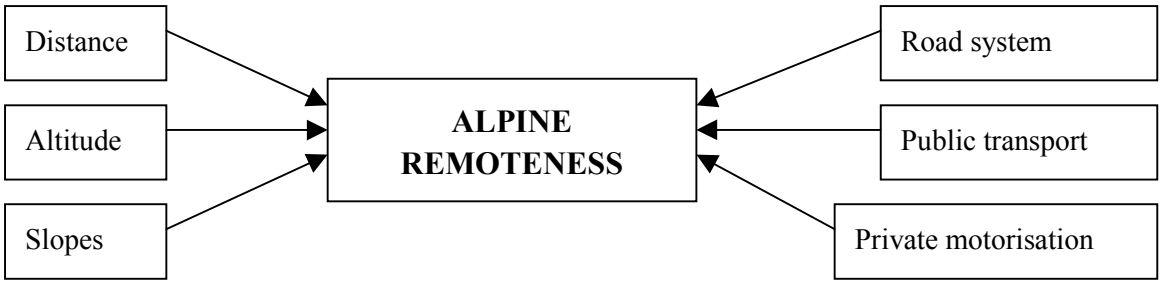
Moreover, these clusters comprehend different situations, as the areas can be in favour of endogenous resources usable for economic activities, they can be very poor in resources or lacking the possibilities to use them. The category "resources" is very wide and not well defined, as many different things can be considered as resources (e.g. agricultural land, good climate, local traditions, good transport services, …) or "new" resources can be invented, too. On the other hand, the development of economic activities depends not only on the richness of resources as an objective datum, but also on the local situation and on the local attitude; it depends on policies, on demographic structure, on local skills and on social network, to give some examples.

The polarisation trend leads to an increasing influence of metropolised areas outside the Alps on inner-Alpine regions and to a decreasing importance of inner-alpine centres. Important functions are shifted more and more to the metropolises outside the Alps. Therefore in some cases (mostly in the border alpine regions) the polarisation trend takes the shape of a "metropolisation" trend.

Two main factors are so determining the relative weight of the different trends in the Alps at present and in the future:

a. **Alpine remoteness** (Fig. 2): in the alpine region the distance from the most important centres of growth or from the metropolitan areas - that determines the situation of marginality - is not only a matter of physical distance; it includes also accessibility and difficulties in transfer (inconvenient roads, i.e.) as well as it is linked strictly with altitude (as we saw in WP2, local centres are at the lowest altitudes); in the alpine region the lucky or unlucky position of a village depends on the slope of its surfaces (or in general to topographic factors), too.

Fig. 2 : Elements of alpine remoteness



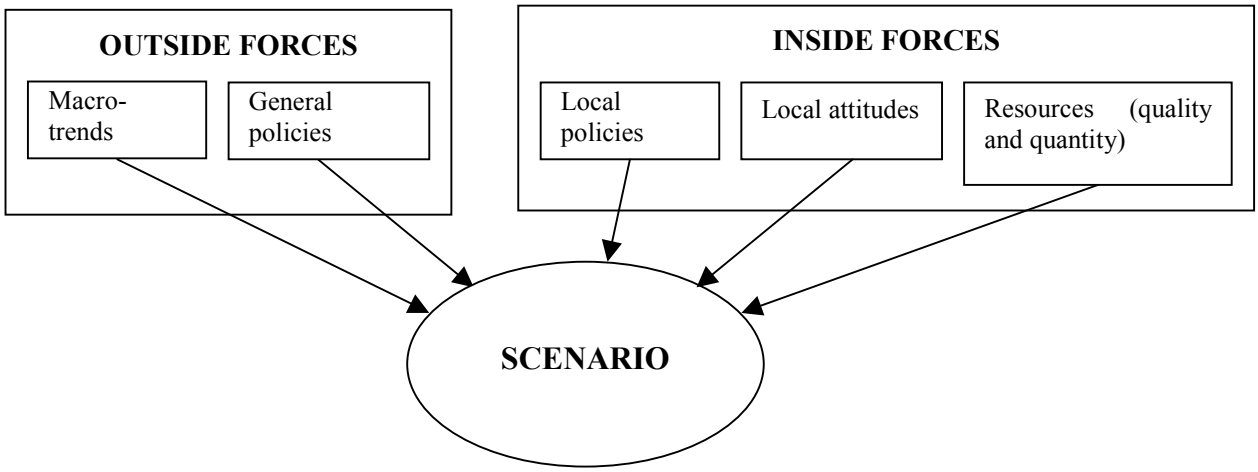
Source: own elaboration

b. the **presence and use of endogenous resources**:

- Physical presence of resources (water, grasslands for cattle breading, landscapes, local skills and know-how…) in quality and quantity
- General policies that allow and/or encourage to use the resources
- Local policies that put into practice general policies
- Local attitudes of using resources (it is a very important point: a community can turn both to positive development or to crisis under the same general conditions depending only on local social, cultural, historical factors,…).

Actually, from this point of view, scenario arises in the way illustrated in Fig. 3, that can be considered as a conceptual model more detailed than the model presented above (Fig. 1): while "macrotrends" occurs in the same way, "policy" is divided into "general policies" and "local policies" and "history" is defined as "local attitudes" together with "resources".

Fig. 3 : Detailed conceptual model for scenarios



Source: own elaboration

3.4.4. A model for clustering

By combining the two main factors alpine remoteness and resources, zoning of the Alps in 2020 can be represented through a graphic model with a structure that can be further adapted to the different situations. In particular:

- It goes beyond the rigid division into administrative communities, that is necessary to use when statistical data are analysed (i.e. in WP2), but that does not take into consideration the wide differences existing at sub-communities scale, especially in the mountain space;
- It can be applied at different geographical scales, from total Alps, to regional situations, to a single valley situation: centrality and peripherality of areas are relative concepts, depending on the geographical scale and on the hierarchy level of the centres that are considered.

In this model the first factor "alpine remoteness" grows moving from the bottom to the top; actually it is assumed that the centre of growth is at the lowest altitude and in the most accessible place. Eccentric circles represent the central areas (at the bottom), an intermediate belt and the most peripheral areas (Fig. 4).

The most significant driving forces that can "push" towards the centre, the intermediate belt or the peripheral areas are identified in Figure 4, too:

(1) The **suburbanisation trend**: it shifts the residential areas and also some economic activities outside the inner urban areas, where better living conditions can be found;

(2) The **decrease of services** (public and private services: health, school, markets, …) in the peripheral areas and their concentration in the central areas: it pushes people to live not too far from the centre;

(3) The **increase of private motorisation**: the dependence on public transport services decreases and accessibility increases also in relatively peripheral areas.

The second factor "resources" divides alpine space into two sectors depending on lower / higher presence and use of endogenous resources.

In addition, the possibility of having a large **metropolitan area just outside the alpine region** must be considered**:** in some cases it plays the role of the local centres, in others it can cause a decrease of the their importance. In other terms if there is a close metropolis, local centres lose many of their functions and become commuter areas and/or local centres of lower hierarchy (mostly in the inertial scenario); the local centre's functions "shift" outside the alpine region. This "metropolisation" trend is very important to analyse the Alps not as an island, but in their relationships with outside regions, too.

Figures 5 and 6 present the model applied to the "inertial" scenario, figures 7 and 8 to the "towards sustainability" scenario. Figures 5 and 7 show the situation when the influence of a metropolitan area outside the Alps is low or even missing; Figures 6 and 8 show the situation when the influence of a metropolitan area outside the Alps is high. Local centres always exist, but they can be more or less important.

The intensity of colours is linked to the intensity of human presence in terms of population and of economic development.

It is assumed that in the **inertial scenario** the possibility of using endogenous resources for local development is lower than in the towards sustainability scenario, because of less effective policies: this is the reason why the vertical line is shifted to the right.

Figure 5 shows the situation of the Alps in the inertial scenario: around the local centres a belt of commuting/residential areas can be found, while peripheral areas - due to less accessibility - are represented in the external belt.

In the inertial scenario touristic areas are supposed to be not as wide as in 2003: it depends on general trends and on specific situations in the Alps, for example the reduction of snow covers due to global warming, that has effects on winter tourism. Touristic areas will be wider at higher altitudes, in more "alpine remote" areas.

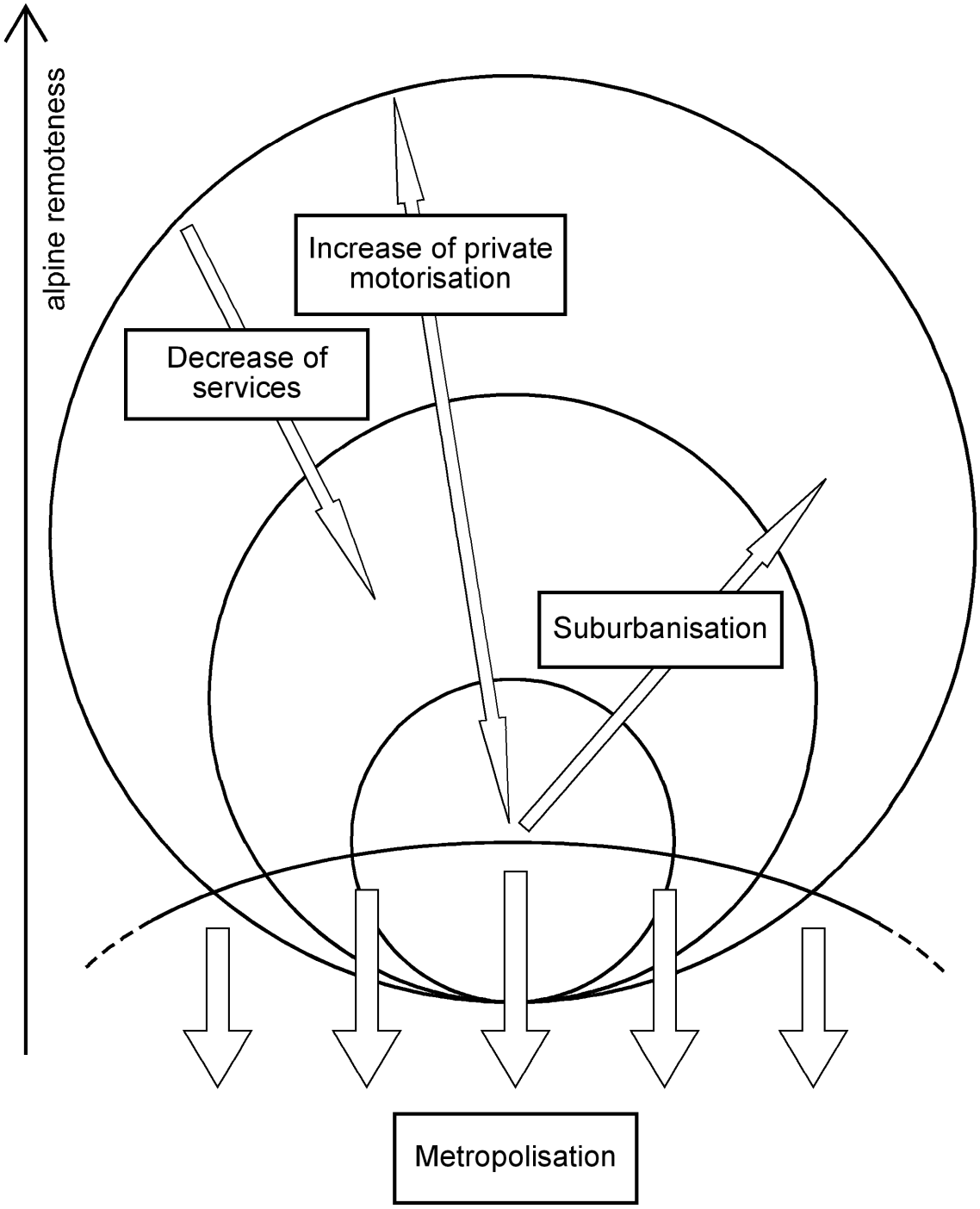
Figure 6 is similar to the previous, but it shows the situation of external parts of the Alps if a metropolitan area just outside the alpine space is present; in this case the metropolis takes many of the functions of the local centres that lose their relative importance. Commuter areas gravitate less on the local centre, but more on the metropolis itself; we can call them "metropolised" areas. The peripheral belt is in a similar situation as in the previous case.

On the other hand, in the **towards sustainability scenario** it is assumed that there will be more opportunities to use endogenous resources for development and for sustainable economic activities: the vertical line is put in the centre, it is not put on the left side because we are not drawing a "pink" scenario, but we are considering realistically that not all alpine areas will have and will use endogenous resources. With regard to the local centres (see figure 7), in this scenario there will be more than one centre and that local functions will be more widespread among centres of different relative importance.

In the towards sustainability scenario peripheral areas either could face difficulties and abandonment (as it happens frequently nowadays and is prevailing expectation in the inertial scenario), or they could find in their "peripherality" new opportunities for development (for example soft tourism linked to natural or even "wild" areas). From this point of view, peripheral areas can be divided into three parts. The first is called "polifunctional growing area": it is characterised by the presence of some small centre of growth linked to one particular local resource (handicrafts, cattle-breeding), or, more probably, to many resources (including tourism) integrating each-others. The second zone is a steady area in which the development trends are slower than in the first, while the third (less wide than in the inertial scenario) is an area of crisis and of abandonment.

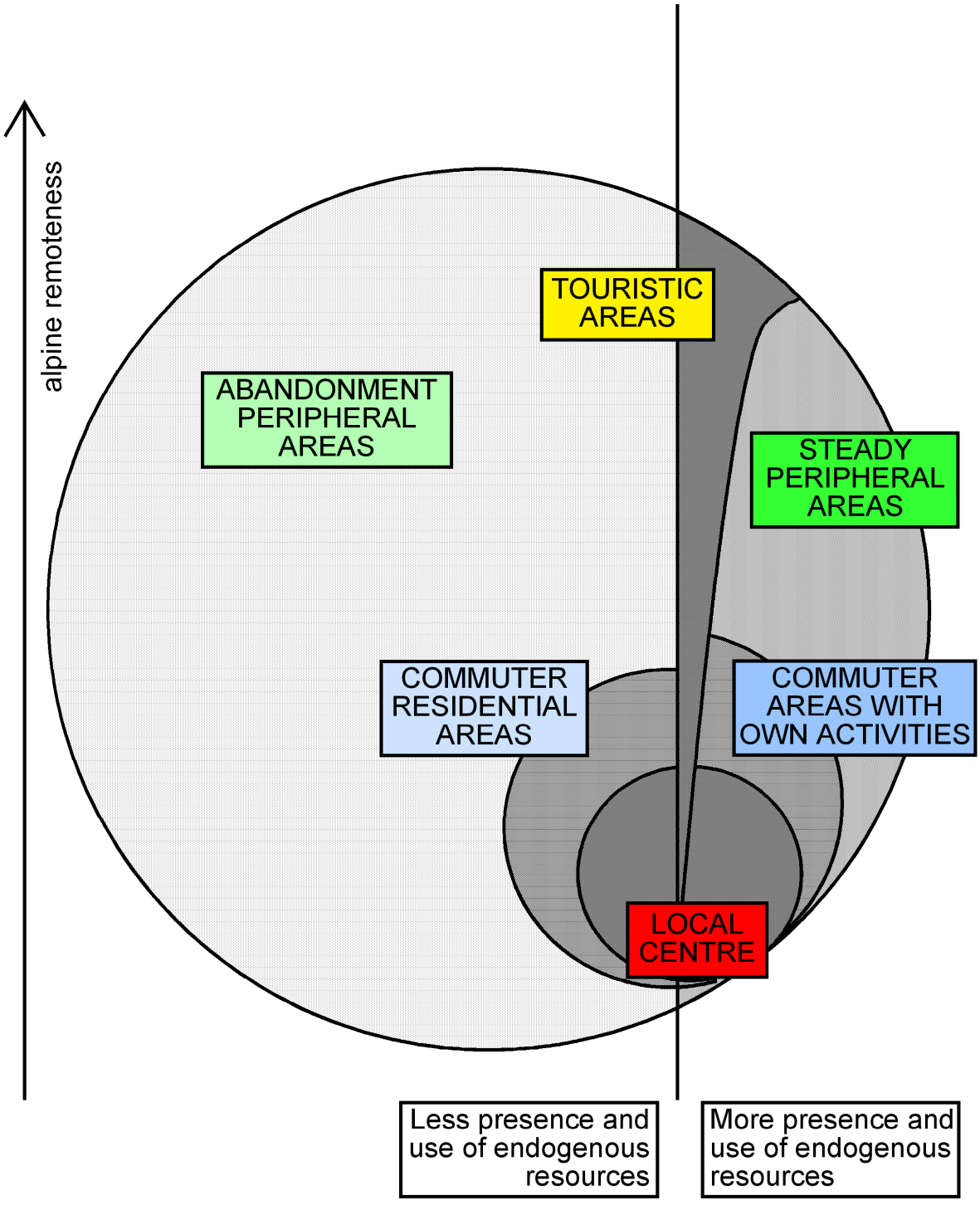
In Figure 8 the "toward sustainability" scenario in the case of metropolitan area closeness is represented. As in the inertial scenario local centres lose part of their functions (but probably less than in the inertial scenario) and the commuter areas gravitate on the metropolis ("metropolised" area). The situation of peripheral areas seems to be the same as in the core parts of the Alps, where the influence of non-alpine towns is not perceived.

Fig. 4 : Driving forces for spatial development in the Alps 2000-2020



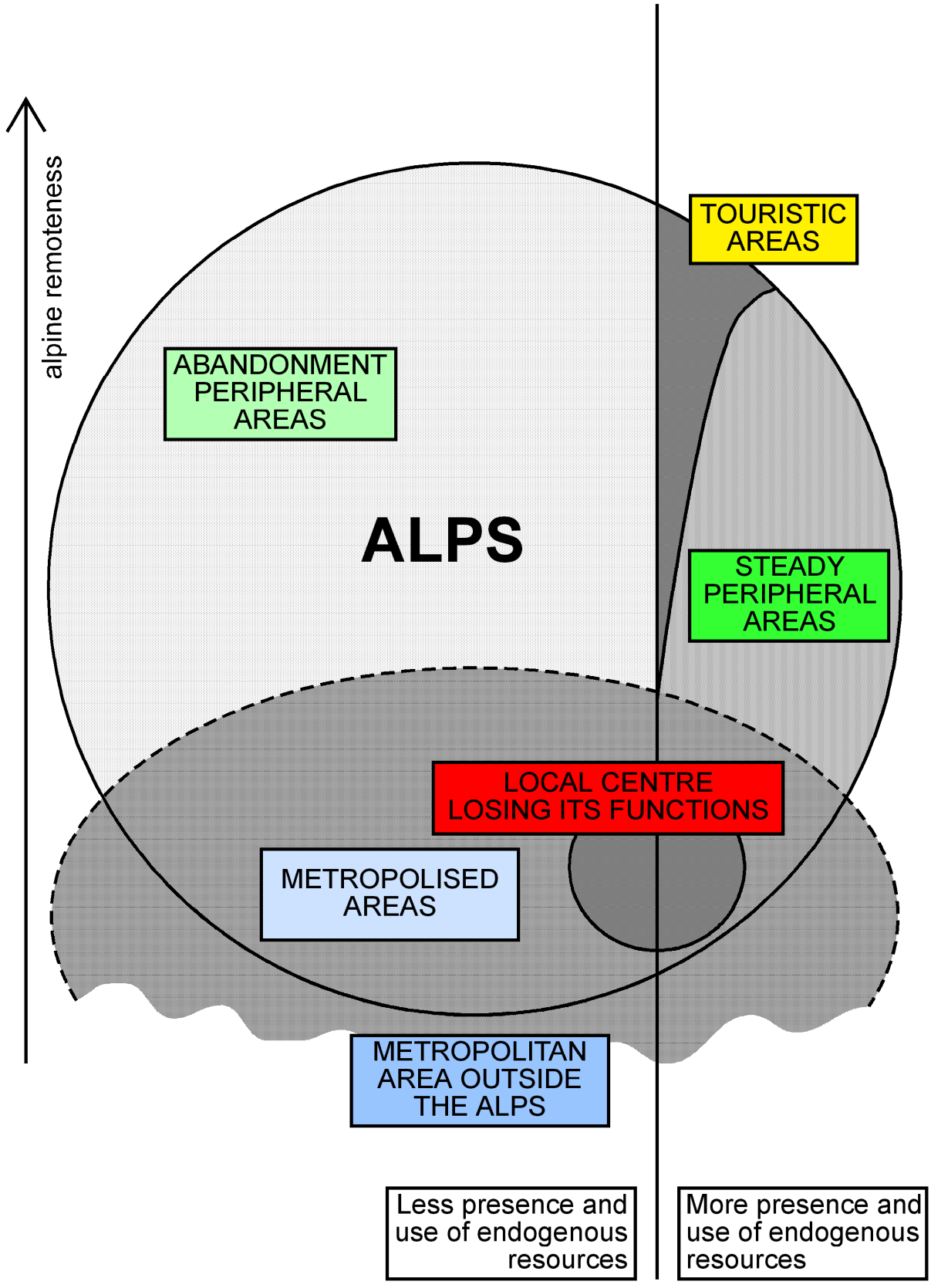
Source: own elaboration

Fig. 5 : Zoning of the Alps in the inertial scenario: core alpine regions



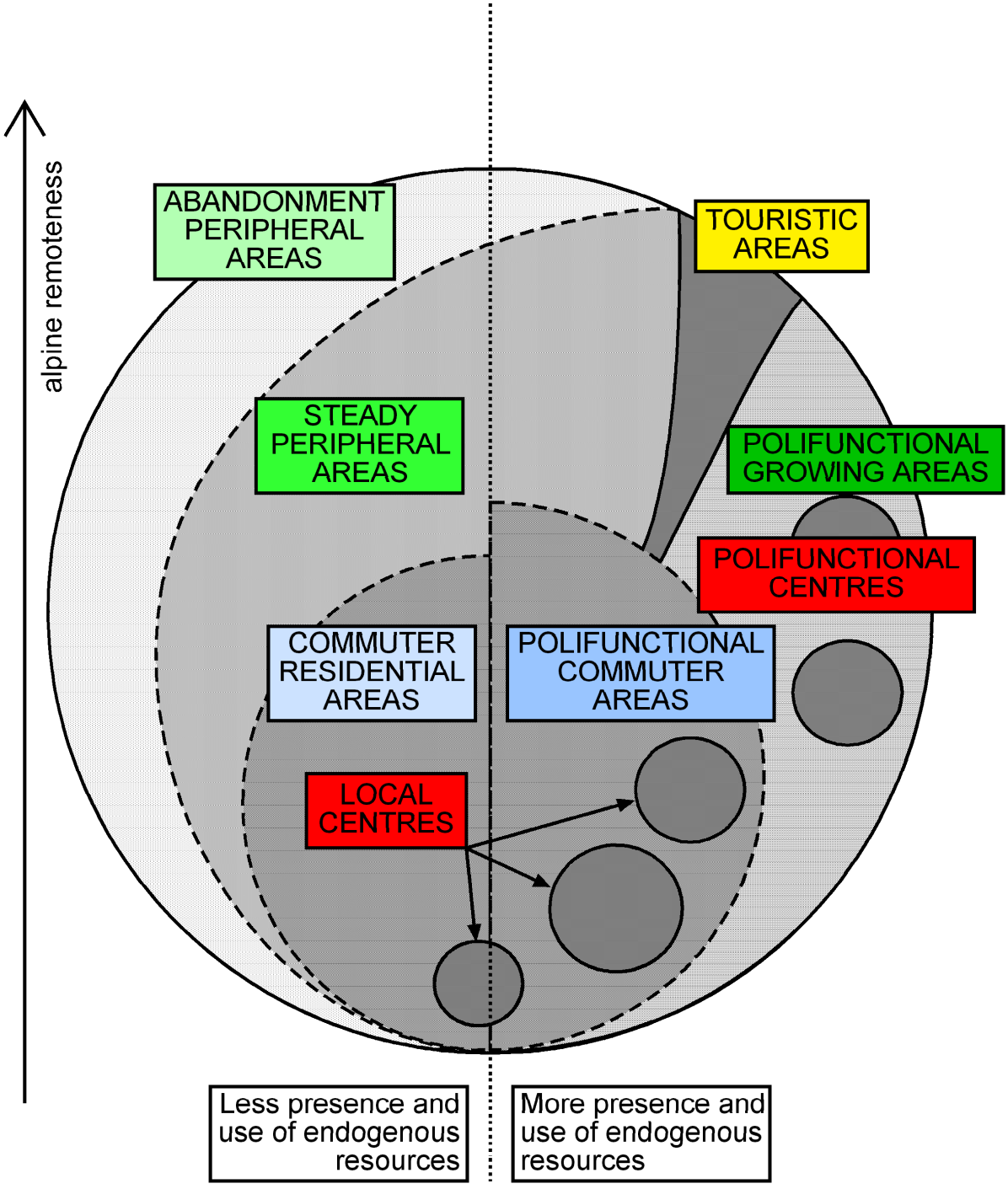
Source: own elaboration

Fig. 6 : Zoning of the Alps in the inertial scenario: alpine border regions



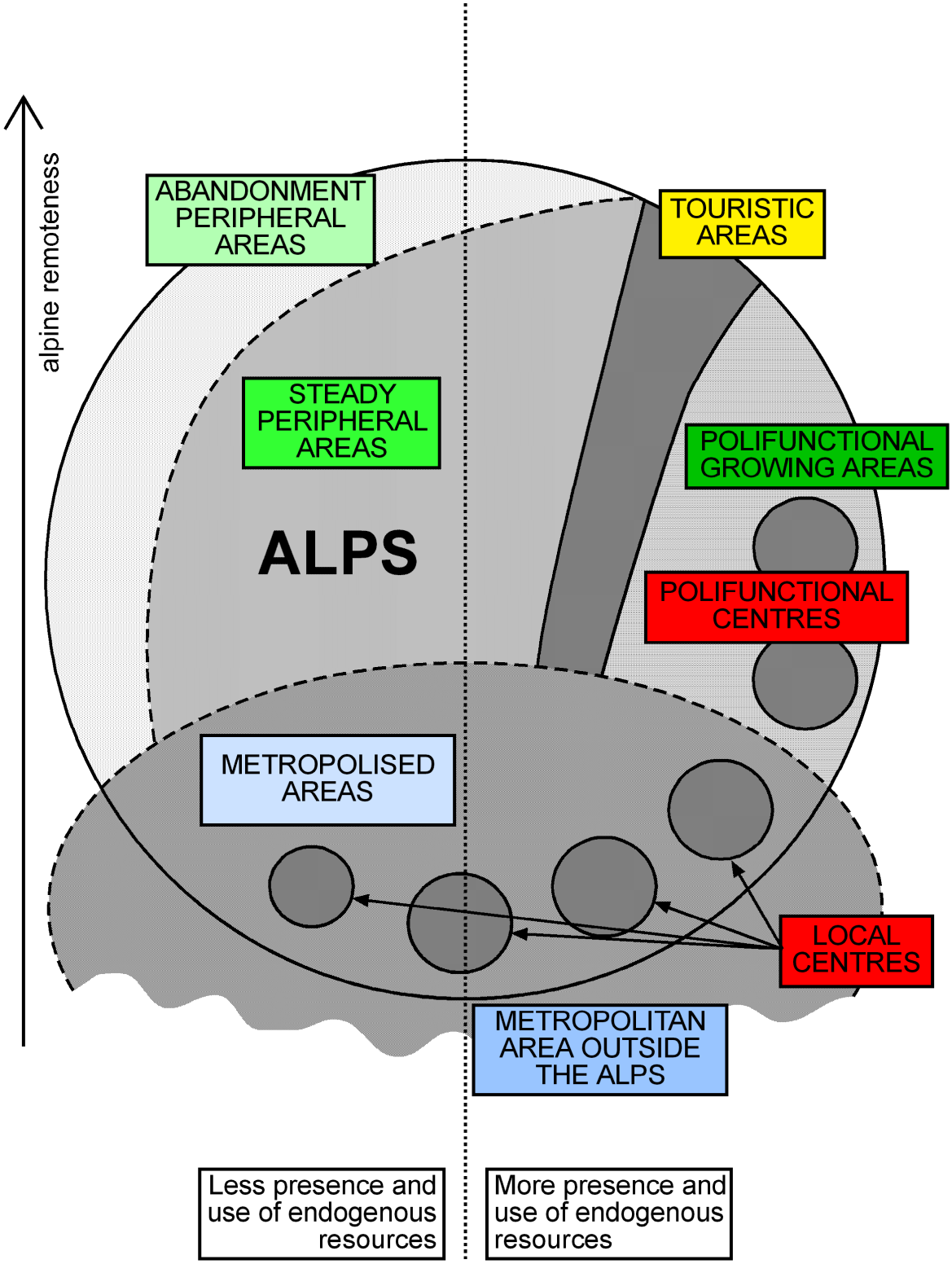
Source: own elaboration

Fig. 7 : Zoning of the Alps in the towards sustainability scenario: core alpine regions



Source: own elaboration

Fig. 8 : Zoning of the Alps in the towards sustainability scenario: alpine border regions



Source: own elaboration

3.6. Items for description

3.5.1. Introduction

The clustering models presented give the general framework of the two scenarios for the whole Alps. It is now necessary to present in detail the features of each area of the clustering models in the two scenarios, with regard to all the items that are involved in determining cultural landscape peculiarities. As we are representing the alpine space in 2020, the descriptions don't have obviously the significance of "real data", but they only represent "likely" future situations, building on the information that has been accumulated and elaborated in the previous work packages.

A chart is used to summarise the features of each area in the two scenarios; the lines correspond to the different aspects, divided into sectors, while the columns correspond to the homogeneous cluster-areas.

The lines are listed below. Each line contains one indicator that can be qualitative or quantitative. When the indicator is quantitative (for example: "n° of...."), in most cases the cell is not filled with a number, but the attention is put on the trend, and the cell is filled with one among the words "increase", "constant" and "decrease". In such a way a kind of comparison is made, either with the current situation, or with the other scenario, or with another area within the same scenario, or with national average, as it will be explicitly mentioned. A brief sentence can be added to explain better quantitative information.

Other indicators are qualitative, and the cell will be filled with a brief sentence. In some cases, after some quantitative indicators, the description of the sector has to be completed with some qualitative information (line: "quality" of....).

The charts represent a way of summarising the scenario: whereas the complexity of the territorial situations, with the interrelations existing among different sectors' features is better explained in the text.

3.5.2. List of columns

INERTIAL SCENARIO

(1) Areas at the centre of the polarisation
    a. Local centres
    b. Commuter areas with own activities
    c. Commuter residential areas
(2) Peripheral areas
    a. Steady peripheral areas
    b. Abandonment peripheral areas
(3) Touristic areas.

TOWARD SUSTAINABILITY SCENARIO

(1) Areas at the centre of the polarisation
   a. Local centres
   b. Polifunctional commuter areas
   c. Commuter residential areas

(2) Peripheral areas
   a. Polifunctional growing areas
   b. Steady peripheral areas
   c. Abandonment peripheral areas

(3) Touristic areas

3.5.3. List of lines (sectors and indicators):

(1) Number of communities belonging to the cluster

It is directly represented by the size of each area in the cluster models. It is a comparative datum between the two scenarios.

(2) Development trends

At which development trend, analysed in work package 2, do the communities of this area belong (see REGALP WP2 Work Package Report)? This information allows to better comparing the two phases of the REGALP Project (analysis of the past; future scenarios).

(3) Population

   a. Total population
   b. Ageing: due to natural trend or to coming back of retired people
   c. Migration balance
   d. Immigration not eu
   e. Density of population

(4) Settlements

   a. N° of residential settlements
   b. N° of productive settlements (factories, sheds, barns, …)
   c. « Quality » of settlements: some information concerning architecture features (traditional, modern, re-building, …) and/or urban structure (for example, compactness of settlement or urban sprawl) can be added to stress the "visible" landscape features

(5) Economy

   a. Working places (by sector if possible): some qualitative information about sectors (according to *macro-trend* information) can be added
   b. Gdp per capita
   c. Size of public expenditure aimed to local development
   d. « Quality » of jobs: part-time/full-time; flexibility, mobility, commuting, …

(6) Infrastructure

a. Rail network
b. Road network: information concerning rural/forest roads can be added
c. Telecommunication systems and making use of ict
d. Energy: systems of production and transport

(7) Traffic

a. Motorisation
b. Rail traffic (goods, persons)
c. Road traffic (goods, persons)

(8) Services for residential population

a. Public services : health, education, administration, tribunal, …
b. Commercial services : shops, commercial centres, bar, restaurant, …
c. Recreational services: cultural services, sport, cinemas, theatres, religious services, ….
d. Public transport network (inside the region and/or linking the region to other regions)

(9) Tourism

a. Touristic beds: in hotels, private houses, apartments, …
b. Overnight stays: eventually specifying winter/summer
c. Touristic infrastructure: skiing areas, shelters, tracks, …
d. « quality » of tourism: second houses/hotels/other accommodations; summer/ winter; long periods/brief periods/weekend/one day; active tourism/passive tourism; ….
e. Integration with agriculture: agritourism; agricultural landscape as a resource for tourism

(10) Agriculture

a. Number of enterprises
b. Full time / part time
c. Livestock production: n° of cattle, breeding, presence of intensive production (pigs, chicken farming, …)
d. Used agricultural surface
e. « quality » of agriculture: biological agriculture, high quality local production, …

(11) Land use

a. Forest area
b. Arable land
c. Intensive grassland
d. Extensive grassland
e. Settlement area

f. Land use conflicts

(12) Environment

a. Pollution (water, air, soil, noise, …)

b. Waste disposal

c. Biodiversity and ecological features: loss of species; arrival of new species; changes due to global warming, …

d. Protection of nature: protected areas like natural parks, other regulations for protection etc.

e. Natural hazards: flooding, landslides, mudflows, …

(13) Promotion of local cultural and environmental resources – local identity, local pride

a. Regional trademarks or labels

b. Local activities (cultural or leisure clubs)

c. Others.

4. RESULTS

4.1. The "inertial" scenario

4.1.1. The scenario for the areas at the centre of polarisation

The area at the centre of polarisation can be divided into 3 sub-areas, according to the model showed above:

(1) Local centres

(2) Commuters areas with own activities and endogenous resources

(3) Commuter residential areas.

(1) Local centres:

In the inertial scenario local centres will probably not increase in number, eventually they will decrease: the centres of lower hierarchy levels will probably lose some of their functions (both private or public services) that will be acquired by higher hierarchy level centres, in a stressed polarisation trend.

Many of the medium sized local centres situated near the border of the Alps will lose importance too, due to the strong metropolisation trend, where a metropolis is growing just outside the alpine space (for example: metropolitan area of Milano for Italian Alps, or Munich for the German Alps). In this case local centres probably will keep only administrative functions, while services and working places will shift to the plain; they will have relative centre-functions within the "metropolised" area. They will be probably in steady conditions, due to the balance between loosing functions and attracting residential population (because of better environmental conditions than in the metropolitan area).

Economic activities (small industries, handicraft, services) are growing in the centres situated in the valley floor, in the most accessible areas and in the areas with large flat surfaces. They keep or slowly decrease if the centres are situated in less favoured zones and are losing their relative importance inside the region.

Communities situated very near to the local centre, with good accessibility, with their own productive activities and with residential quarters on wide surfaces can be considered as part of the local centre area, like "younger brother", but with "the same dignity". They are growing in population, probably more than the local centre itself.

This development polarisation determines the complete "filling up" with human activities of the most important valley floors, in which no natural areas or extensive agriculture exist any more (apart from some isolated small natural reserves or protected humid areas or biotopes). Residential and productive settlements, as well as roads, motorways, railways and intensively cultivated areas occupy entirely the valley floor.

Strong land use conflicts are present and landscape as well as environmental deterioration (i.e. air pollution due to traffic, noise) is growing. In this sense quality of life is decreasing.

Population is growing also due to immigration (from the outside of EU), and ageing is the same or lower than the national average.

Concerning agriculture, some typical local productions are present, but agriculture is mostly directed to the global market and to agro-industry. Some new cultivations are experimented, once typical only of plain areas, now possible also in the mountain regions, due to global warming (greenhouses, market gardens, …). The relative importance of agriculture in terms of businesses and agriculture population is decreasing; the ratio between part-time and full-time agriculture population is constant.

Natural hazard is growing (flooding, landslides and mudflows) due to the increase of the frequency of natural disasters and to the more intensive occupation of the valley floor: the damages of a single event can be worse than in the past.

(2) Commuter areas with own activities and endogenous resources

Communities around the centre, easily accessible and with flat surfaces more than steep slopes offer a quality of life probably better than the centres themselves. They gravitate towards the local centre, because of working places and of services, but they are more quiet and with lower intensity in land use. In these areas, out-commuting is associated with some local activities, such as agriculture (extensive, but partly also intensive), small industry, handicraft, services, and perhaps soft tourism. Population is increasing and ageing is probably lower than the national average. Even if the cluster division does not correspond to the administrative division, to some extent it is possible to identify these areas according to the WP2 development trends: they correspond mostly to PE (in-and out-commuting communities) and to G (balanced communities) or, in some particular conditions, to a sectorial type.

These areas can be probably considered as the strongest growing areas inside the alpine space; they play an important role also when they are very near to the border of the mountain area, and they can represent an important suburban area for the larger centres of the plain. In this case they represent a belt between “Alps” and “non-Alps”, with some peculiarities of both of these different regions.

Residential buildings (mostly family houses) increase as well as other settlements: if the growing of settlements is not directed by careful planning, deterioration of landscape is possible. A particular attention on preservation of landscape occurs when tourism is one of the local activities, for example due to some natural or cultural resources like lakes or artistic places. If local attitudes exist, also some kind of soft tourism such as agri-tourism could develop. It goes with actions devoted to promotion of local products, local landscape, local history.

Agriculture activities still play a quite important role, even if a decrease of agricultural land is very probable, due mostly to the increase of settlements. The number of farms and of agricultural population decreases, and enterprises are mostly part-time. Some new kinds of cultivation as well as more traditional ones are present. Breeding and extensive grassland are very scarce.

(3) Commuter residential areas

Some of the communities situated around the centres could have unfavourable conditions to develop own economical activities and mostly gravitate towards the centres themselves. There are different reasons for this gravitation: on one hand they may have the function of strictly "dormitory communities", when the local centre has a lot of economic activities, important administrative functions and many working places, but does not have the conditions for enlargement itself; this is the case of the southern suburbs of Innsbruck, for example. In other cases, side valleys or steep slopes are quite near to the central areas, but do not have the potential for the development of local economic activities and/or for new residences (for example because of the lack of plain surfaces for large growing of productive or residential settlements). Both of these cases are present in many alpine border regions, which gravitate towards centres outside the Alps and are completely involved into the metropolisation trend (for example some parts of the Italian Pre-Alps).

Out-commuting is typical for these communities that look like satellites of the near local centres and correspond mostly to the commuter dominated development trend (P). Their conditions have to be considered as "unfavourable" not in absolute terms, but in relationship with more "favourable" neighbouring areas (local centres and commuter areas with own activities), where it is easier to develop local economic activities.

The different reasons for out-commuting mentioned above lead to many differences in the peculiarities of the areas inside the same cluster. For example, with regard to population, the suburbs are probably growing, with a high amount of young people and a positive migration balance (also not EU workers); side valleys, instead, are probably losing some parts of their population and are slightly over-ageing. As a matter of fact, some different factors are involved in growing, keeping steady or decreasing of population, playing different roles: on one hand the presence or absence of good services (health, education, commercial services, public transport, …), on the other hand the better quality of life and the lower price of housing than in the local centres. In the inertial scenario; services are probably very concentrated in the centres, but at the same time the differences between these areas and the centres concerning quality of life an prices is larger. Peculiar local conditions are often very important, so it is very difficult to generalise the trends.

Many activities that are linked to the local space are decreasing, as most of activities gravitate on the centres (working places, services, recreational activities, for example) and people living in this areas are probably in danger to lose their local identity. In the metropolised areas this is more evident: identity is changing, as the result of the meeting between local "insider" cultural models and "outsider" urban models. The word "mountain" changes its meaning: new meanings probably come out from its new activities, mostly leisure activities, so "mountain" may be the site of mountain biking etc. Actually, the commuter areas (those with and those without own activities) also serve for recreation of the population of the local centre for example for day trips.

In the commuter residential areas touristic activities are very few or completely absent.

Agricultural activities are decreasing on the slopes, most of all because benefits for keeping terraces and for mowing are decreasing. Forest is growing as an effect of

renaturalisation, but there is not a stable ecological balance, due also to the shift towards higher altitudes of vegetational belts. Landslides and mudflows can happen more frequently on the slopes, also due to the abandonment of the territory.

4.1.2. The scenario of peripheral areas

In the most "alpine remote" areas, located on the slopes far above the valley floors, from alpine or peri-alpine towns, from development poles and from communication networks, two types of areas are possible (with the intermediate cases, of course):

(1) Steady peripheral areas

(2) Abandonment peripheral areas.

(1) Steady peripheral areas

They are peripheral areas as the following category, but their population keeps steady and some economical activities are present.

Different types of areas belong to this category:

- Communities with some well exploited endogenous resources, very often linked to some particular tradition: small industries or handicraft, "protected" local agricultural products, strong local identity (i.e. linguistic islands), natural or cultural heritage, special landscape, touristic attractions. Due to these economic activities, the area is not declining although out-commuting is common – but out-migration does not take place.
- Communities that were in better conditions and are slowing down their development, especially small touristic centres, situated at low altitudes; they can face a crises (and turn to the category of marginal areas) or find new resources for a alternative kind of development.

They could correspond to G or sectorial balanced (G) development trends mentioned in WP2, or change of touristic areas, or in some cases to the commuter trend (P or PE), too; generally the number of communities of these types may be constant.

Population is slightly decreasing or even constant, ageing is lower than in decline marginal areas but higher than in the areas at the centre of polarisation; therefore ageing is generally above national average.

Migration balance is stable or negative, immigration from outside of EU depends on the number of working places: it is constant if working places are constant, it increases if working places increase, it decreases if working places decrease.

Density of population is lower than national average but higher than in the decline peripheral areas.

Settlements and infrastructure remain the same, some light increase can occur because of the importance of tourism, especially "soft" and "agro" tourism, and the traditional settlements could be improved (renovation of houses).

Working places are constant or slightly increasing in some sectors (handicraft, tourism, or breeding), but they can be decreasing in others. The jobs are characterised by flexitime, mobility, in and out-commuting and so road traffic increases and pollution, too.

Services are moving closer to the centre but they are not strongly decreasing because the constant presence of population needs some public and commercial services, even if public financing is decreasing.

Particular attention on preservation of landscape is to be observed when tourism is one of the local activities, due perhaps to some natural or cultural resources (lakes and natural parks, for example). If local attitudes exist, also some kind of soft tourism such as agri-tourism could develop, so tourist beds and infrastructure may be improved in some cases. Tourism goes with actions devoted to promotion of local products, local landscape, local history.

Agriculture keeps stable, often with part-time agricultural activities, sometimes with new kinds of mostly extensive cultivation ; intensive and extensive grassland are constant or decrease. The number of agricultural enterprises remains constant or decreases.

Some processes, such as forest overgrowth on agricultural land and decrease of arable land continue, but their intensity is rather low. Settlement areas might increase in some places due to holiday dwelling construction.

In these areas there can come up some conflicts between nature conservation and economic use by residential population, also conflicts between residential population, owners of holiday dwelling and tourists are expected to emerge and aggravate.

As far as environment is concerned the low density of population and of human activities causes few (mostly local) problems of pollution and waste disposal, on the other hand poor communities will do no environmental investment. Moreover there is a loss of biodiversity and of rare types of grassland and landscape elements, extinction of old races in agriculture (animals and plants), re-growing of forests in some places and so presence of wild animals near to the houses. On the other hand a more intense exploitation and improvement of environmental resources for protection of nature is probable. But there are more risks of landslides, avalanches and erosion, due to climate change, inadequate care of forests as well as abandonment of mountain pastures.

(2) Abandonment peripheral areas

In the inertial scenario the number of decline peripheral areas probably increases but the population living in these areas decreases, especially because young people are leaving because of lacking job opportunities.

Decline areas are characterized by a strong decline of economic activities, above all agriculture, heavy out-commuting and out-migration.

Policies aimed to centralise services and to decrease public expenditure on welfare lead to strong decrease of services (health, school, shops, sport facilities, …). People are almost forced to move away from these areas, if nothing else is present here to increase the quality

of life, and to oppose to the inconvenience of peripheralcity; ageing is higher than national average, migration balance is negative and density of population is very low.

Different kinds of communities with low accessibility belong to this category: secondary valleys, communities situated at high altitudes, communities connected with inconvenient roads, communities with most part of surfaces on steep slopes.

In addition, communities with centres situated on the valley floors (being not very peripheral) often comprehend also wide parts of very "alpine remote" territories, with very few endogenous resources (i.e. hamlets, scattered houses and settlements): a large percentage of alpine space really belongs to this category.

The communities of these areas mostly correspond to the balanced (G) or out-commuter (P) development trends identified in WP2.

Only a small number of working places is present, often in a "residual" way (small shops, some agricultural business, some tourism, perhaps holiday houses). People have to be commuters (with a relative increase of road traffic), or to take advantage of pensions and subsidies.

Many residential buildings are abandoned or are occupied only in the summer period and in the weekends by ex-inhabitants.

The number of services is going to decrease as well, in particular the policies for financing public transport are reduced; whereas traffic remains the same, but at a very low level (transit tourist traffic increases).

Generally tourism (and so touristic beds, overnight stays, touristic infrastructure) decreases or is constant in few places.

Agriculture is not playing an important role, arable land, intensive and extensive grassland are in constant decrease.

In the neighbourhood of villages, forest is growing due to the abandonment of grazing and mowing (cattle is decreasing and/or there are no incentives) and to the less intensive use of wood.

The lack of care and frequent mudflows destroy what man had built in the previous decades (arrangement of streams, terraces, cartroads, tracks). Local or outsider groups carry on some initiatives of recovery and reclamation, but they do not succeed because of the lack of general agreement, support and incentives. In this situation land use conflicts are improbable.

Some re-growing forests are almost stable yet - in ecological sense -, in spite of global warming; re-naturalisation involves the increase of wild animals, too: they could come nearer to the settlements and cause damages. The functions of these areas inside the alpine space (and at a largest scale, inside Europe) are more and more linked to their wilderness and to their ecological importance.

The areas can face similar natural hazards like other parts (landslides, mudflows, floods, erosion) due to climate change, inadequate care of forests and abandonment of mountain pastures.

4.1.3. The scenario of touristic areas

In the inertial scenario touristic areas will be less than today: it depends on general trends and on specific situations in the Alps, in particular concerning the reduction of snow covers due to global warming, that has effects on winter tourism.

This problem could be solved by "simple" answers: if snow is guaranteed only at high altitudes, then new touristic resorts have to be built at higher altitudes, with little attention to alpine landscape peculiarities; moreover this situation gives an advantage to the high lying ski resorts with glaciers.

The most important winter-summer touristic centres at higher altitude probably increase their importance and their dimensions: the ski stations and the infrastructure for ski are renewed (change/rationalisation of existing networks). On the other hand the smaller places lose importance and disappear slowly because they lack the economic resources necessary for modernisation.

The "surviving" touristic areas develop well: economically booming (with a strong focus on the service sector and flexible jobs, a lot of seasonal jobs and a high rate of in-commuting), increase in population (density of population strongly changes according to the season: low in "dead" season, high in high seasons). In some cases the strong increase in the costs for life (very high cost of housing, most of all) leads to a decrease of residential population and to an increase of in-commuting from cheaper neighbouring communities. Land use and also some social conflicts occur, in particular between residents and owners of holiday dwellings, between tourism development and nature protection. Landscape could be considered as a resource for tourism and protection should be improved. But often landscape is used very intensively not only to build infrastructure for tourism but also to build in large multi-apartments buildings, serving as secondary homes. This not only defaces landscape but gives less work and less income to the residential people: if the tourists stay in the hotels or in private houses or in agri-tourism belonging to local residents (instead of stay in second homes), this could be a source of income for residential people. Mostly big tourism infrastructures are not property of residential people but of big companies from outside.

The development of tourism is mostly connected to the wishes of "townsmen". Probably there are wishes for good services (mostly commercial services, but also public services), infrastructures and recreational activities, in an "urban" way, as well as wishes for "nature" and for a balanced relationship between human activities and environment. In the touristic area agriculture may be an important secondary resource for maintaining cultural landscape, for agri-tourism and for handicrafts.

As more tourists want to come by car and to reach every place by car, road traffic is going to increase although the road network remains the same or faces little increase; also the local population is depending on the use of private cars. This will lead to "seasonal" problems with air-pollution and noise.

The settlement area increases due to new housing (mostly holiday dwellings) and tourism infrastructure construction. Natural hazards like floods, avalanches and landslides are a potential danger to these communities.

There is a decrease of biodiversity, loss of high mountain ecosystems (permafrost and glaciers); on the whole, the protection of areas continues according to global trends.

Local identity will more and more change to a uniform and generally defined “alpinity”.

Table 9 : Inertial scenario

Sector	Indicator	Areas at the centre of polarisation			Peripheral areas		Touristic areas
		Local centres	Commuter areas with own activities	Commuter residential areas	Steady peripheral areas	Abandonment peripheral areas	
Number of communities belonging to the cluster		The same number or little decrease	Increase	Increase	Constant or decrease	Increase	Decrease (they are concentrated on high altitude)
Development trends (WP2)		LZ, AZ, PE	PE, G, D or sectorial, or change of T communities	P	G, sectorial, change of t communities, P, PE	G, P	T, G, DS
Population	Total population	Constant or increase; with exception of some places, where a decrease may occur because of sub-urbanisation	Constant or increase	Constant or increase (dormitory villages)	Constant or light decrease	Decrease	Constant or light increase (or, in some places, decrease due to high costs of life)
	Ageing	Ageing as national average	Ageing lower than national average: young people settle in these areas because of working places and good services	Ageing as national average	Ageing lower than in the decline marginal areas but higher than national average	Ageing higher than national average because young people leave these areas which offer little o nothing	Ageing as national average
	Migration balance	Positive; with exception of some places, where may occur a negative balance because of sub-urbanisation	Positive; in some places slightly negative, but the highest in the alpine area		Almost steady or slightly negative	Negative	Almost steady or slightly positive
	Immigration from outside of EU	Constant or increase because of increase of working places	Constant or increase because of increase of working places	Constant or increase because who works in lz settles in these areas (lower prices)	Constant or decrease (with regard to the working places)	Decrease because of decrease of working places, marginal	Constant not EU workers will be partly in-commuters and partly residential people; increase of seasonal non-EU workers
	Density of population	Highest among the areas at the centre of polarisation	Constant or increase, but higher than alpine average		Lower than national average but higher than the decline peripheral areas	The lowest in the alpine space	Density will remain low in “dead” seasons, very high in high seasons

Settlements	Residential settlements	Increase	Increase	Increase	Constant or increase where tourism is the most important resource	Constant	Increase
	Productive settlements	Increase	Increase	Increase	Constant or little increase Because of the “vital sectors”	Vacancies and even decrease because of the general economical decline of the area	Constant or increase
	« quality » of settlements	High density of settlements: urban models prevail on traditional models	Increase of new family houses and of some more condensed construction; in some cases increase of apartments and holiday houses, scattered settlements	High density of settlements: urban models prevail on traditional models	Traditional settlements could be exploited and improved; modern family houses and holiday houses, reconstruction of farm houses	Evident signs of abandonment of settlements	Constant or increase of holiday dwellings, sometimes in not well defined “alpine” style of buildings; many secondary homes
		Majority of residential settlements in typical building style, larger apartment houses and productive settlements often atypical/ modern; compact town centre but massive urban sprawl outside					
Economy	Working places	Increase (handicraft, little industry, services)	Increase (handicraft, little industry, services)	Constant or decrease in all sectors	Constant, decrease or light increase in 3rd sector	Decrease in all sectors because of general decline of the areas	Constant or decrease in primary sector, decrease in secondary sector, increase in tertiary sector
	Gdp per capita	Increase	Increase (in some places it’s lower than national average)	Constant	Constant or increase	Decrease	Increase
	Size of public expenditure	Constant	Constant or increase	Decrease	Constant or little increase	Constant or decrease	Constant or increase
	« quality » of jobs	Mobility, in-commuting, flexitime	Mobility, flexitime, in and out-commuting	Mobility, out-commuting	In and out-commuting, flexitime, mobility, but less than in the central areas	Out-commuting	Seasonal, in-commuting
	Telecommuni-cation systems	Increase and upgrading, many antennas for mobile phones			Increase	Light increase	Increase and improvement
Infrastructure	Rail network	Constant; increase of capacities in the few areas involved in Trans European Network	Constant or decrease of secondary sections (regions outside the centres will not benefit from improvements of ten network)		Constant, decrease, abandonment of secondary sections		Some secondary sections that were abandoned could be renewed; some others are transformed in cycle tracks.
	Road network	Constant or increase of capacities of the road network (mostly improvement of the existing network)			Constant or improvement of main roads; probable increase of tracks and of forest roads	Main roads constant; maintenance or decrease of quality of secondary roads, tracks and forest roads worsened	Constant or increasing use of private cars
	Energy: systems of production and transport	Constant or increase of transport network, little increase in use of local sources (biomass); increase of energy consumption			Constant or increase of transport network, little increase in use of local sources	Constant	Increase of transport network, little increase in use of local sources

Traffic	Motorisation (= cars / inhabitant)	Increase as national average; motorisation grows slower in cities than in rural areas	Increase, more use of private car	Increase, more use of private cars	Increasing use of private cars		Constant or increasing, use of private cars
	Road traffic	Increase of freight traffic and passenger traffic as well as of transit and regional traffic, more than in other areas			Constant or increase because of more intense mobility on main roads; decrease on small roads	Constant (at a low level)	Increase; some village centres are reserved for pedestrians
	Rail traffic	Constant or increase	Constant or decrease (less rail stations)	Constant or decrease	Constant or decrease	Decrease	Constant or decrease; in some places may be a light increase because of renewing of abandoned sections
Services for residential population	Public services	Increase or constant (or decrease relatively to the plain metropolis), privatisation of health and education, old people's care etc…	Constant or decrease (more privatisation)	Constant or decrease	Decrease due the general trend, even if population needs some public services	Decrease because of general decline of these areas; lack of services	Constant or decrease
	Commercial services	Increase	increase or constant	Constant or decrease	Decrease or constant (because the constant presence of population needs some commercial services)	Decrease; lack of services	Constant or increase (some problems concerning seasonal services)
	Recreational services	Constant or increase	Constant or decrease, because of concentration in the local centre, Increase for space-consuming activities like golf etc.		Constant or decrease	Decrease	Constant or increase (seasonally), mainly for tourists
	Public transport services	Constant or increase because these areas are the most important concerning working places and services, privatisation	Constant or decrease (out-commuting is mostly based on private motorisation); privatisation		Constant or decrease	Decrease (because of general decline of these areas)	Constant
Tourism	Touristic beds	Constant or decrease because people generally go to LZ only for a day or for weekend	Constant or light increase because tourism could be one of the usable resources	Constant or decrease because of absence of touristic attractions	Decrease with the exception of some places where beds are constant or increasing	Constant or decrease	Constant or slight increase
	Overnight stays	Constant or decrease because people generally go to LZ only for a day or for weekend	Constant or light increase (for example in winter) because of improvement of touristic resources of some of these areas	Decrease	In some places there is an increase (in particular in winter), in other a decrease (in particular in summer)	Decrease	Constant or slight increase
	Touristic infrastructure	Constant	Constant or light increase	Decrease	Constant or increase (improvement) in those places where there is a tourism increase	Constant or decrease	Increase and improvement
	« quality » of tourism	One day; cultural and business tourism	Short time and weekend holidays prevails, skier commuting, hotel, B & B in private houses, second houses	Hotels or bed & breakfast in private houses; families; ski hikers	Second houses (families, old age) tourism, new kinds of "soft" tourism or sport (but not only ski) tourism	Transit tourism, short time and weekend holidays prevail, B & B in private houses and farms	Second houses and hotels accommodations; winter more than summer; short time and weekend holidays, according to general trends; ski tourism; tracking and climbing in summer

	Integration with agriculture	Decrease because of decrease of agriculture itself	Decrease because of decrease of agriculture itself; in some places may occur a touristic use of some alpine pastures, light increase of agritourism	Constant or decrease	Light increase of agritourism	Decrease	Little increase of agritourism
Agriculture	Number of enterprises	Decrease	Decrease	Decrease	Decrease	Decrease	Constant or slight decrease; agriculture could be an important secondary resource in these areas for maintaining cultural landscape and for agritourism
	Full time / part time	Constant	Mostly part time, few large full time enterprises		Constant ratio between part time and full time: mostly part time and few large full time enterprises		Mostly part time
	Livestock production and plant production	Constant or decrease	Constant or increase because of new intensive zootechnical activities	Constant or decrease	Constant, in some places breeding is increasing, in another places decreasing	Decrease	Constant or decrease
	« quality » of agriculture	More intensive (greenhouses, horticulture)	New specialised agriculture, biological agriculture, or extensive agriculture	Extensive, re-growing of forest especially on the slopes; few or no local products of high quality are produced	Intensive grassland cultivation in favourable areas, extensive farming or fallowness in disfavoured places, abandoning of mountain pastures. Some local products of high quality are produced	"residual" agriculture; abandoning of mountain pastures, few or no local products of high quality are produced	Mostly extensive
Land use	Forest area	Constant or decrease	Constant or increase: forestation and re-growing of abandoned agricultural surfaces (steep / remote surfaces), Under-use of forests, insufficient care of forests	Constant or increase (re-growing of forest in abandonment areas), under-use of forests, insufficient care of forests	Increase or constant	Increase (re-growing of forest)	Constant
	Arable land	Constant or decrease	Constant or decrease	Decrease	Decrease		Decrease
	Intensive grassland	Constant	Constant	Constant or light increase	Constant or decrease		Constant or decrease
	Extensive grassland	decrease, marginal	Constant or decrease	Constant or decrease	Constant or decrease	Decrease	Constant
	Settlement areas	Constant or increase	Increase	Increase	Constant or decrease	Decrease, abandonment of "old" settlements	Constant or increase
	Land use conflicts	Increase of conflicts (among settlements, agriculture, infrastructures)	increase of conflicts caused by claims for housing		Some conflicts among nature conservation and economic uses (agriculture, tourism infrastructure and traffic, construction), among inhabitants and owners of holiday dwellings (parking, traffic and agriculture) as well as daily tourists (parking)	Improbable	Increase (conflicts between building of infrastructures for tourism and consciousness of landscape as a resource for tourism)

Environment	Pollution	Increase of air pollution and noise caused by traffic in main valleys; increase of soil sealing		Constant or increase of air pollution and noise caused by traffic in main valleys; increase of soil sealing	The low density of population and of human activities causes few (often localised) problems of pollution and waste disposal; on the other hand "poor" communities will do no environmental investment		Seasonal problems: pollution because of too much traffic; Problem of pollution of soil because of artificial snow
	Waste disposal	Constant or increase (adequate waste disposal system)					Seasonal problems of waste disposal
	Biodiversity and ecological features	Decrease of biodiversity due to intensive land uses	Loss of several habitats with high biodiversity (meadows) because of non-cultivation due both to intensive use of the area for settlements and tore-growing of wood; presence of wild animals near to houses		Loss of biodiversity and loss of rare types of grassland and landscape elements, extinction of old races in agriculture (animals and plants), regrowing of forests in some places. Presence of wild animals near the houses		Changes according to global trends, loss of high mountain ecosystems (permafrost and glaciers)
	Protection of nature	Constant, not improved, nature protection loses importance			Probable more exploitation and improvement of environmental resources	Constant or decrease	Protected areas and natural parks as resources for tourism
	Natural hazards	Risk of floods and landslides	Risk of landslides, floods, avalanches, mudflows		Increase of risk of landslides, erosion, avalanches due to climate change, inadequate care of forests, abandoned mountain pastures		Risk of landslides and of avalanches
Promotion of local cultural and environmental resources – local identity, local pride	Regional trademarks or labels	Constant	Increase; local smaller labels does exist but are less successful	Very few initiatives of promotion	In some places promotion and use of local identity as a resource; typical local products; Local smaller labels do exist but are less successful	Very few initiatives of promotion; local smaller labels does exist but are less successful	In some places there is an increase, in other urban and "global" identity prevails over the local
	Local activities (cultural or leisure clubs)	Constant or little increase	Scarce, some initiative to promote but the number of cultural and leisure clubs decreases; less co-operation among municipalities and existing projects.	Some initiative to promote but the number of cultural and leisure clubs decreases.	Decreasing number of cultural and leisure clubs; less co-operation among municipalities and existing projects		

4.2. The "towards sustainability" scenario

4.2.1. The areas at the centre of polarisation

The areas at the centre of polarisation can be further divided into 3 sub-areas, according to the model showed above:

(1) Local centres

(2) Commuter areas with own activities and endogenous resources

(3) Commuter residential areas.

(1) Local centres

In the "towards sustainability" scenario local centres are probably constant in number, or slightly increasing. The metropolisation of the local centres (when a metropolitan area can be found outside the alpine region) on one hand, and the reactivation of commuter areas with own activities near the local centres (and also of the steady and growing areas more distant from the local centres) on the other hand could underline the importance of local centres - different from the inertial scenario: local centres tend to be constant or to increase in number, but not to increase in importance.

Population and economic activities (small industries, handicraft, services) are growing if the centres are situated in the valley floors, in the most accessible areas, with large flat surfaces and if they are well linked with the most important centres outside the alpine region.

Local centres and the areas gravitating on them form a kind of interdependent territory: relationship between local centres and their big surroundings become more fluent in both directions.

Local centres correspond to LZ and AZ development trends identified in WP2; the nearest communities are probably classified as P, PE, G.

Population in local centres is constant or increasing and migration balance is positive, because of the increase of working places (services, some handicraft, little industry).

Concerning agriculture, typical local products are favoured (among them also crops, orchards and vineyards) or new cultivation are experimented, once typical only for plain areas, now possible also in some mountain regions, due to global warming (greenhouses, market gardens, …).

Land use conflicts can be better managed than in the inertial scenario because of more efficient territorial policies (spatial planning, EIA etc.).

In spite of some problems due to the concentration of settlements and of activities and to traffic, quality of life in the local centres profit from the closeness of working places and services, but also from the easiness to reach surrounding areas with good environmental and landscape conditions.

(2) Commuter areas with own activities and endogenous resources

More opportunities to use exogenous resources (subsidies, national contributions, European funds) and especially to exploit endogenous resources (present in the territory) make this area less vulnerable and less dependent from local centres than in the inertial scenario. These areas are wider than in the inertial scenario, too. Some local activities, such as agriculture (specialised, biological), soft tourism, local products by handicraft and small industry are improving local economy, together with the promotion of local products, local history and cultural heritage. Other delocated activities could increase too, due to the implementation of the use of communication technologies and the increase of e-services.

The communities of these areas correspond to PE and G types, of WP2.

These areas offers a quality of life probably better than the centres: population is increasing (more than in the commuter residential areas) with a positive migration balance, because of more working possibilities, but also to the relative closeness to the local centre. Residential and productive settlement, infrastructure and public transport increase. Land use conflicts are managed by efficient territorial policies; landscape is recognised as an important resource, which in some case could induce the development of tourism, in particular soft tourism (i.e. agritourism). It goes with actions devoted to the promotion of local products, local landscape and local history.

(3) Commuter residential areas

The commuter residential area comprehends some zones that are strongly tied to the local centres and that are mostly depending on them for services and for working places; they don't have many local economic activities, and they look like "dormitory" villages, but they benefit from a better ecological and environmental situation than the centres themselves.

The extension of these areas is smaller than in the inertial scenario, due to the possibility of a more widespread use of local resources in the whole alpine area, but most of all in the "not remote" areas. Residential commuter areas are nevertheless present in metropolised zones, where activities are located mostly in the plain, and mountain areas can represent a "green suburb".

Out-commuting is typical for these communities that look like satellites of the near local centres or of the plain centres and correspond mostly to P development type.

Population is increasing, probably because of low cost for residential building. Perhaps this fact supports increase of immigration both from the local centre (in a trend of suburbanization) and from non EU countries.

Increase in traffic (private cars) is strong, because activities and services are mostly located in the centres. However, traffic is not as strong as in inertial scenario because a public transport services are good.

In spite of a general trend of concentration of services in the centres, local services (health, education, commercial, recreational) do not decrease as much as in the inertial scenario. They improve in quality so that, even if the centre maintains certain important services (the

hospital, for example), people living in the commuter areas can easily access to the services themselves (with heli-ambulance to reach the hospital).

Residential settlements are increasing, agricultural activities are decreasing and there is a renaturalisation of slopes. Landscape planning plays an important role in order to avoid deterioration. Some old buildings (farms) are renewed and used as residential buildings.

Touristic activities are very few or completely absent because generally there are no touristic attractions. These areas sometimes play the role of recreational areas for leisure activities of the population of the centres, such as day-trips, biking, etc. Some activities that need much space (golf, orienteering, …) could settle here.

As in the inertial scenario, some changes in the local identity occur.

4.2.2. The scenario of peripheral areas

The peripheral position of an area usually lead to many difficulties due to the lack of services and to the distance from the development poles. On the other hand, in the "towards sustainability" scenario, in some cases the peripheral position could become a resource: soft tourism, multifunctional agriculture, protection of nature and/or other activities could give a good chance for development to these areas if wilderness and remoteness are exploited as resources.

Sometimes not the potential but the ability to use the own resources makes the difference among abandonment peripheral areas, steady or growing areas. Actually we can assume that some abandonment peripheral areas facing negative trends since 1970ies probably will not overturn their situation.

From this point of view, marginal areas can be divided into three types:

(1) Growing peripheral areas (poly- or mono-functional)

(2) Steady peripheral areas

(3) Abandonment peripheral areas.

(1) (2) Growing and steady peripheral areas

Local attitudes and specific contexts seem to be extremely important to make a community turn both to a steady or to a growing situation. Concerning the geographical context, integration between steady and growing areas leads to a widespread development. For example, polifunctional-growing areas could help steady areas to improve because usually development influences a bigger territory.

It must be assumed that steady or growing polifunctional centres could exist most of all if they develop a variety of roles and use many different resources to meet different external demands for goods with a differentiated internal supply. In almost in every case tourism could be one of the important resources. Mono-functionality can occur, but often it represents a weak situation and it runs the risk of stagnation or decline.

These areas are steady or growing in dependence on their resources and on endogenous and exogenous initiatives to promote them, but also in dependence on their history and on

their past trends. Some of these areas, for example, could have been touristic areas in the past decades but their low altitude changes their vocation: they can go on growing if they develop other resources or other kinds of tourism (different from specialised ski tourism); they slow down their development if they don't look for new development options. On the other hand, abandonment peripheral areas can turn to steady areas (and perhaps also to growing areas) if they find a way of using their remoteness and wilderness as a resource.

The steady areas are located in the valley floors whereas growing peripheral areas are more often situated on the slopes above.

They correspond mostly to G or sectorial development types sometimes to the PE and P types identified in WP2.

The growing areas are characterised by the presence of some small centres specialised on one particular local resource (handicrafts, cattle-breeding, …) or, more probably, on many resources (including tourism). So they are increasing in number also in population whereas steady areas have no increase in population and in settlement areas.

Growing peripheral areas instead show an increase of settlements because of some new small enterprises and tourist infrastructure, and because of new residential settlements (generally small and scattered villages in typical style, large and scattered separate farms, sprawl).

Ageing is at national average in growing areas, or above in steady areas.

The number of working places remains constant or increases. The structure is varied: agriculture, forestry, small craft, wood processing, tourism, basic services. Jobs will be characterised by flexitime, mobility, in and out commuting (more in-commuting in growing areas).

Other infrastructures, especially roads, are improved; some new forest ways and tracks are made, but traffic does not or just slightly grow due to the increasing number of inhabitants and commuters.

Services for local population develop according to the general trend, but they are not closed down; there is an increase of privatisation in public services and an increase and improvement of public transport because of policies with the aim to reduce private motorisation. Improvement of commercial and recreational services (i.e. alternatives to winter tourism, strengthened co-operation with agriculture, gastronomy and handicraft) can be observed, too.

Tourism plays an important role in the development of these areas. The existing facilities (mountain huts) and infrastructures are improved through new investments, also with regard to a good ecological performance.. New kinds of soft and sport tourism offers (i.e. agritourism, hikers and bikers) lead to more overnight stays as well as to higher income, in particular in hotels or in private houses, in spite of the brief touristic stays (weekends, long-weekends).

Agriculture decreases less than in the inertial scenario, but some new initiatives will bring specialised farming and breeding together with traditional agriculture. In connection with tourism, new labels, marketing, strengthening of biological production and of local high quality products can be of great attraction.

Land use does not face big changes. Some conflicts among tourism, agriculture and small industries are managed better than in the inertial scenario, and careful planning reduces landscape deterioration, as well as pollution problems, especially waste disposal.

Identity, cultural heritage and the well managed landscapes are trademarks of these areas, in fact the environmental and landscape policies improve and consciousness of environmental resources is increasing.

(3) Abandonment peripheral areas

The distance from local centres and "alpine remoteness" in general are not the only elements that destine an area to carry on its marginality, it is a more complex set of circumstances; however the decline of these areas is less intensive than in the inertial scenario and a lower number of communities belongs to this cluster.

The communities of these areas correspond to P development types, or in some cases to G or sectorial types.

These areas are losing population (with negative migration balance and strong ageing), working places (with high flexitime, mobility and out-commuting in the jobs), settlements and services. Most of these areas have been facing crises since some decades, and show the effects of previous abandonment. Infrastructure remains more or less the same, and there will be the same amount of roads and traffic and an increase in traffic passing through to the touristic centres.

Even if now the new "wilderness" could represent a resource, the economic structure and the social network are almost completely disrupted, and new ways for development would need strong exogenous interventions.

Policies aimed to centralise services and to reduce public expenditure on welfare lead to a strong decrease of services (health, school, shops, social leisure, …) and tourism (because of few touristic attractions), but less than in the inertial scenario ICT trends (tele-working e.g.) present some new possibilities for revitalisation of marginal areas, but it seems to be difficult that these opportunities could prosper in a community that has also lost its own social network vitality, as well as regional trademark or label identity.

Tourism is mostly transitory, which means that the tourists pass through these areas to reach the main touristic destinations.

Concerning agriculture, some part time farming remains with a very low integration with tourism. Forests increase, arable land, intensive grassland and settlement areas decrease, extensive grassland remains the same or increases. The amount of land use conflicts decreases because of absence of strong economic interests. Pollution remains the same, although more air pollution due to traffic can be expected. Some natural hazards (landslides) are potentially dangerous, but there is an improvement of planning of protected areas and better management of "wild" areas, even if the promotion of local cultural and environmental resources is quite marginal.

Looking towards sustainability from a wide point of view (including social, economic and environmental factors) and on a regional scale, abandonment peripheral areas have to be

considered not strictly and not only as areas with disadvantages. They have to be considered also as important tesserae of a wider sustainable mosaic, in which wilderness areas are as important as economic development areas.

4.2.3. The scenario of touristic areas

The "toward sustainability" scenario for touristic areas depends on different driving forces: main climate trends as global warming lead to reduction of snow, and so tourism of winter sports shifts to the areas at higher altitude, but the areas at lowest altitude could become important for "soft" tourism and agritourism, linked to other economic activities (i.e. agriculture, handcraft). So, even if there is a quite strong development of tourism in the whole alpine area, we can imagine that specialised touristic areas do not increase in number, perhaps they decrease. Actually, in growing and stable peripheral areas tourism is increasing its importance.

In mono-functional touristic areas population is constant or increasing, in particular in the high seasons because of the number of working places in the touristic sector; in-commuting is typical of these centres, and also non EU workers are in-commuting.

These communities correspond mostly to T development types, and to G or DS, too.

Settlements remain the same in size or increase; new residential settlements are built and many buildings are rebuilt in a traditional way. Cultural heritage has great importance for the tourism sector as well as for preserving local identity.

Tourism remains the most important employment sector; the number of touristic jobs increases and remains almost the same in others sectors. The road network remains the same but it is improved and there is a change in use of forest roads for touristic aims. Some slight increase of traffic can be expected. In many touristic centres car traffic will be limited or even prohibited.

Tourism shows an increase in quality, orientating towards sustainable tourism. Touristic beds increase more in hotels than in second houses and the distribution of overnight stays is more balanced over the year Improving of existing infrastructures is more frequent than building of new ones.

But there are strong seasonal differences in the "vitality" of the centres, even if less than in the inertial scenario: residential population is a small part of the population that arrives in the high tourism seasons, and also services and recreational activities are present only in some periods of the year. It causes some problems leading to new measures like, for example, to fix a maximum number of arrivals: "quality" of touristic supply should prevail on its quantity.

Some kinds of agriculture activities are increasing, in particular environmental services. Together with tourism, agriculture maintains the meadows and promotes local products on the market.

Forest area as well as intensive and extensive grassland remain almost the same; arable land decreases, settlement area is constant or increasing, causing some conflicts among tourism and environmental aims, although landscape is recognised by everybody as one of the most important touristic resources.

Seasonal problems with pollution still can be observed, although less than in the inertial scenario.

Policies and instruments concerning environment, landscape and nature protection improve in these areas, as consciousness of environmental resources is increasing. Cultural heritage and natural resources are promoted. Other policies aim to maintain the peculiarities of these areas and to avoid the risk of a standardisation following “urban” models.

Tab. 10: Towards sustainability scenario

Sector	Indicator	Areas at the centre of polarisation			Peripheral areas			Touristic areas
		Local centres	Commuter areas with own activities	Commuter residential areas	Growing peripheral areas	Steady peripheral areas	Abandonment peripheral areas	
Number of communities belonging to the cluster		The same number or little changes, but belonging to different hierarchies	Constant or increase more than residential commuters areas	Constant or increase	Increase specially because areas at lowest altitudes profit from "new" touristic (soft-tourism), agricultural (bio-agriculture) and industrial (handicrafts sector) resources now successfully combined. They profit also from their remoteness and wilderness		Less than in the inertial scenario	Constant or decrease (with respect to 2003 and to the inertial scenario)
Development Trends (WP2)		LZ (AZ, PE)	PE, G, D, P	P	G, sectorial, PE	G, sectorial , PE, P	G, sectorial, P	T, (G, DS)
Population	Total population	Constant or increase	Constant or increase more than in the inertial scenario and than in the commuter residential areas; the most growing area	Constant or increase more than in the inertial scenario	Light increase	Constant or light decrease	Decrease	Constant or increase
	Ageing	Ageing at national average	Ageing (generally less than national average)	Ageing at national average	Ageing at national average	Ageing more than national average	Ageing more than national average	Ageing as national average
	Migration balance	Slightly positive because of more working possibilities and better quality of life	Positive because of more working possibilities and better quality of life	Balanced or positive because of low cost of residential building and better quality of life than in the local centre	Slightly positive	Little moving in and out	Negative	Constant (the high costs of life cause a negative rate, but the increase of working places cause a positive rate)
	Immigration from outside of EU	Constant	Constant or increase because of more working possibilities	Constant or increase because of low costs of residential building	Constant, or light increase due to more working possibilities	Constant	Very few (very few working activities)	Constant; non EU workers increase but they are probably in-commuters more than residential people
	Density of population	Less than in the inertial scenario	Constant or increase (in some places more, in other places less than in the inertial scenario)	Constant or increase more than in the inertial scenario	Constant, definitely lower than national average		The lowest in the alpine space (but slightly higher than in the inertial scenario)	Density will be very different according to the season, from very low in "dead" seasons, to very high in high seasons. These differences will be less evident than in the inertial scenario

Settlements	Residential settlements	Constant or increase	Increase	Increase	Increase	Constant or light increase	Constant, but with many vacancies and under-used settlements	Increase
	Productive settlements	Constant or increase	Increase	Constant	Increase	Constant or light increase	Decrease	Constant or increase
	« Quality » of settlements	High density of settlements (but less than in the inertial scenario); some traditional settlements are renovated, but in some cases urban models prevail on traditional models	High density of settlements (but less than in the inertial scenario); residential settlements mostly in typical building style, supermarkets and productive buildings sometimes modern / atypical; town centre compact, urban sprawl to a small extent; some apartments buildings and holiday houses; renovation of traditional settlements	New apartment buildings and family houses,; single-family homes dominating, renovation of traditional settlements	Improvement and renewal of traditional building for residential and touristic aims		Evident signs of abandonment of traditional settlements	Renewal of traditional building for touristic aims, new buildings fitting well to the traditional architectural style/cultural landscape
Economy	Working places	Increase (services, handicraft, little industry)	Increase (services, handicraft, little industry, tourism)	Constant	Constant or increase (strengthen of "low industrial" sector, agricultural, breeding and tourism)		Decrease	Increase in touristic sector, constant in others
	Gdp per capita	Increase	Increase: more opportunities to use endogenous resources for development	Constant or increase	Constant or increase: more opportunities to use endogenous resources for development (governmental and non-gov. funds)	Different trends can be recognised in these areas, where economy either is stable, or is facing crises coming from a growing trend, or is beginning a growing trend after a crisis	Decrease	Increase
	Size of public expenditure	Slight increase, but more selective expenditure	Increase, but more selective expenditure	Constant or slight increase, but more selective expenditure	Increase, but more selective expenditure		Constant or decrease	Constant or increase, but more selective expenditure
	« Quality » of jobs	Mobility, in-commuting, flexibility	Mobility, in and out-commuting, flexibility	Mobility, out-commuting	Flexibility, mobility, in-commuting	Flexibility, mobility, in- and out-commuting	Very few activities, out-commuting to the growing peripheral centres	Flexibility, high seasonality, in-commuting
	Telecommunication systems	Increase: upgrading of infrastructures, more intensive and diversified uses			Increase: upgrading of infrastructures, more intensive and diversified uses		Constant	Increase: upgrading of infrastructures, more intensive and diversified uses
Infrastructure	Rail network	Constant; increase of capacities only in the areas involved in ten, improvement of the exiting network			Constant, ten is not relevant for peripheral regions; even in a sustainability scenario it is likely that investment in rail infrastructure is concentrated in central regions			Some secondary sections that were abandoned could be renewed; others could be transformed in cycle tracks.
	Road network	Constant or increase and mostly improvement of the existing network			Constant, preservation of main roads, improvement of existing network; increase of forest roads and of tracks, changing of use of forest roads for touristic aims		Constant, some deterioration of the existing network (secondary roads) is possible	Constant or increase, improvement, changing in use of forest roads for touristic aims

	Energy: systems of production and transport	Constant or increase of transport network, increase in use of local sources (biomass), increase of measures for saving energy			Increase of transport network Strong increase in use of local sources (biomass) Increase of measures for saving energy		Constant	Increase of transport network, increase in use of local sources, increase of measures for saving energy
Traffic	Motorisation	Constant or increase	Constant or slight increase of private cars (but less than in the inertial scenario)		Increase of private cars (less than in the inertial scenario)			Slight increase, due to use of private cars, but some village centres are reserved for pedestrians
	Road traffic	Constant or increase, but less than in the inertial scenario			Increase due to more inhabitants, more commuters and local activities	Increase due to more inhabitants, more commuters and local activities	Slight increase	Increase due to more inhabitants, more commuters and local activities
	Rail traffic	Increase			Decrease, but not as much as in inertial scenario			Constant or increase
Services for residential population	Public services	Constant or increase	Constant, increase in efficiency, privatisation	Constant or decrease, privatisation	Decrease as general trends; increase of privatisation		Strong decrease (but less than in the inertial scenario)	Constant or decrease
	Commercial services	Increase	Constant or slight increase	Constant or slight increase	Constant or slight increase	Constant	Decrease (less than in the inertial scenario)	Constant or increase (some problems concerning seasonal services)
	Recreational services	Constant or increase			Constant	Constant or decrease	Constant (increase of quality, but quantity constant)	Constant (improvement of quality) or decrease
	Public transport services	Increase and improvement	Constant or increase because of growing importance of these areas and because people have to move to the local centres	Constant or increase because people have to move to the local centres	Slight increase due to policies aimed to reduce private motorisation	Constant or light decrease	Constant or decrease	Constant or slight increase
Tourism	Touristic beds	In some cases constant or decrease because of one-day or weekend holidays; in other cases increase and improvement of b&b in private houses	Constant or increase; soft tourism could develop	Constant or decrease because of few touristic attractions	Constant or increase; soft tourism could develop (agritourism, promotion of local products)	Constant or increase, depending on the resources used for development	Decrease because of few touristic attractions	Constant or increase, more hotels than second houses; less than in the inertial scenario
	Overnight stays	Constant	Constant or increase; increase might be possible due to new touristic offers such as “farm holidays”, “wellness- holidays”	Constant or decrease				Increase less than in the inertial scenario
	Touristic infrastructure	Constant, improved quality	Constant or increase because of development of soft tourism; improved quality	Constant	Constant or increase, improvement of the existing ones		Decrease	Increase less than in the inertial scenario, improvement of the existing ones

	« quality » of tourism	One day; cultural and business tourism, all season tourism	Hotels and bed & breakfast in private houses; all season tourism; brief or medium periods; soft tourism; skier commuting, families, pensioners, hikers, bikers	Scarce transit tourism; skier commuting, families, pensioners, hikers, bikers	Second houses are present since last decades; new kinds of tourism prefer hotels or bed and breakfast in private houses and farms; wellness, health and sport proposal; weekend, brief periods as well as medium periods; winter and summer mostly; "soft" tourism, reorganisation of ski tourism where snow cover is not sure, hikers, bikers		"transit" tourism	Second houses and hotels accommodations; winter more than summer, but the trend is to "lengthen" touristic seasons; medium periods and weekends, according to general trends; ski tourism; tracking and climbing in summer; development of "soft" tourism
	Integration with agriculture	Marginal	Increase of agritourism	Marginal, in some places Touristic use of some alpine pastures	Increase	Increase	Constant, but at a very low level	Increase
Agriculture	Number of enterprises	Constant or decrease	Constant or increase; in some places maybe a slight decrease (less than in the inertial scenario)	Decrease less than in the inertial scenario	Constant, in some places maybe a decrease, but not as much as in inertial scenario		Decrease	Constant, agriculture can be an important secondary resource in these areas for maintaining cultural landscape and for agritourism
	Full time / part time	Mostly part time; full time enterprises of specialised and organic farming	Increase of part time; full time in specialised or biological agriculture, or agritourism	Increase of part time; slight decrease of full time but less than in the inertial scenario	Mostly part time, but also few full time enterprises in some initiatives (breeding, biological agriculture)		Part time	Mostly part time, few full time for new biological and high quality local production
	Livestock production and plant production	Constant or decrease	Constant or in some places increase because breeding could be one of the new resources to be used	Constant or decrease	Constant, in some places may be an increase		Decrease	Constant or decrease
	« quality » of agriculture	Policy interventions to avoid intensification	Strengthen of biological production and development of multifunctionality of primary	Increase of re-naturalisation of slopes; "residual" agriculture"	Strengthening of biological production and of local high quality products; development of multi-functionality of primary sector and of environmental services		"residual" agriculture	Increase of biological agriculture and mostly of environmental services.
Land use	Forest area	Constant	Constant or increase	Constant or increase	Constant or light increase		Increase	Constant
	Arable land	Constant	Constant	Constant or decrease	Constant or decrease		Decrease	Decrease
	Intensive grassland	Constant	Constant	Constant or decrease	Constant		Decrease	Constant
	Extensive grassland	Decrease, marginal	Constant	Constant or decrease	Constant or decrease			Constant or light decrease
	Settlement areas	Constant or increase	Increase		Constant or increase	Constant	Decrease (abandonment of peripheral settlements)	Constant or increase
	Land use conflicts	Decrease and better management than in the inertial scenario, some problems with increased traffic and infrastructure interventions; conflicts avoided by stronger EIA legislation	Decrease and better management than in the inertial scenario, introduction of local planning policies to avoid landscape deterioration	Decrease; conflicts avoided by planning regulation	Decrease: occurring conflicts are well managed by spatial planning; higher consciousness of environmental resources as basis for tourism, agriculture and industrial development; introduction of local planning policies to avoid landscape deterioration		Decrease: conflicts avoided by absence of strong economic interest	Landscape is recognised by everybody as one of the most important resources, but some conflicts can occur among touristic aims and environmental aims.

Environment	Pollution	Little improvement of water, air, soil's quality; measures to mitigate noise pollution.	Pollution is constant or there is a light decrease		More care towards territory, no increase of pollution in spite of the slightly higher density of activities		Constant or in some places no pollution or waste disposal problems because of low density of settlements and of population	Seasonal problems about pollution but less than in the inertial scenario. Problems of pollution of soil because of artificial snow
	Waste disposal	Up-to-date waste management system			Some problems of waste disposal			Seasonal problems of waste disposal
	Biodiversity and ecological features	Slight loss of biodiversity	Loss of biodiversity less than in the inertial scenario, arrival of new species		Loss of biodiversity and of rare types of grassland less than in the inertial scenario, less arrival of new species			Changes due to global warming, arrival of new species
	Protection of nature	Improved policies and instruments to protect nature outside protected areas, better care for green areas within the urban structure	Increase of protected areas, co-operation with agriculture and tourism, improved policies and instruments to protect nature outside protected areas	Improved policies and instruments to protect nature outside protected areas, better care for green areas within the urban structure	Increase of protected areas and natural parks; increase of policies to protect nature and landscape	Probable more exploitation and improvement of environmental resources	Improvement of planning of protected areas; better management of "wild" areas	Increase of policies to protect nature; increase of protected areas and natural parks; improvement of policies and instruments to protect nature outside protected areas
	Natural hazards	Risk of floods and landslides	Deterioration of landscape is possible especially due to residential and productive settlements, but the risk is lower than in the inertial scenario	Risk of floods and landslides	Risk of landslides (but less than in the inertial scenario)			Risk of landslide, floods and avalanches
Promotion of local cultural and environmental resources – local identity, local pride	Regional trademarks or labels	Increasing interest on them, more than in the inertial scenario	Strong increase Creation of a label for agricultural quality products; Local cultural and environmental resources used for tourism marketing	No special interest; creation of a label for agricultural quality products; Local cultural and environmental resources used for tourism marketing	Strong increase: cultural heritage and environmental resources are promoted for touristic, environmental and industrial aims; Constant number of cultural and leisure clubs; co-operation and networks among the municipalities and the existing projects.		Marginal	Strong increase: cultural, heritage and environmental resources are promoted for touristic and environmental aims; high altitude touristic areas tend to standardisation, in some cases avoided by special policies
	Local activities (cultural or leisure clubs)	Increase	Many initiatives to promote; constant number of cultural and leisure clubs	Constant initiative, constant number of cultural and leisure clubs				

5. CONCLUSIONS

The main question to answer is: what will the Alps look like in 2020?

The attempt reported in this paper, was not to define simplistic pictures and future scenarios of the alpine space, but to go deep inside the complex set of driving forces and factors that are influencing spatial development trends and landscape changes; in addition, the big geographical differences within the alpine space lead to define not one homogeneous scenario, but a complex territorial mosaic in which very different "tesserae" play different roles.

The mosaic can be looked at with different geographic scales, in order to point out its features from local to regional and to macro-regional level. Moreover, the clustering models presented above allow to take into consideration also tesserae of little spatial dimensions: they maybe represent some "hot spots", which have great importance for the local or regional development trends (for example: "isles of decline" in otherwise flourishing areas or – *viceversa* – "isles of growth" in declining areas).

In the towards sustainability scenario this mosaic should be better organised and different tesserae (corresponding to the areas belonging to the different clusters), belonging both to "more positive" and to "more negative" development trends, should integrate each other in a reciprocal interdependency.

As resources in the Alps are quite scarce and scattered and the inconveniences of "alpine remoteness" are a matter of fact, the polarisation trend towards some centres of growth seems to be quite unavoidable. This trend, if it is controlled and if it is not too strong, has some sustainable economic and social aspects. First, the concentration of services can limit their costs and help to retain favourable level of service at least in middle sized local centres; secondly, cultural and recreational opportunities as well as intense human relationships help to build a strong social network.

On the other hand, the presence of "less favoured" areas with abandonment trends and very few resources, should be looked at in a not completely negative perspective, even in terms of overall sustainability. The wilderness of alpine remote abandonment areas could play a very important ecological role in the future.

The metropolisation trend shows some critical aspects: On one hand it is a way to go beyond the "isolation" of the alpine area and to be included into the global economy as well as into global cultural exchange. On the other hand in this globalisation process there is the risk of an important loss of local identity; the Alps have many typical features (different from those of the surrounding European areas) that have to be considered in each the development initiative to exploit local resources and to manage cultural landscape change.

Tourism shows critical aspects too: two different kinds of touristic areas will probably develop (considered mostly as two extreme situations of a continuum) in all scenarios, even if with different

peculiarities and different spatial extension. On one side high altitude touristic centres will keep their importance, strictly linked with winter sports or other typical "alpine" sports (hiking, climbing, etc.). On the other side traditional settlements where a certain pastoral type of landscape and image will be maintained – mainly by subsidies – will become a sort of "destinations of spectacle", with the intention to preserve the cultural landscape as a tourist attraction as well as in the name of cultural heritage preservation. Critical aspects can arise in both these touristic areas if external inputs (both cultural and economic) are much more substantial than internal ones, with the risk of building "untrue" landscapes (based on the demand and on the perception of the townsman) and of depending too much on external economic situations.

From a methodological point of view, it is important to underline the reciprocity of the "theoretical" and of the "applied" approaches as well as of the "global" and "local" vision that were used in the scenarios building process. As a matter of fact, the theoretical proposition of the clustering models has been compared and verified through the application to the "real" situations (the pilot regions), as well as the scenarios for total Alps comes out as a sort of "average" from the different regional scenarios. Regional scenarios reports (Annexes from 2 to 8) are in this sense an integral part of this report.

Finally, the analysis of WP4 gives an important frame of reference to look at the future of the Alps, considering them as a whole, or only single parts or regions. As an intermediate result of the REGALP project, it can usefully help to define suggestions for policy makers in WP6, mostly because it identifies forces and factors, which have to be taken into account by public policies.

6. REFERENCES

CAFARO P., SCARAMELLINI G. (eds.) (2003): Mondo alpino: identità locali e forme d'integrazione nello sviluppo economico: secoli XVIII-XX., Milano, Franco Angeli.

BÄTZING W., PERLIK M., DEKLEVA M. (1996): Urbanization and depopulation in the Alps, Mountain Research and Development, vol. 16, No. 4, pp. 335-350.

DIAMANTINI C., ZANON B. (eds.) (1999): Le Alpi. Immagini e percorsi di un territorio in trasformazione, Temi Editrice. Trento.

EUROPEAN COMMISSION – JOINT RESEARCH CENTRE – INSTITUTE FOR PROSPECTIVE TECHNOLOGICAL STUDIES, POLICY RESEARCH IN ENGINEERING, SCIENCE AND TECHNOLOGY, CM INTERNATIONAL, SVILUPPO ITALIA S.P.A. (2001): Practical Guide to Regional Foresight, Report EUR 20128 EN. Seville, Manchester, Boulogne, Roma.

MUSOVIČ Ž.; PFEFFERKORN, W.: (2003) Work Package 2 Report. Analysing the interrelation between regional development and cultural landscape change in the Alps. Regional Development and Cultural Landscape Change: The Example of the Alps. Evaluating and Adjusting EU and National Policies to Manage a Balanced Change. Vienna.

REGALP-TEAM: (2003) Work package 4 Scenarios 2020. Task 4.2 Macrotrends influencing regional development and landscape change. Regional Development and Cultural Landscape Change: The Example of the Alps. Evaluating and Adjusting EU and National Policies to Manage a Balanced Change. Vienna.

SCARAMELLINI G. (ed.) (1998): Montagne a confronto: Alpi e Appennini nella transizione attuale, Giappichelli Editore. Torino.

7. MATERIALS

Annex 1: Macrotrends Reader

Annex 2: Regional Scenarios Wipptal (A)

Annex 3: Regional Scenarios Lower Tauern (A)

Annex 4: Regional Scenarios Visp-Saastal (CH)

Annex 5: Regional Scenarios Le Trièves (F)

Annex 6: Regional Scenarios Isarwinkel (D)

Annex 7: Regional Scenarios Carnia (I)

Annex 8: Regional Scenarios Upper Sava Valley (Slo)