

# Workshop Restart IENE

9 – 12 April 2008

## Re-start IENE Workshop



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### **IENE**

'I': network of infrastructure, local, regional, national and international

'E': ecology; network of nature

'N': network of involved institutions, authorities, .... better: network of people

'E': Europe → new countries

## **1 Introduction**

**Infra Eco Network Europe (IENE)**, established in 1996, is a European network of authorities, institutes and experts involved in the phenomena of habitat fragmentation caused by the construction and use of linear transport infrastructure, especially motorways, railways and canals (waterways).

The organization stimulates the mutual cooperation and tries to promote the exchange of knowledge between the sectors of environment and transport infrastructure; both on a national and on an international level.

The general aim of the IENE is to promote an efficient, sustainable and safe pan-European Transport Network supplying measures to maintain biodiversity and reduce the amount of traffic accidents and collisions with fauna.

IENE addresses decision makers, planners and researchers as well as the public. Till 2003 experts from 21 European countries were actively involved in the activities of IENE.

IENE promotes international and multidisciplinary research in the field of transportation infrastructure and nature. In this context, the IENE was the applicant of the COST 341-project (Habitat Fragmentation due to Transportation Infrastructure). It was a new action in the framework of the COST (Cooperation in the field of Scientific and Technical research) program of the European Community. This European program aims for coordination of national subsidized research, striving for an exchange of information on international scale. The action started in 1998 and run for 5 years. The results were presented during an international conference in Brussels in November 2003.

The initiator of the COST 341-project was the Road and Hydraulic Engineering Division of the Dutch Ministry of Transportation, Public Works and Water Management. The project can be seen as one of the follow-up actions of the conference on "Habitat fragmentation, infrastructure and the role of ecological engineering", organised by the Directorate-General for Public Works and Water Management in the Netherlands in September 1995.

### **Current Situation (April 2008)**

Since the establishment of IENE in 1996 there have been several international IENE meetings, in different parts of Europe. The network has been coordinated by a coordination center, a steering committee and 21 national coordinators who coordinate the build-up and maintenance of the network of involved people in their own country. Although the contacts between some of the involved experts have still elements of a living network, the IENE-organization itself is now more or less dormant. One of the, most visible, consequences is that the website has not been updated since 2004.

At different occasions and from several sides members have underlined the necessity to activate the network again. Similar remarks and questions came from non-member countries, including requests whether it is possible to become an IENE-member. Such requests arrived especially from new member states of the EU, where many infrastructure projects are in the planning and/or construction phase.

In the last years a lot is going on:

New colleagues started working in governmental and private organizations, but also universities and NGO's got a task in the field of habitat fragmentation due to linear infrastructure. A broader international audience is connected to this discipline.

Many fauna passages have been constructed; and more will be built in the next future. New designs and new techniques for wildlife measures are developed and will be developed. And we notice that maintenance aspects demand for more attention.

Research provided new insights and innovative solutions, but new questions as well. Per example there is more attention for the human aspect around de-fragmentation. That means the joint use of fauna passages and the fragmentation for the use of the landscape by pedestrians, hikers and bikers. Scientific models provide new possibilities. Digital and equipment, DNA analyses and GPS give possibilities for more advanced techniques. And the exchange of knowledge is going on in the USA via the two yearly ICOET-conferences.

Again and again the question around money comes up; how to use opportunities to raise money. And related to that there is always the discussion with politicians and decision makers related to attention for the topic again and again.

→ So enough reasons to reestablish and activate IENE !!

### *Meeting in Hungary*

This all was reason enough to organize an IENE meeting in Hungary, on **9<sup>th</sup> April till 11<sup>th</sup> April 2008**, with the possibility to have an excursion afterwards. The venue has been chosen in Nyireyhaza in the east of Hungary; close by a new section of highways with several mitigation measures for fauna passages.

## **2. Aim of the workshop**

The meeting will be multi-functional. The main focus will be to reinforce and strengthen the IENE network. And that can be done by a welcome to new countries in the IENE network. Those new member states didn't participate before. As we noticed in several meetings of IENE and COST 341 the meetings are the engine for cooperation and actions. There you make new friends and see old ones; there you can check your ideas around new developments and new solutions and threats concerning the topic.

The goals for the meeting were:

- To come to an update of the state of the art report?
- To get answers on old and new questions
- To encourage each other
- To hear about new developments, and new measures, new techniques, new research results
- Are there needs for the development of new fields of work adjacent of our old field of working, such as human/social aspects of de-fragmentation

- To explore the possibility to organize every 2 years an 'international conference'
- To explore and start collaborative actions
- To hear about promising programs to get a more updated European review

### *Possible role of IENE*

IENE is a network for professionals working in the field of fragmentation of habitats and landscape due to linear infrastructure. Such a network functions as help for all involved to inform each other (active and/or passive). It helps to formulate common questions and issues to make steps in research, in political statements in national and in international perspective.

And IENE stimulates participants in implementing the found solutions.

IENE can help by initiating an EU-financed European wide research program to assess effectiveness of mitigating measures and identify critical factors that effect effectiveness

### **2.1 Program**

At first a short presentation of each country about the current situation related to habitat fragmentation due to linear infrastructure. This presentations are as pdf-files put at the updated IENE website.

Secondly what kind of research is going on? Monitoring wildlife passages: what has recently be learned?

Thirdly about the future of IENE:

- What about the coordination centre?
- What about (old and new) national coordinators?
- What about regular meetings?
- What about frequent (international) conferences?
- What about the website?
- What about our scope? Including human/social aspects of de-fragmentation?

### **2.2 Participants**

The meeting was only on invitation. A maximum of three persons per country were present. Those persons from one country were from different disciplines: transport or environmental policymaking, transport or environmental planning, science/research and consultancy.

In the appendices a list of participants is given.

### 3. National presentations

In this section a short overview of (some) highlights of the national presentations is given.

#### Austria

- First fauna overpass early 1990s.
- Ministry Directive (2006) “Habitat connectivity”, designing, construction, evaluation, control of functionality.
- “Wildlife protection” (2007); roads, railways
- “Amphibian protection along roads”
- Attempts to preserve/restore a regional corridor between the Alps and the Carpatians.

**Belgium;** 4 ecoducts and one is “ecoveloduct”. This is a former viaduct for cars that is adapted to an ecoduct with a bike trail.

#### Denmark

Several studies are presented, about the topics of Large Mammals collisions, efficiency of fauna passages, etc. Barrier effect is not perceived for the local authorities and media Challenges for the future (to be considered in the **IENE** topics) .

- Fragmentation of existing roads and the need for mitigation measures or habitat compensations
  - Effects of mitigation measures at population level
  - Development of objective models to assess fragmentation effects on conservation status of wildlife species
  - Maintenance, who has the responsibility and who pay?
  - Infrastructure construction can be new habitats for animals?
- EIAs are recognised as a useful tool, includes socioeconomics. Railways are not included. New guidelines for wildlife fencing are produced.
  - Studies on fauna passages on stat roads finished.
  - A model for evaluating connectivity may be developed.

#### Estonia;

- Moose kills ~ 200/yr
- Roe deer ~ 2000/yr
- Wild boar ~ 150/yr
- Plan to collect data on animal movement, mitigations measures, monitoring.
- 5 fauna passages up to now.

Want an interactive database for road kills, more attention to bigger animals (traffic safety), and more attention to endangered species

#### France

- 1 million km of roads (incl. private)
- approx. 10.000 km motorway built since 1970
- next 15 years; just a small evolution of national network
- Indicators; sensitive areas, protected areas
- Non-fragmented areas < 100 km<sup>2</sup>, total 106.705 km<sup>2</sup>
- Increased awareness last 3-5 years

- Biodiversity is one important reason
- Grenelle Roundtable
- + Fragmentation mitigation for 30 years
- + Good legal basis
- - management
- - connectivity

#### Future:

- Road kills
- Develop technical support
- Assessments
- 2008: new action plan for biodiversity

#### Germany

- Started with amphibian underpasses already in the 1970s
- Interlinking biotopes (Federal conservation Act)
- 2007: national strategy for biodiversity, Ministries for Environment + Transportation, working group on defragmentation
- 2008: recommendations for projects approval processes (SEA, EIA), model project in process
- 36 green bridges built, 8 under construction, and 33 planned to be built.
- 72 underpasses for wildlife
- 176 special overpasses over rivers/streams
- Challenge: evaluation of functionality
- German habitat networks; no longer needed to explain that defragmentation is necessary, but still a question of *where* to do it.
- Can define undissected areas
- Function of mobile “bioengineers”
- Functionality of measures in the light of climate changes.

#### Hungary

Agnes, National Infrastructure Development Ltd  
Miklos; no amphibians in dry tunnels

#### Ireland

- Public roads: 90.000 km
- Dramatical increase in transport networks
- 738 km new inter-urban routes before 2010.
- 850 km new roads before 2015.
- ADT 100.000 around Dublin
- National roads are approx. 6% of all roads, and carries ~ 46% of the traffic.
- 4-step process, the last is a post EIA evaluation study.
- Several guidelines concerning fragmentation (see: [www.nra.ie/environment](http://www.nra.ie/environment))
- Environmental operation plan
- Special species; lesser horse shoe bat, otter,
- Relocation of wetland habitats

- Not much in-house expertise

## **Italy**

Marco Dinetti, Serena Ciabò, Bernardino Romano

### ***Impacts, facts and data***

Today a significant increase in the length of transportation infrastructure and in the traffic is evident. The European policy expressed by the Trans European Transport Network (TEN-T).

Habitat fragmentation has been recognised as one of the most significant factors for the decline of biodiversity in Europe.

In Italy there are 6,532 km of motorways, 17,250 km of national roads, 151,570 km of regional and provincial roads and 670,000 km of local ones, and 19,472 km of railways.

277.1 km of roads are present (2.5% of available land) every 100 sq. km.

In Italy, the urbanisation that accompanies infrastructure is a main problem, which increases fragmentation, so that many factories and supermarkets are built close to the motorways.

Analysing Corine Land Cover Level 3 data the urbanized areas cover 4% of national territory (6% if we consider the altitude below 600 m a.s.l. and 8% for the altitude below 300 m a.s.l.).

Motorways and freeways also require the construction of other parallel roads, for local traffic and vehicle not qualified (bicycle, tractors, etc.).

The impacts of transportation infrastructure (roads, motorways, railways and waterways) are: land take and habitat loss, urbanization, modifications to microclimate and ecological conditions, hydro geological impacts, habitat fragmentation, “barrier effect”, “edge” and “corridor” effects, verge management, pollution and disturbance, wildlife mortality (collisions with windows, transparent noise barriers and other structures, trapping in drainage system, fauna-traffic collisions).

This last problem connected with road mortality is of particularly concern: an estimate has calculated an annual loss of over 15,000 animals in every Italian province, and for the avifauna the loss is 25 birds/km of road.

There was a research around road mortality.

Other than the costs for biodiversity, those for the human society are important: in the years 1995-2000 there were 2083 accidents with animals, and in the decade 1995-2005 human fatalities were 150 and human injuries some hundreds.

The mean damage to vehicles from accidents with ungulates and middle-sized animals is 370-2200 Euro.

### ***Policy instruments***

The General Plan for Transport (Ministry of Transport, 2000) recognizes the goals of environmental sustainability and the Kyoto agreement. The environmental target refers to relations between the infrastructure network and the national ecological network (parks, protected areas, corridors to keep connectivity) in order to conserve biodiversity.

The Biodiversity Convention was ratified by Italy with the law n. 124/1994.

The Habitats Directive 92/43/EEC (Nature 2000) is applied with the Italian Regulation D.P.R. 357 of 8<sup>th</sup> September 1997, and over 2000 sites of community importance (SCIs) were localized.

In the context of wildlife legislation, fauna (mammals and birds) is protected at national level (law n. 157 of 11<sup>th</sup> February 1992), and the government is responsible for damage caused by wildlife in the countryside.

Provincial administrations have the competence about the management of wildlife, and they are in some instances in charge of refunding people in case of vehicle-animal accidents (Judge of Città di Castello n. 96 of 30<sup>th</sup> December 1998 and judge of Perugia n. 92 of 27<sup>th</sup> April 1999), if warning signs are lacking.



Parma, Florence, Pisa, ecc.) have developed data-banks on the wildlife-vehicle accidents, in some cases with also the location of black spots. For management and administrative purposes, generally the programmes are only about the ungulates.

#### Other ecological studies

The University of Bologna has published studies on the behaviour of ungulates and the measures for preventing road accidents.

Some research has been made to establish the impact of the noise of motorways on breeding birds.

Prof. Bernardino Romano of the University of L'Aquila has proposed the use of a section of ecological occlusion by infrastructure (PDO) (Battisti & Romano, 2007).

The use of GIS was proposed especially in the context of the activities of the national working group on "defragmentation and infrastructure" settled by National Environmental Agency (APAT).

#### Awareness campaign

Some provincial administrations (i.e. Turin, Cuneo, Trient, Belluno, Modena, Pisa) and management offices of the protected areas (i.e. Ente Parco Naturale Laghi di Avigliana in province of Turin, Parco Regionale dei Boschi di Carrega in province of Parma) have developed monitoring programmes and awareness campaigns (poster, leaflet, conferences, warning sign, etc.), considering the involvement of the drivers and the general public very important.

The environmental societies and NGOs are active in this field, with specific campaigns and environmental education. For example, the Italian Society for the Protection of Birds (LIPU) launched the Project "*Natura spezzata*" (broken nature) to collect data on vertebrate mortality at man-made structures.

#### Warning signs

At present the national law allows only one warning sign (with the picture of a deer). This is widely used along the roads, even if the reaction of the drivers is not consistent.

#### Reflectors

Some regional and provincial administrations (i.e. Valle d'Aosta, Alessandria, Verbania, Bolzano, Trient, Bologna, Modena, Forli, Macerata, etc.) have installed reflectors along roads. The results about their effectiveness are quite different.

#### Fences

All the motorways are provided with metal fences along the verge (1.2 meters high).

In 1988-1990 fences were improved (1.75 meters high, and connected to bridges and viaducts) along motorway Carnia-Tarvisio (A23) in province of Udine, in order to prevent the accidents with ungulates.

The drift fences in plastic material created to protect a *Emys orbicularis* population along the SS 309 "Romea" national road (Delta of Po), based on a preliminary study on road mortality, have proved highly efficient at an accurate monitoring.

#### Fauna passages

In the years 1990-1992 four "green bridges" (60-800 meters long) and four tunnels (8 meters high and 8 meters long) were built-up along Carso motorway (A4) in province of Triest.

In the years 1990-1997 40 underpasses 2x2 meters, 5 meters long were posed along a 27 km tract of the national roads SS 13 and SS 464 (province of Pordenone) in order to allow crossing by hares.

Another good activity was made in the Ticino Regional Park (province of Varese), with the aim of crossing the barrier effect by infrastructure: in the context of the realization of the freeway SS 336 to connect Malpensa 2000 Airport with Malpensa North Airport, the best location of the alignment, planning of mitigation and compensation measures (underpasses and ecoducts) were provided. In particular, some ecological corridors by means of landscape bridge and ecoduct (180 meters width) were restored.

Other fauna passages were planned or built in Piedmont, Emilia-Romagna, Tuscany, Abruzzo, Campania.

Along high-speed railways some fauna passages are planned between Turin and Novara, and between Rome and Naples.

#### Complex programmes

The province of Modena has activated a project on fauna and roads since 1999 with the following activities: monitoring of accidents, collaboration between office and university, realization of conference, installation of warning signs (also some experimental, with the picture of the hedgehog), installation of 700 reflectors and chemical repellents, realization of tunnels and fences, documentation. The project "Fauna and roads: a possible coexistence" was commissioned by the province of Pisa to LIPU. In 1999 a first study of the road mortality of vertebrates along the national road SS 439 was carried out, and black spots were localized. An educational brochure and stickers were printed for people education. A workshop and a show of the Italian and European experiences were organized in the spring of 2001.

#### Local ecological networks and landscape defragmentation

The main initiative about the ecological network is the Project "ecological network monitoring" promoted by National Environmental Protection Agency (APAT), which takes origin from the "Habitat Directive 92/43/EEC", in order to study and identify useful elements on which to draw the policies of biodiversity conservation. Some workshops about the planning of the ecological networks in urban and rural areas were promoted (Milan, Catania, L'Aquila, Bari).

The Project LIFE EConet Emilia-Romagna was realized in the territories of the provinces of Bologna and Modena in order to plan local ecological networks.

Other projects for planning local ecological networks were developed in order to study the natural and cultural aspects (i.e. Parco del Ticino, Bosco di Mestre in province of Venice, municipalities of Bagnolo in Piano and Correggio in province of Reggio Emilia, basin of river Arno in province of Florence, Torre Flavia wetland natural park in province of Rome, and along the Appennines), for the best connectivity and the improvement of territorial planning.

Some regional, provincial and municipal local administrations have realized studies on biodiversity and ecological network plans in respect to news masterplan (i.e. municipalities of Biella, Milan, Reggio Emilia, La Spezia, Pisa, Rome, Naples).

#### Verge management and habitat restoration

The responsible for verge management is the management agency of the road, as far as the base of the slope (lower or upper).

Some woodland strips were planted along freeway of Mestre in province of Venice.

Other actions about ecological engineering are described in reports printed by the Province of Bologna and AIPIN.

The Project "Wildflowers" has the aim of restoring flower meadows on the road verges.

#### Projects for amphibian protection

This activity is one of the most widespread, and we give some examples.

The main Project is "Toads Lombardia", supported by Lombardia Region and started in 1990. The amphibians, rescued with the aid of volunteers (200 people in 1996) and ecological guards were 9000 in 1992 and 55,707 in 1996. Between 1990 and 2004 this project saved from traffic about one million of amphibians of 11 species. The recovery localities were 21, located into 7 provinces.

The Italian part of the Project Interreg III A Italia-Austria "Salvaguardia dell'erpetofauna nel territorio di Alpe-Adria" was coordinated by the Regional Government for Friuli-Venezia Giulia. The actions taken were monitoring and research, the mapping of the most important corridors for the spring migration of the amphibians, the restoration of breeding sites, the building of tunnel and manual rescue.

#### Actions for bird protection

Along some highways, roads and railways, and in some buildings there are transparent noise barriers and windows: these structures are very dangerous for the birds. Their localization is very important, as is the stimulation in respect to planners, designers and management agencies. This is useful in order to

avoid the use of transparent materials, to pay more attention in the planning phase, or to insert mitigation measures in the already existing situation.

In many cases the silhouettes (raptor) and vertical strips were used by motorway, national road and railway agencies. In the city of Modena LIPU has studied the optimum density of silhouettes in order to obtain the best mitigation effect (1 raptor silhouette/1,5 sq. meters of window = mortality decrease by 37-89%).

In many cases we work on panels that are already in place, therefore the use of silhouettes is more practical.

In this period however we are working with the principal companies in highway and railways management to study the most effective project strategies.

#### Fauna exits from waterways and fish passages

Some provincial administration (i.e. Bergamo) promoted activity for fish passages.

LIPU Venice near Marcon made an action about the building of fauna exits from waterways.

#### Compensation

In the new railway track Saronno-Malpensa a compensation measure was planned: 128,000 sq. meters are identified for a forest planting (a surface three times as great as the destroyed woodland).

One of the better compensation actions was taken by the motorway agency "Centro Padane": some new woodlots were planted near Ospitaletto-Montichiari in province of Brescia.

WWF Tuscany has promoted the restoration of a new network of little wetlands (for *Bufo viridis*, *Triturus carnifex*, *Triturus vulgaris*, *Hyla intermedia* and *Rana esculenta*) near the new University settlement in the Florence plain, as compensation measure.

#### Technical documentation

The first Italian technical manual on ecological planning of infrastructure was published (Dinetti, 2000).

The technical magazine "Acer" has hosted a column on ecological network (written by the Italian section of IENE), and has published some papers on road/fauna topic.

Other books have been written on the topic of ecological network, EIA and landscape planning.

#### Conferences

Some conferences were organized about the topic biodiversity and infrastructure.

The most important were: "Roads and fauna" (Modena, 5<sup>th</sup> May 2000) organized by Province of Modena; "Road infrastructure and biodiversity: environmental impacts and mitigation solutions" (Pisa, 25<sup>th</sup> November 2004) organized by LIPU, Province of Pisa, ARSIA and University of Pisa; "Wildlife and human activities: a possible coexistence" (Turin, 3<sup>rd</sup> April 2006) organized by Piedmont Region.

#### Regulation and administrative measures

The regional governments of Valle d'Aosta, Piedmont, Abruzzo, and the Province of Trient have allocated specific funds for animal-vehicle accidents economic compensation.

#### Participation at international initiatives

The paper "Pilot projects proposed by LIPU and local administrations in Italy" was given at the Group of Specialists of Council of Europe "Transport and Environment" (Strasbourg, 13-14<sup>th</sup> November 2000).

The Italian section of IENE Infra-Eco-Network-Europe, activated in 1996, is now co-ordinated by Marco Dinetti.

Even if Italy didn't participate in the European Project Action COST 341, some data were given to the coordinators, so that some Italian experiences were described in the reports.

Some cultural exchanges and trips were promoted with experts from Switzerland and the Netherlands.

#### Projects at national level

The main national Project was “Fauna/Traffic Safety” developed by LIPU in 2001-2002 with funds from the Ministry for Infrastructure and Transport. The realized activities were: a report, the inventory of scientific publications at international and national level, a pamphlet as awareness campaign for the people.

The Project has permitted the analysis of the Italian experiences: till 2002 141 activities were identified:

- 51 (36.2%) were practical actions
- 71 (50.3%) were initiatives
- 19 (13.5%) were actions for bird protection on noise barriers

107 (67.3%) initiatives were taken in Northern Italy, 49 (30.8%) in Central Italy, and 3 (1.9%) in Southern Italy.

The most frequent actions was the building of underpasses (n. = 54), the realization of fences (n. = 32), the application of silhouettes for bird protection (n. = 19), and the building of tunnels for small animals (n. = 12).

As for the initiatives, road mortality monitoring is the most common (n. = 42), followed by the planning of ecological networks (n. = 33), the actions of rescue of amphibians along roads (n. = 32) and the scientific research (n. = 27).

Unfortunately, at present this Project has been stopped because the new staff employed at the Ministry for Infrastructure and Transport has no more interest in this kind of collaboration.

#### Recent and important initiatives

The National Environmental Protection Agency (APAT)A settled a national working group on “defragmentation and infrastructure”. The aim is producing guidelines at national level.

The first Italian course on ecological mitigation for infrastructure was organized in 2006, with also the collaboration of experts from Switzerland and the Netherlands as teachers.

The motorway agency “Centro Padane” is the most active in its sector: a hedge of native shrubs was planted along the motorway near Cremona to reduce pollution and dust. Close to the headquarter a pond was created, and fauna monitoring and actions for bird protection were activated.

A viaduct was realized near nature reserve Orti-Bottagone (Piombino in province of Leghorn): this initiative was promoted by WWF Tuscany and realized by the Province of Leghorn.

Finally, the Report about the Italian State of the Art was published (Dinetti, 2008).

#### ***Problem perception***

The picture of the Italian situation shows a great ferment in the last years, especially about local activities: at present many programmes and activities at regional and local level have been proposed and activated, but the situation is so variegated and discontinuous, because often it is based on the direct awareness and sensibility of specific technicians or administrators.

In some cases (provincial administrations) there is the risk that road ecology policy is adopted only to protect themselves against damage claims due to wildlife-vehicle accidents with roe deer, red deer and wild boar.

At general level the situation is more or less stagnant, and the only national activity in progress is that promoted by APAT. The main responsibility for this is of the central government.

The main problem in the Italian context is the lack of a broad acknowledgement of the topic at wide level, the lack of specific laws and technical guidelines, the lack of coordination at scientific and technical level (with a systematic adoption of mitigation measures).

So in Italy not only is the landscape fragmented, but even the cultural assets of the local human communities: in a space of few tens km, the awareness can therefore change from “zero” (total absence of awareness and initiatives) to a developed and well done initiatives.

Often the perception of infrastructure problems concerns only impacts due to pollution. Authorities rarely consider the habitat fragmentation like an emergency to mitigate.

A deep cultural/historical aspect also exists: the classical Italian view of nature is one “domesticated”, with a formal style that reflects human order and control (see: Hall, 2000).

Now it is more and more necessary to explore other ways for the involvement and the cultural positive improvement of politicians (especially at national level), the administrators, planners, technicians as engineers and architects, but also people and drivers more in general, about the complex topic of the infrastructure/biodiversity relations.

### ***Emotion***

In Italy the success of habitat defragmentation basically is due to local initiatives. The biggest disillusion is the lack of real involvement by the central government.

### ***Future***

In countries like Italy, where defragmentation policy is deficient at the moment, is important the presence of “official” legal instruments (from EU) that impose to a member country implementing defragmentation policy and mitigation-compensation measures along the infrastructure.

IENE could immediately exercise its role by putting pressure on national governments in order to support its national network.

Actions to be taken in Italy are the following:

- ❑ more awareness has to be raised in the country
- ❑ a national policy and specific regulations about mitigation and ecological compensation in the infrastructure are needed, with particular emphasis on fauna/traffic relation
- ❑ guidelines at national and regional level should be given
- ❑ the existing passages, even if not built for fauna purpose must be improved
- ❑ there should be more coordination and cooperation between different sector, particularly between engineers and ecologists
- ❑ documentation of good practices is needed

### **References**

- Battisti C. & B. Romano 2007. Frammentazione e connettività. De Agostini Scuola, Novara.
- Dinetti M., 2000. Infrastrutture ecologiche. Il Verde Editoriale, Milano.
- Dinetti M., 2008. Infrastrutture di trasporto e biodiversità: lo Stato dell'Arte in Italia. IENE Sezione Italia.
- Ferri V., 1998. Il Progetto Rospì Lombardia. Iniziative di censimento, studio e salvaguardia degli Anfibi in Lombardia: consuntivo dei primi sei anni (1990-1996). Comunità Montana Alto Sebino e Regione Lombardia, Gianico (BS).
- Hall M., 2000. Comparing damages: Italian and American concepts of restoration. In: Agnoletti M. & S. Anderson (eds.). Methods and approaches in forest history. CABI, Wallingford, pp. 165-172.

### **Latvia**

- Via Baltica is a project with major impact on fragmentation and land use.
- State roads: 20.180 km
- Average density of roads: 1,1 km/km<sup>2</sup>, state roads: 0,3 km/km<sup>2</sup>.
- Railway: 2300 km.
- Population: 2,3 MILL
- Forest cover: ~ 50%
- 278 nature reserves.

Since 2003; 7 new bridges over rivers, 9 km with wildlife fences put up, but no monitoring up to now.

Future: ISPA-projects

**Problems:**

- Not enough warning signs or wildlife fences, fauna passages, pedestrian passages
- Not done any inventionation of barriers
- Little cooperation between sciences
- Little experience in implementation of wildlife overpasses.
- Not good/sufficient data on “black spots”

**Needs:**

- Improved regulations
- Stronger cooperation between specialists and sectors.

**Netherlands****Problem perception**

Habitat and landscape fragmentation is already recognized for a long time as an important reason for degradation of natural values. The role of linear infrastructure in this is evident for several groups in the Dutch society. Public, interested in nature issues, is interested. Several authorities, NGO's, scientists and practitioners are willing to pay attention to this. But it is not yet an embedded issue in all necessary procedures, cash flows and working schemes as it is for water management per example. Often it is one of the issues at overloaded agenda's and never the one with the highest priority. But at the other hand most people, decision makers and practitioners are not against activities to solve problems at this point. Often money is lacking for tackling defined problems

**Impact, facts and data**

The situation till 2000 has been described in the Dutch State of the Art Report for Cost activity 341 (June 2001).

The amount of car kilometres is increasing, especially when economical activities are increasing. The importance of infrastructure for all kind of development will ask for better solutions in mobility and this will be translated in reconstructions (i.e. widening) of motorways, railroads and provincial roads. Political more important at the moment are the mobility related issues as air pollution and water pollution.

At the moment there are high mortality collisions with ungulates (specially wild boar) due to the high population densities. And the more and more the mortality is mainly at the lower level roads.

**Policy instruments**

Habitat fragmentation has been recognised in the Netherlands at several levels and circumstances. The main bottom line in nature policy is the concept of the National Ecological Network (NEN). This has been formulated in 1990 and it has been strengthen by several European directives. Based at the concept of the NEN several steps followed. All kind of policy papers passed and still the concept is there and it has been translated in the field of habitat fragmentation due to linear infrastructure in some steps.

Concerning new motorways and by reconstruction of motorways de-fragmentation measures are part of the procedures; although there is discussion about the level of these measures.

For the existing national infrastructure 3 ministries (Nature, Transport and Spatial Planning) formulated the Long Tern De-fragmentation Program (MJPO); and this program is accepted by Parliament in 2005. Inside the NEN 208 problem points at the national infrastructure (motorways, rail and main network of canals) are identified to solve before 2018, the year the NEN will be realised. For this program 410M Euro is available. Many projects from the program are in progress now.

Measures at networks of lower level roads are not part of the Long Term Defragmentation Program. But by some provinces a program is active to realise de-fragmentation measures by new and existing

provincial roads. And the same is by some municipalities, often related to de-fragmentation measures around the higher level roads

More and more the fragmentation of the landscape for humans is an issue. People need space for outdoor activities as hiking, biking, horse riding and not to forget the daily walk with the dog or running. Infrastructure is often a barrier to reach the available space at the other side of the motorway. Use of ecoducts and other mitigating measures are discussed on effects of such co-use studies.

### **Practical solutions**

Most of the practical solutions, described in the COST 341 Handbook are installed in the Netherlands. Specific attention we paid to measures at (existing) civil works that are built for other functions to get a kind of co-use.

In the Netherlands we need solutions that fit in a wet and flat countryside, where space is lacking and where many people live per square kilometre. At one ecoduct in Noord Brabant (Groene Woud) there is included an innovative ‘wetland-zone’ for improving passages for amphibians. In a catchment the rainwater of the ecoduct is gathered and when this is not enough water is pumped up from the ground water. This water flows constantly down to both sides of the top of the ecoduct.

As specific measure is to mention a wooden passage for tree dwelling species built at a gantry for electronic signs to inform car drivers over traffic and road conditions.

For most of the bigger measures monitoring around the use of the provision is part of the deal, included the finances. The smaller ones have been monitored at use, mostly as a bunch of provisions. This was financed in specific projects.

### **Emotion**

In the process till now there were several successes / milestones. That was the first badger-pipe, later on the first badger-pipe by an existing motorway, later the first ecoduct over a new build motorway, later the first one over an existing motorway. Later again the very large landscape bridge organised by a local NGO. And of course the launching in 2004 of the Long Term De-fragmentation Program was a highlight as well.

But there were fallbacks. Good maintenance of the provisions is often lacking. Mistakes in design and construction occur.

Several time the public discussions (why a fauna passage in stead of a lowered train platform for elder people) , but also discussions among scientists (definitions; expert judgement against expert judgement, practical solutions against puritan ecologists), are disappointing.

### **Future**

Our biggest challenge at the moment is to keep the realisation of the MJPO at track. Therefore we need good information or prove about the functioning and effectiveness of the measures. All kind of questions needs an answer: are these used by target species, has the barrier effect decreased, are there less road victims, are the populations of target species safeguarded. Monitoring in a right way will be necessary to get answers.

Another important questions is whether recreational use of ecoducts and big underpasses is hindering the function for animals. And is this to specify for groups of species?

### **Norway**

Problem perception:

How is the issue of landscape fragmentation due to infrastructure recognised

- by the public,
- by administrative agencies
- by governmental authorities,
- by politicians,
- scientists,
- practitioners in the field of infrastructure management?

Are effects on

1. cultural heritage,
2. outdoor recreation,
3. land use and
4. landscape perception acknowledged at all
5. Habitat fragmentation/connectivity

and if so from a landscape perspective (or only restricted to designated sites)?

	1	2	3	5	Hab frag
Public	0	x	0	0	0
Admin agencies	x	x	x	x	0
Govern auth	x	x	x	x	0
Politicians	0/x	X	0	0	0
Scientists	0	X	x	x	x
Practioners	0	X	x	x	0

In general:

- anthropocentric
- case to case
- site specific

Impact, facts and data:

- How is the actual pressure on landscapes caused by recent infrastructure development (present state) and what is planned or can be anticipated in the next 10-15 years?
- What major changes in infrastructure have taken place since the COST-341 European review in 2003?
- What and where are the major present infrastructure threats to the environment?

Road density: 0,6 km/km<sup>2</sup> (all roads included). Highest pressure around the major cities, and in the south-east.

Future challenges:

- Increasing 2-lane to 4-lane roads, with median barrier.
- Planning/discussing high speed railways.
- Management of existing road network.

The recommendations of COST 341 are the basis for a nationally adapted Norwegian handbook, and the handbook has been integrated into the policies, guidelines and handbooks of NPRA. This has, supplemented by training courses, led to an increased awareness both in the in-house planning, construction and maintenance of roads, and among the environmental agencies. The result of this is that that habitat connectivity is now included in general SEAs and EIAs, and more passages for fauna are built. Project to project variation. There are still some struggles, but also very positive surprises.

*Policy instruments:*

No legislation.

New nature protection law is coming up, and with more focus on ecosystems and landscape ecology.

*Practical solutions:*

We are trying to follow the strategy of the COST 341 Handbook:

- Planning
- Minimization
- Mitigation
- But we are not doing much compensation

No new solutions.

Lack of monitoring and evaluation – lack of knowledge about the actual functionality.

2-year survey of selected measures 2008-2009.

Mitigation measures are as a rule financed through ordinary project budgets. Toll roads.

Harder to finance measures on existing roads.

*Emotion:*

Highlights/successes:

- Habitat connectivity is more and more recognised as a major environmental value.
- New projects have fauna passages included from the earliest planning phases.

Dissolutions:

- Still some struggles on some projects, fauna passages looked upon as extra costs.
- Difficulties with cooperation with other sectors (railway)
- Difficulties/problems with area use in adjacent areas, regional spatial planning
- Regional ecological infrastructure is not evaluated. How to prioritise between different measures or roads.

Future:

Main questions:

- Evaluation/monitoring of existing constructions.
- Development of more cost effective and targeted measures.
- The regional cumulative effects of infrastructure development.
- Evaluation of regional ecological infrastructure.
- The effect of median barriers on small and medium sized fauna.

IENE:

- Distribution of knowledge and experience.
- Arena for discussion, debate and development of tools and measures.
- Motivation.
- Applying for new European development projects.

## **Poland**

- Perception of problem, as in Norway
- Obligated to implement EU regulations on EIA procedures
- 2007 – 2013: 30% increase in traffic, 690 – 1778 km motorways, 300 – 2274 km express roads
- Habitat fragmentation is the biggest threat to viability of large mammals
- Wolf & Lynx Census; distribution and HSI (Habitat Suitability Index). DNA analysis of wolf scats, long distance migration of wolves, ecological corridors.

## **Landscape fragmentation by transportation infrastructure development in Poland**

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**Problem perception.** According to the general public opinion, which has been regularly reflected in a number of articles, media programs, and public opinion polls, the Polish government should as soon as possible build a dense network of high quality roads and railways for better connection between Polish towns and Western Europe. Most of the people are convinced that it is a main factor which can accelerate the development of the Polish economy and increase the life quality. Last Polish governments

were strongly criticized for the slow tempo of motorways building, and every new prime minister announce the road development as his government priority. Currently the process of road building seems to speed up. Generally the problem of the landscape fragmentation due to infrastructure development is differently recognized by various bodies and public. The public do not recognize the landscape fragmentation by transportation infrastructure as a threat for the landscape values or for the wildlife. People pay their attention only to these cases, when a project of a new road concerns a given community (new road will disrupt local human connections, or decrease attractiveness and prices of the land). Also politicians are mostly not interested or aware of problems of landscape fragmentation, they feel obligated to take a stand in, when it becomes serious ecological or social problem raised by environmentalists or local communities, and then widely discussed in media (e.g. Via Baltica or Rozpuda case). Administrative agencies and governmental authorities connected with environmental issues have to regularly deal with fragmentation, as they are obligated to implement appropriate regulations e.g. environmental impact assessment procedures set by the Environment Protection Act. We can observe a growing concern about landscape fragmentation amongst specialists involved in motorways and railways designing, as the number of proper projects of animals passages increased significantly last two years. The biggest knowledge on the problem have several scientific institutions and ecological organisations conducting various projects connected with habitats fragmentation in Poland, with a special attention paid to the ecological corridors, as well as to designing and monitoring of wildlife passages etc. (e.g. Jędrzejewski et al. 2005b, 2006; Pierużek-Nowak & Mysłajek 2007; Pierużek-Nowak et al. 2007).

**Impact, facts and data.** Until 2007, 690 km of motorways and 300 km of express roads were build in Poland. Polish government plans to extent length of motorways and express roads up to *ca.* 1 800 km and *ca.* 2 300 km respectively, to 2013. Hosting of UEFA Euro 2012 by Poland and Ukraine additionally accelerates development of the transportation infrastructure. The majority of Polish roads are adapted to the maximum axle load of 80 kN/axel or 100 kN/axel, and only 2190 km are adapted to 115 kN/axel. Poland is obligated, by the Accession Treaty, to upgrade 2500 km of roads to the axel load of 115 kN/axel. Between 2000 and 2005 overall traffic level grew 18%, especially in case of lorries with trailers (49%). The average traffic achieved 8.224 vehicles per day (v/d), on main roads 13.561 v/d. In 2005, on 55% of roads the traffic was over 6.000 v/d, on 12% roads – over 15.000 v/d. The main threats to the environment caused by linear infrastructure were defined for large carnivores populations (Jędrzejewski et al. 2004, 2005a, Niedziałkowska et al. 2006), and are mostly considered as serious difficulties in migration and dispersal of big predators due to disruption of ecological corridors by roads. Also animal mortality on busy roads is considered as a major problem.

**Policy instruments.** In Poland, there are three levels of spatial planing, set up by the Spatial Planing and Management Act, where the future development of infrastructure is reflected: 1) on national level – national policy of spatial management, prepared by the minister of regional development and accepted by the government, it describes conditions, goals an directions of sustainable development of Poland, activities to achieve it, and demands resulted from protection of environmental and historical values; 2) on provincial level – provincial plan of spatial management, compatible with national policy, which coordinates planned social and economic activities of provincial council, in circumstancens of environmental and historical values. This plan before acceptance should have an environmental impact assesment and should pass a wide procedure of varied opinion; 3) on community level there is a local plan of spatial management, which detailed describes all planned activities (also areas for infrastructure) and obligatory includes rules of nature , environment, and cultural landscape conservation. This plan is also widely consulted by different bodies and local community, preceded by some detailed studies and analyses, and should have EIA. The Spatial Planing and Management Act made rules for all development (also infrastructure) planning, with exception of transportation infrastructure. It means that procedures of new road planing can be simplified and shortened (do not require long procedures of changing local or provincial plans). The Environment Protection Act includes regulations concerning the environmental impact assessment procedures. They are widely implemented, especially for those investments, which have negative impact on environment and are included to a special list. Building of new motorways, expressroads and railways are recognized as such investments. The third document - the Nature Conservation Act includes regulations concerning protected areas (including national parks, nature reserves, Natura

2000 sites) and protected species of animals, plants and fungi. There are also special forms to protect landscape values - a landscape park, and "area of protected landscape", which can preserve a landscape values for tourism and recreation but also migration corridors for animals. Unfortunately ranks of these forms are low, especially when they set against the priority of the road infrastructure development. There are also some other notes which mention the ecological corridors protection, but they are general and difficult to implement.

**Practical solutions.** Extensive ecological studies on species of long-distance migrations and dispersals like wolf, lynx, moose and bison, genetic studies, analyses of factors preventing settlings and habitat suitability model for wolf population in Poland helped to define the migration corridors network which prevents habitat fragmentation in our country (Jędrzejewski et al. 2004a). There was also prepared for the Ministry of Environment a project of ecological corridors linking Natura 200 sites (Jędrzejewski et al. 2005b), and other corridor networks were developed (e.g. Econet). In two provinces compatible corridor projects have been also created (Pierużek-Nowak 2007). Due to strenuous efforts of Polish NGOs and scientists, which were involved in ecological corridors planing, and EIA procedures connected with roads, agencies responsible for the transportation infrastructure development started to pay bigger attention to the proper location od new roads, and building of wildlife passages, along already defined ecological corridors. Till the end of 2007, 182 wildlife passages (104 culverts, 13 underpasses, 20 overpasses and 44 integrated passages) were built on new roads, and 2 on railways (Pierużek-Nowak et al. 2007). Building of wildlife passages is financed mostly from EU sources, but also from private, when the road has such investors. Unfortunately, there is still a lack of monitoring system for passages, and very little is known about their efficiency. Recently, the first project of the wildlife passages monitoring system was developed for the Ministry of Infrastructure (Pierużek-Nowak et al. 2007).

**Emotions.** Having all experiences of western countries connected with the impact of transportation infrastructure on environment, Poland has a chance to avoid most of mistakes done in Western Europe. Currently Poland has one of the best developed project of ecological corridors for terrestrial animals in Europe. In many cases it serves as a good base for less harmful road planning, proper location of wildlife passages and other mitigation activities. But there is still lack of regulations which guarantee legal protection of migration corridors in Poland and implementation of the the corridor network into spatial planning proces. There is also a very poor concern of public opinion for landscape fragmentation, and efforts of environmentalist are mostly percived as activities which slow down the tempo of road planing and building. Such negative attitude toward environmentalists is raised also by many politicians and journalists, which strengthen society in these beliefs. Also Natura 2000 network is pointed as a main factors blocking road building. Big disillusion is connected with the national strategy of development for 2007-2013, which assume enormous expenditure for the development of transportation infrastructure, while funds for the counteracting of landscape fragmentation are disproportionately small. The same is with Polish budget.

**Future.** Poland should better implement the project of migration corridors into all levels of spacial planning and introduce efficient tools for ecological corridors protection to existing regulations. There is also necessary to introduce the monitoring of wildlife passages, which allows proper assessment of their efficiency. Furthermore the monitoring of wildlife mortality on existing roads and railways is required. Development of transportation infrastructure should be followed by extensive studies on the impact of landscape fragmentation on migration of animals, especially endangered species such as large carnivores. Long-term genetic studies of various species and telemetry with GPS collars would be essential.

Fast development of transportation network in Europe calls for joint efforts to plan the European network of ecological corridors and their efficient protection by European law.

#### References

- Jędrzejewski W., Niedziałkowska M., Nowak S., Jędrzejewska B. 2004. Habitat variables associated with wolf (*Canis lupus*) distribution and abundance in northern Poland. *Diversity and Distributions* 10: 225-233.
- Jędrzejewski W., Niedziałkowska M., Mysłajek R. W., Nowak S., Jędrzejewska B. 2005a. Habitat selection by wolves *Canis lupus* in the uplands and mountains of southern Poland. *Acta Theriologica* 50 (3): 417-428.
- Jędrzejewski W., Nowak S., Stachura K., Skierczyński M., Mysłajek R. W., Niedziałkowski K., Jędrzejewska B., Wójcik J. M., Zalewska H., Pilot M. 2005b. Project of ecological corridors connecting European

- Network Natura 2000 in Poland. Unpublished Report for the Ministry of Environment. Mammal Research Institute Polish Academy of Sciences, Białowieża. [in Polish]
- Jędrzejewski W., Nowak S., Kurek R., Mysłajek R. W., Stachura K., Zawadzka B. 2006. Animals and roads. Methods of limiting negative impact of roads on wildlife population. Second Edition. Mammal Research Institute Polish Academy of Sciences, Białowieża. [in Polish]
- Niedziałkowska M., Jędrzejewski W., Mysłajek R. W., Nowak S., Jędrzejewska B., Schmidt K 2006. Habitat requirements of the Eurasian lynx in Poland – large scale census and GIS mapping. *Biological Conservation* 133: 63-69.
- Perzanowska J., makomska-Juchiewicz M., Cierlik G., Król W., Tworek S., Kotońska B., Okarma H. Ecological corridors in the Małopolska province. Institute of Environmental Sciences of the Jagiellonian University, Institute of Nature Conservation Polish Academy of Sciences, Kraków. [in Polish]
- Pierużek-Nowak S., Mysłajek R. W. 2007. Ecological corridors in the Silesian Province – conception for the landscape management plan of the province. Stage I. Corridors for large carnivores and herbivorous. Unpublished Report for the Nature Heritage Centre of the Upper Silesia. Twardorzeczka. [in Polish]
- Pierużek-Nowak S., Mysłajek R. W., Jędrzejewski W., Kurek R., Briggs L. 2007. Possibilities of implementation of the wildlife passages monitoring system in Poland. Unpublished Report for the Ministry of Transportation. Association for Nature „Wolf”, Twardorzeczka. [in Polish].

### **Portugal**

- 10 mill inhabitants
- Main environmental concerns: climate change, water quality, renewable energy
- Habitat fragmentation is recognised but not prioritised
- Ecological effects are taken seriously if the project affects protected areas
- Fences at high traffic density
- Many roads still to be built
- COST 341 has meant a lot
- Using Rosell's guide lines
- Connectivity between important areas are poor
- Lack of information
- Few landscape studies
- Poor knowledge about long term population effects
- EU directives, EIA
- Goal 2007: decrease of road kills by 50% in six years, increase number of fauna passages by 50% in six years
- Compensation measures rarely implemented

### **RUSSIA**

The goal of IENE network is “to show how to do it”. It is a network of expertise and we are expected to give our orientations from the beginning, before the project, in the planning of the infrastructures.

Dimitri present examples of educational toolkits to train decision makers using maps, simulation games, etc.

PRELUDE. European Environmental Agency. Scenarios for future Landscape depending on our behaviour.

WWF – ECONET Simulation game for regional sustainable development planning  
IENE can bring new problems “under the table”, e.g. climate change effects on road and ecological aspects.

**Spain;** use excess material (gravel) to build new overpasses

## Sweden

Landscape strategy focused in specific objectives to be evaluated.

Evaluations of road stretches: to measure if they fulfil the objectives established. They have evaluated the environmental deficiencies in existing Road network. Barriers is one of the points of the evaluation. They have identified 3100 barriers (250 million Euro) and also hundreds of barriers for amphibians, moose, etc. it costs a lot of money to de-fragment all the points.

“Not much is really done to mitigate fragmentation compared what we need”.

He remarks: No specified demands for politicians/ No necessary support is demand from administrative agencies/ ...No truly interest for this issue

We increase the mitigation measures but the transport network “ But ...there is no brake in the trend of decrease biodiversity” .

Bjorn: One of the **IENE** tasks is dissemination, but, there is no pressure on us, they do not demand our knowledge.

- 300 mill Euros designated to environmental mitigation. In 2015 90% of the road system shall fulfil the environmental targets.
- There is not a lack of knowledge, but a lack of pressure from media, politicians, leaders, public and scientists.
- Dissemination, strategies for getting the issues on the Agenda is necessary.

#### 4. Future of IENE

- Started in 1995, coordinated by NL, S and B (2 years periods)
- After COST 341 2003, no new coordinating nation
- Networking continued, but not as a formal network

Main goal for IENE: Network!!! But what does this mean? The web-site is the most important instrument, but we also need to meet. This will cost money and time. Joint activities, projects and research also possible. Field work. Training courses.

Need to involve other groups, especially road engineers.

IENE can also be active through other organisations/networks as PIARC, ICOET, CEDR etc.

IENE is important not only for dissemination of information, but also for motivations, to establish new instruments, production of posters, simulation games, and should always think cross sectorial.

IENE; a network for a group of people, or a more formal organisation/NGO? How should we make people listen to us, how shall we raise funds, how shall we attract member nations?

In the reactivation of IENE, we must start slowly, building it up gradually when the coordination is established. We should think both in the short term, and in the long term.

We need something concrete to work towards. Should we aim for a new/revised European Review?

##### **4.1. Inventory of wishes and needs**

Inventory of hot topics that needs to be addressed in the near future.

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From Germany (Dimitri support this proposal) - Tasks of IENE. We must consider

1. Ecosystem function for all kind of species must be considered.
2. IENE must give out ideas about the ecosystems approach of HF to include in the SEA procedures
3. Using IENE to obtain information about functions of animal mobility

Netherlands: There is a need for:

1. More information about maintenance /and monitoring
2. Natura 2000 is one part, what about the situation out of Natura 2000 areas?

Hungary: Landscape part and human part

Belgium: Broad the scope of the IENE? ?? Perhaps ... but take care not overlap. We can include all the dimensions of the effects of transport network, it is a very wide topics.

Lennart. When we move to the landscape and human approach, the European Landscape Convention will give a framework to develop our tasks. If we want to be successful we have to broad our scope.

Dick agree but, this means we will need other experts.

Andreas: It is not necessary to bring more people into the network

Dimitri "IENE must be recognised as a organisation that bring new values and give a better understanding of problems". Do not forget educational task!,...communication.

What about the opinions of new, young participants in the meeting?

From Polonia – they just started the expertise FH/infrastructures. What’s going on in other countries? We do not have good examples in IENE now. They need technical guidance. How to maintain different kind of passages? Who must do it? What should grow in the ecoducts?

From Denmark – It will be useful to have information about how to construct and maintain the measures.

From Austria – Some wishes Give European standards for apatial planning. “If not, we are re-inventing the wheel every day”.

From Bjorn – Open days after the IENE meetings were great. Good

From Dimitri “short dreams” to be sure we will not be late when we arrive

From Italy – Identification of the problem of the general public

From Carme. To support the topics “Guidance for maintenance”- we need it, it is a new problem that we have. It can be linked with monitoring and to support the idea of the inclusion of criteria for identification of ecological corridors and to avoid and mitigate transport infrastructures permeabilisation?

From Sabrina, Poland. We need more information from the IENE network in the topics how avoiding habitat fragmentation in the transport network development. Most of the countries of the centre of Europe have developed their transport network and now they are dealing with defragmentation, but from the perspective of Eastern countries is different. How to avoid doing the same mistakes?

From Edgar. The website is essential in the whole context of dissemination.

Andreas Seiler. De-fragmentation only for animals or also for people?

Andreas propose expanding the goals of IENE including the landscape and social aspects.

#### IENE INVENTORY OF “HOT TOPICS” Wishes and needs for the future.

<p><b>1. Monitoring to get more information about the effectiveness of measures.</b> It will help us to update the information about measures for mitigation (Wildlife and Traffic – COST 341 handbook).</p>
<p><b>2. Maintenance. Guidance for maintenance of mitigation measures</b> A common problem for all us. We have constructed a lot of measures, we are not maintaining in the proper way. The effectiveness is reduced.</p>
<p><b>3. New scope? Landscape and human dimension of transportation network. It means an abroad the goal of IENE.</b> But, take care not overlap with other organisations. It is good to focus our scope! (some participants expose this idea)</p>
<p><b>4. Planning: identification of ecological corridors and guidance for avoiding and mitigation of fragmentation by transport infrastructures</b> Guidance to be applied in different landscape and wildlife contexts.</p>
<p><b>5. Indicators of habitat fragmentation (estate and pressure).</b> Efficient and simple indicators. To provide a definition for an standard calculation in all the countries. It can be delivered to EEA</p>
<p><b>6. Guidance for measures to be applied in the Eastern countries.</b> To collect all the information that will help them to avoid the same mistakes that</p>

<p>Dissemination activities:</p> <ul style="list-style-type: none"> <li>- Open days's included in IENE meetings</li> <li>- Website is need in the whole context of dissemination. It is a tool for the communication between the experts of different countries. Coordinators of every country must provide the contents.</li> <li>- Perception of the HF problem of the general public and politics, etc. "To convince our politics we must convince the public!"</li> </ul>
<p>Exchange of knowledge activities</p> <p>Between all the experts of the network and between the "experienced members" and the "new comers"</p>

## 4.2 Organisation

The tasks for IENE

- Ecosystem approach, not only some target species
- Function of animal mobility
- Maintenance, vegetation.
- Spatial development before and after construction
- Landscape approach.
- Help to get mitigation measure on the agenda in different countries.
- Web site, actions, projects, reports.
- Good examples to present to the government. How to do it right. Best practice.
- Also some bad examples?
- Technical guidelines needed.
- Contacts between experts.

Bi- or tri-annual conferences, combined with an Open Day for the hosting nation. Should be coordinated with ICOET.

Focus on Eastern Europe.

Sweden proposed a plan for establishing a international coordination for IENE at the Swedish Centre for Biodiversity at Grimsø Research Centre. Funds from Grimsø and The Swedish Road Administration.

### **Preliminary steering committee (2008):**

- Norway, Bjørn Iuell
- Portugal, Antonio Mira
- Poland, Sabina Novak
- Belgium, Dick van Straaten, Johan Peijmen

- Tasks: Suggest a mandate for the committee, get it approved. Produce letters to be sent all potential member states.

### **4.3 Planning**

Next meeting in Portugal, spring 2009. Include an Open Day. Antonio is in charge.

Possibilities for a European/International conference in Eastern Europe 2010.

### **5. Tasks**

To be done after the meeting:

- notes for the minutes to be sent to Hans
- national presentations to be sent to Andreas
- minutes and presentations(as pdf's) will be set at the renewed website by Johan
- up-date and clean up the web-site (Dick/Johan)
- put photos on the web site (can be uploaded locally); all
- put info on up-coming events on the web-site; all
- get the preliminary steering committee in place, approve the mandate and get letters written and sent (Bjørn)

## Appendix 1

### List of participants

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