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REPORT ON THE

**TASK FORCE MEETING
OF THE
“SHEEP&GOAT BRUCELLOSIS”
SUB-GROUP**

**PORTUGAL, FARO
21-22 OCTOBER 2004**

REPORT OF THE
“SHEEP & GOATS BRUCELLOSIS” TASK FORCE SUB-GROUP MEETING
HELD IN FARO, PORTUGAL, ON 21-22 OCTOBER 2004

Participants: see Annex 1

Agenda: see Annex 2

DAY 1

The meeting was held in Faro, the main town in the Algarve Region, located in the south part of Portugal, in the headquarters of the Regional Directorate of Agriculture.

The presentations and discussions were either in English or Portuguese and a simultaneous translation service was provided. Copies of all the overheads presented were handed over to the experts. The first day of the meeting was dedicated to the sheep and goats brucellosis national eradication programme and examples of regional implementation in the two most infected regions. The second day included, in the morning, a visit to one sheep and goat flock. In the afternoon, after a short presentation on the control of the implementation of the programme at the farm level, a meeting was held with the Portuguese counterpart for clarification of matters and discussion of the sheep and goat brucellosis programme and the list of recommendations.

THE NATIONAL SHEEP AND GOATS BRUCELLOSIS ERADICATION PROGRAMME (SGBEP): EPIDEMIOLOGICAL SITUATION *(Dr. António Pina Fonseca)*

The National Eradication Programme for sheep and goat brucellosis in Portugal, the measures in place and the epidemiological situation were explained. The organisation of Veterinary Services, laboratories and breeders associations at the national, regional and local levels was explained. Evolutions of the programme since the previous 2001 meeting of the Task Force in Portugal was described.

Portugal is divided into seven regions¹ on the mainland plus the two island regions of Azores and Madeira. The central state veterinary services (DGV) forms part of the Ministry of Agriculture, Rural Development and Fisheries and is responsible for planning, programming and co-ordination. Regional Veterinary Services (DSV-DRA), that are included in an

¹ Entre Douro e Minho; Trás-os-Montes; Beira Litoral; Beira Interior, Ribatejo e Oeste, Alentejo, Algarve.

administratively autonomous structure (*Direcção Regional de Agricultura* [DRA]: Regional Agriculture Board) but are functionally dependant on the central level, are in charge of the implementation of the programme and operate with local units (*Divisões de Intervenção Veterinária* - DIV) that themselves include smaller administrative units or municipalities (*Concelhos*). The DIV supervise the relevant activities regarding animal identification, flock registration, movement permits, eradication programmes and contingency plans. Most of the practical aspects related to the surveillance and eradication programme are implemented through breeders co-operative structures set up under official guidance, the *Organizações de Produtores Pecuários* (OPPs). Breeders contract with OPPs of their choice to carry out sampling in their flocks.

Since 2002, a National Co-ordinator of the Eradication programme has been designated. His tasks are the following:

- Issue norms through a manual of operating procedures
- Standardise the decision criteria
- Evaluate the regional services and OPPs
- Steer-up and energize the programme, increasing the general participation.

The national veterinary research laboratory (LNIV) provides co-ordination, technical support and evaluation of the regional laboratories.

In 2003, in Portugal, had 67 627 flocks with less than 3 millions of sheep and goats. These numbers are decreasing each year. The Portuguese authorities use the following status to classify the flocks: B4 (officially free), B3 (free), B2 (not free) and B2.1 (infected). Screening of free and officially free flocks is performed on a representative fraction of animals, in accordance with directive 91/68/CEE. However, in areas with a flock prevalence rate over 2%, all the animals are sampled. In not free flocks, all the animals are tested 30 days after the slaughtering of positives and then at intervals of 60 days, three months and six months before recovering a free or officially free status.

At the national level, the epidemiological situation improved yearly since 1998: in 2003, 1 667 flocks were infected with 20 744 positive animals (in 1998, 7 831 infected flocks with 85 920 positive animals). Thus the prevalence rate dropped during this period from 8.76% to 2.64%. However, in Algarve (6.73%) and Alentejo (1.61%) there is no significant improvement while, on the other hand, in the highly infected Trás-os-Montes (15.06%), the results of the programme (34.95% in 2001) are rather better.

In 2003, the rate of coverage of the programme increased and reached over 90% and more than 74 000 animals were vaccinated.

The serological tests carried out are RBT and CFT. In B4 and B3 flocks, CFT is performed on RBT positive sera. If at least one CFT positive result is observed or if more than 5% of the samples are positive to RBT, all animals are tested to CFT. In B2 flocks, CFT is performed on all RBT negative sera. In 2003, 952 animals were submitted to a bacteriological examination. A strain of *B. melitensis* was isolated from 194 of them (186 of biovar 3, 5 of biovar 2 and 3 of biovar 1).

THE SGBEP IN ALGARVE: MEASURES IN PLACE AND EPIDEMIOLOGICAL SITUATION (*Drs. António Madeira & Catalão Dionísio*)

GENERAL STRUCTURE OF ALGARVE AND ITS PRODUCTION SYSTEMS (*Dr. António Madeira*)

The region of Algarve has 16 Counties with an area of 4 990 Km². Population is around 392 000 people (12-13% dedicated to agriculture) increasing to more than a million during summer. There are 3 main ecological regions, parallel to the Atlantic coast: the Littoral (1 040 Km²), the Barrocal (intermediate area 945 Km²) and the Serra (mountainous area 3 005 Km²). Half of the area has soil characteristics only suitable for forestry and livestock production.

Regarding climatic conditions, Algarve is divided into Barlavento (West), Centre and Sotavento (East). The climate is semi-arid with Mediterranean characteristics in Sotavento and Atlantic characteristics in Barlavento. The average rainfall is 600 mm, ranging from 400 in the littoral and 1 200 in the mountains. Water is scarce and irrigation is practiced using dams. Underground water is also available. Average temperature is 17°C (11-24°C). Sunstroke is 3,100 hours per year with an incidence of 160 kcal/cm².

The main agriculture activities are forestry, non-irrigated fruit production, horticulture and wine production. The numbers of livestock population are: sheep 52 690; goats 14 846; cattle 12 342; and pigs 49 000.

The most important small ruminants production system is the extensive traditional system, where animals use natural vegetation with large numbers of farms without owned land. Local breeds are the most important: Algarvia and Charnequeira for goats and Churra Algarvia and Campaniça for sheep with Merino breed as well. The Algarvia goat has a double aptitude and its milk is used for cheese production. The Churra Algarvia sheep is used for meat production. There are 2 mating seasons: April/May and September/October which allow for the selling of lambs and kids for Christmas and Easter, taking advantages of the most favourable prices.

HISTORY OF THE DEVELOPMENT OF THE BMEP IN ALGARVE (Dr. António Catalão Dionísio)

The farmers of Algarve are aged people with an average of 50 years old and with low levels of school education. More than 90% do not own land, using communal land or agriculture land after harvesting, areas that are shared among several flocks. There are also ancient practices of exchange of animals between flocks.

The activities for small ruminants brucellosis control started in 1986 with test and slaughter of positive animals and vaccination of young goats (which was abandoned in 1992). In 1995 a full coverage of the region was obtained by expanding/creating 3 OPPs (Alcoutim started in 1988 – 649 associates; Castro Marim started in 1988 – 427 associates; and Barlavento [ASCAL] started in 1995 – 453 associates). In 1999/2000, new legislation was issued at national level Law Decrees 338/99 and 244/2000, establishing new rules for small ruminant movement control and brucellosis eradication. These measures were applied in Algarve, as well as the laboratory norms by the Faro Laboratory to support the programme. From 2000, the strategy established for Algarve was, to improve animal identification (using tattoos and microchips), to improve the controls by the Algarve Regional Directorate of Agriculture (DRAALG) and the OPP, to implement the Complement Fixation test at Faro Laboratory, to improve efficiency in sampling, laboratory analysis and slaughter of positive animals, to enforce sanitary sequestration of infected flocks, to promote total slaughter of chronically infected flocks, to promote activities of farmers information and education, and to study the possibility of introducing vaccination in the Region.

The Regional coordination of the programme is done by the DRAALG veterinary services with 1 veterinary with 50% of time dedicated to the programme, 1 administrative with 70% dedication and 4 technicians with 70% of time dedication. Equipment available is 2 personal computers and 1 vehicle. This team has the following tasks: to identify the positive animals; to remove these animals for slaughter; to sample organs for analysis; to perform epidemiological questionnaires; to establish the sanitary sequestration of infected flocks; to attribute the sanitary classification of flocks; to elaborate the processes for the compensation payment; to elaborate judicial processes in case of non-compliance; to develop epidemiological studies; and to perform activities of sanitary policy.

The field work is developed by the 3 OPPs, with the following characteristics:

	OPP Castro Marim	OPP Alcoutim	OPP Barlavento
Area km ²	1 298	1 690	2 202
Small ruminants No	14 446	30 330	22 760
Density animals/km ²	11	18	10
Farmers No	427	649	453
Mean No heads/farm	34	47	50

Veterinarians No	1	2	3
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The results of the brucellosis eradication programme are presented in the following table:

Year	N° flocks tested	N° infected flocks	% infected flocks	N° animals tested	N° positive animals	% positive animals
1995	1 966	542	27.6	138 180	4 168	3.0
1996	1 692	346	20.5	141 757	3 893	2.8
1997	1 894	326	17.2	157 558	4 750	3.0
1998	1 894	424	22.4	162 963	4 024	2.5
1999	1 461	369	25.3	145 241	4 417	3.0
2000	1 489	219	14.7	112 401	4 030	3.6
2001	1 489	124	8.3	97 747	4 025	4.1
2002	1 532	105	6.9	77 306	1 577	2.0
2003	1 768	119	6.7	72 276	1 612	2.2
2004 – 1 st sem.	905	79	8.7	49 094	881	1.8

The numbers of new outbreaks were:

Year	New flocks infected	% Incidence
1997	14	0.74
1998	24	1.27
1999	36	2.46
2000	26	1.75
2001	37	2.48
2002	32	2.09
2003	36	2.04
2004 - 1 st semestre	17	1.88

The present situation by OPP is:

OPP	Castro Marim	Alcoutim	ASCAL	DRAALG (total)
N° flocks	427	649	453	1 529
N° infected flocks	8	26	45	79
Prevalence %	1.87	4.01	9.93	5.17
New outbreaks in 2003	6	14	16	36
New outbreaks 9/2004	1	4	12	17

The geographical distribution of flocks and outbreaks was presented. The information is stored in a geographical information system database.

Isolation of *Brucella* spp (*B. melitensis* biovar 3):

Year	N° of samples	N° positive samples	N° farms	N° farms with isolation of <i>Brucella</i>
2000	469	51	73	24
2001	223	22	50	7
2002	112	25	23	11
2003	375	52	45	18
2004 - 1 st sem.	78	12	22	7

Sanitary slaughter and compensation payment:

Year	N° of animals	Value (Euro)	Value / carcass (Euro)
2000	4 689	201 339	42.94

2001	9 254	379 057	40.96
2002	3 454	103 946	30.09
2003	2 707	94 607	34.95
2004 - 1 st sem.	1 559	46 106	29.57

Depopulation and repopulation:

Year	Depopulation			Repopulation			Re-infection
	Slaughtered flocks	N° positive animals	N° negative animals	N° flocks	N° animals	Payment (Euro)	
2000	7	1 148	659	--	--	--	--
2001	37	6 030	4 376	--	--	--	--
2002	11	2 161	1 515	16	2 532	3 313	4
2003	9	812	682	12	2 038	80 418	0
2004	3	359	214	2	326	13 011	0

The identified main causes for infection and re-infection of flocks are the use of common pastures, the introduction of animals from non-free flocks, the exchange of animals between flocks, and the non-authorized trade by dealers.

The timings for the accomplishment of the programme activities are 15 days from sampling to the issuing of lab results; 15 days from issuing of lab results to the slaughter of positive animals and 30 days from sampling to slaughter of positive animals.

In conclusion, for the future work of DRAALG the following aspects are considered the most important: to accomplish legislation time intervals for inspection and re-inspection of flocks; to control all flocks existing in the Region; to maintain the sanitary pressure on infected flocks; to apply rigorously the animal identification and registration rules using the PISA computer program; to apply the depopulation of all chronically infected flocks; to continue the activities of information and education of farmers; to consider the vaccination in some flocks in order to decrease incidence; to encourage the development of approved centres for animal trade; to improve the human and material means dedicated to the brucellosis eradication programme; to make it fast the penalties processes for non-compliance; to withdraw the possibility for infected flocks to apply for premium, in order to improve farmers awareness for the importance of maintaining a free flock.

THE SGBEP IN ALGARVE: THE PERSPECTIVE OF THE FARMERS ASSOCIATIONS *(Dr. Paulo Pina)*

Dr Paulo Pina from the Producers Organization of Alcoutim (ADS Alcoutim), presented a description of brucellosis and main eradication tools, from a presentation prepared for farmers information. A revision of brucellosis pathogenesis, symptoms and means for control/eradication was presented. The development of the ADS Alcoutim and its intervention in BMEP was also presented as well as the results achieved and the human notified cases of its region.

The OPP Alcoutim started with 2 counties (Alcoutim and Tavira (Cachopo)) in 1988 and incorporated 2 more counties (Loulé and São Brás de Alportel) in 1995. At present it has 800

associated farmers from which 650 have small ruminants. The total sheep and goats population is 35 000 animals.

The number of outbreaks has decreased over the time from 120 in 1994 to 50 in 1999, but the decrease was slower from 2000 (39) to 2003 (29). In 2004, 29 outbreaks were again identified. In Algarve the Loulé County appears as the most infected.

In the human population brucellosis has a great socio-economic impact. The disease is not easily diagnosed, it is chronic and disabling and in 60% of cases hospitalisation is necessary. Infected people cannot work for long periods and even abandon the job.

Main risk professions are: livestock farmers, agricultures, abattoir personnel, veterinarians and technicians. Infection occurs by direct contact with animals (60%), by alimentary route (25%) (raw milk and products made from non-pasteurised milk) and other routes (15%) (respiratory, etc.). On average only 1 case in each 6 is notified. From the 136 cases notified between 1996 and 2003 for Algarve, 45 belong to Alcoutim. In 2003 Algarve had 10 notified cases with 5 in Alcoutim. A testimony of a farmer with brucellosis was presented.

In conclusion, brucellosis is important for man and animals, the OPP and the Veterinary Services have their responsibilities in fighting against disease, small ruminant producers have also to assume their part of responsibility, producers have to be conscious that they are in the front line in the fight to prevent dissemination of brucellosis amongst flocks.

THE SHEEP AND GOATS BRUCELLOSIS CONTROL PROGRAMME IN TRÁS-OS-MONTES: MEASURES IN PLACE AND EPIDEMIOLOGICAL SITUATION

(Dr. Armada Nunes)

The main objective of the Brucellosis Control Programme in Trás-os-Montes has been a rapid reduction of the flock prevalence and the incidence of human brucellosis by the use of a mass vaccination policy. The Rev. 1 vaccine has been administered to young and adult animals by conjunctival route since February 2001. Exception to this rule is the epidemiologically isolated B3 flocks, where only the offspring is vaccinated.

Additional measures in place were:

- Slaughtering of positive reactors as a previous step to the administration of the vaccine.
- Serological checks of vaccinated flocks to confirm the good performance.
- Improvement of the general organization of the system: animal identification, reduction of period time between diagnosis/ slaughtering of positive reactors, etc.
- Coordination meetings of Official Veterinary Services and OPPs. Penalty measures to farmers in case of non-compliance with sanitary rules.

Some difficulties have been encountered during the implementation of the Programme:

- Some OPP delayed the beginning of the mass vaccination campaign
- Cases of non compliance with rules
- Lack of farmers cooperation
- Difficulties in the performance of risk analysis and follow up of the programme.

Results point to the success of the strategy in place: high reduction of flock prevalence since the start of the mass vaccination programme (from 43% in year 2001 to 14% in year 2003) and notably, reduction in the incidence of human brucellosis (128 cases in year 2001, 17 cases in 2003).

THE PROGRAMME IN TRÁS-OS-MONTES: FUTURE STRATEGIES AND PERSPECTIVES *(Dr. Francisco Neto)*

Dr Neto emphasized the success of the Programme in terms of reduction of small ruminant brucellosis prevalence and incidence; drop of human brucellosis and recovery of livestock production.

Objective for the coming years are to maintain the protection of flocks by the continuity of the vaccination policy, to introduce an eradication programme as soon as possible, and to guarantee food safety.

The negative aspect of the mass vaccination policy has been a confusing panorama in some vaccinated flocks, with regards the serological picture showed by adult vaccinated animals, because of the likely persistence of residual antibodies to the Rev.1 vaccine. To solve the problem, Dr Neto proposed the Double Gel Diffusion Test (DDG) as the best alternative test to RBT and CFT in order to distinguish, in that particular, infection from cases of vaccinated antibodies.

THE PROGRAMME IN TRÁS-OS-MONTES: SEROLOGICAL DIAGNOSIS *(Dra. Maria Inácia Corrêa de Sá)*

Dr Corrêa de Sá rationalized the use of the DDG as the most appropriate test in the case of the epidemiological situation in Trás-os-Montes. According to the results of a number of scientific papers, that test was presented as the most specific one to detect exclusively the epidemiologically relevant animals (after a Rev.1 mass vaccination programme in endemic

situations). Nevertheless, it should be stressed that the same scientific papers made clear the lower sensitivity of the DDG in comparison to the classical RBT and CFT.

The results of two serological studies on sera from mass vaccinated flocks were presented to assess the situation in Trás-os-Montes Region. Comparison between serological tests was performed. The results pointed to a higher specificity of DDG, but a lower sensitivity than others tests. Also a good agreement between high CFT titres and DDG positive sera was obtained.

DAY 2

FIELD VISITS TO FARMERS ASSOCIATIONS AND SMALL RUMINANTS FARMS

A sheep herd was visited in Escanxinas, Almandil locality (Loulé). The herd, composed of about 150 sheep of local breed, is exemplary for the sheep husbandry of the region. The sheep were kept in rudimentary premises without grazing land and were led to common pastures for grazing. The farm was infected previously by brucellosis and repopulated completely.

THE SYSTEM OF CONTROL OF THE IMPLEMENTATION OF THE PROGRAMME AT THE FARM LEVEL – THE CONTROL OF OPP *(Dr. António Pina Fonseca)*

A. Pina fonseca presented briefly the history of the OPP that are copy of the French GDSs (Groupements de Défense Sanitaire du bétail). The OPPs are under the private law and they have a physic infrastructure including premises normally owned by an association or co-operative.

Competencies:

The competencies of the OPPs are defined in legislation as well as the tasks of the veterinary co-ordinator. The DRA (Direcção Regional de Agricultura) has full power on the strategy decision. The DRA ratifies the annual programme proposed by the OPP and approves the coordinators and the vets working in field vets which functions on sanitary police of the vet of the OPP are described on a contractual basis.

The DRA is also responsible for the control and audit of the OPPs and the evaluation of the vets working for the OPPs. They are finally responsible for the imposition of sanctions and removal the authorisation of the OPPs to participate in the programme, if necessary.

The technical audits to OPPs are carried out following a pre-established protocol and criteria are in place to prioritise the OPP to be audited. The audits verify the methodologies used and the level of performance in relation with the proposed objectives. Technical support and

advise on the correction of non-compliances are given by the DRA in the audit report. 74 audits have been performed in the period 2001 to 2003 covering every year all the regions.

CONCLUSIONS

The sub-group considered the meeting in Faro as fruitful with very good and totally open participation by the Portuguese national, regional and field Vet Services and also the farmers' organisations.

RECOMMENDATIONS OF THE BRUCELLOSIS SUBGROUP

1. Progress (i.e. coverage, implementation, organization and results) has been made in general regarding the Small Ruminants Brucellosis Eradication Programme in Portugal: Prevalence has improved as expected.
2. However, in some regions no significant progress has been made, as in Alentejo and Algarve.
 - In Algarve the production system with a very high proportion of farms without land makes it difficult to control animal movement and avoid contact between farms. This created a disperse pattern of outbreaks in some counties. Therefore, vaccination should be implemented. A risk assessment of infection could be the basis of decision in which areas this vaccination is not necessary. The communication with the farmers, by the Veterinary Services and OPPs, at all levels, should ensure that the information delivered is in accordance with the objectives of the programme.
 - Alentejo has reached a good epidemiological situation towards eradication but a more in depth analysis is necessary, with the identification of the factors leading to the non progress of the eradication programme in this region.
3. The role of a national coordinator and a consultative committee has clearly contributed to a better level of coordination and a good evolution of the programme. This should be continued.
4. The design of strategies and the decision-making should be fully made by the Official Veterinary Services. A Regional Coordinator for the programme is important for this purpose and for the evaluation of the programme in order to adjust the implementation to the local situation.
5. The work of the vaccination campaign in Trás-os-Montes and the results obtained so far are acknowledged and efforts should be sustained. The way farmers have been enrolled to

the programme is appreciated. In this region, the help of a regional coordinator is essential.

6. During the transitory period before a conventional eradication programme could be strictly implemented in this area, all epidemiological and technical information should be taken into consideration for the evaluation of risk of infection of the animals vaccinated as adults, and could be done case by case, and linked to the analysis of CFT titre observed.

PARTICIPANTS

OF THE “SHEEP & GOATS BRUCELLOSIS” TASK FORCE SUBGROUP MEETING HELD IN FARO, PORTUGAL, ON 21-22 OCTOBER 2004

- **Task Force Sub-Group**

- Dr. Bruno GARIN-BASTUJI Chairman
- Dr. Thierry BADIN DE MONTJOYE France
- Dr. Manuel DURAN FERRER Spain
- Pr. Dr. Yolanda VAZ Portugal
- Dr. Fernando CRESPO-LEON Spain (private expert)
- Dr. Francisco REVIRIEGO-GORDEJO Commission
- Dr. Jean-Pierre VERMEERSCH Commission

- **Portuguese Representatives (main list)**

- **Direcção Geral de Veterinária** [*State Veterinary Service*]
Dr. Carlos AGRELA PINHEIRO, CVO
Serviços de Saúde Animal [*Animal Health Service*]
Dr. António Pina Fonseca, National Co-ordinator of the Eradication Programmes
- **Direcção Regional de Agricultura** [*Regional Directorate of Agriculture*] **do Algarve**
Direcção de Serviços de Veterinária [*Regional Veterinary Service*]
Dr. António MADEIRA, Head
Dr. António CATALÃO DIONÍSIO, Head of Veterinary Division Sotavento
- **Direcção Regional de Agricultura** [*Regional Directorate of Agriculture*] **de Trás-os-Montes**
Dr. Francisco G. NETO, Sub-Director
Direcção de Serviços de Veterinária [*Regional Veterinary Service*]
Dr. Armada NUNES, Head
- **Laboratório Nacional de Investigação Veterinária (LNIV)**, Benfica-Lisbon (National Reference Laboratory)
Dra. Maria Inácia CORRÊA DE SÁ, Head
Dra. Sandra RODEIA, Eradication Programmes Support Services – Bacteriology
- **Organização de Produtores Pecuários (OPPs)** [*Breeders Associations*] **de Algarve - ALCOUTIM**
Dr. Paulo PINA, Coordinator

AGENDA**OF THE “SHEEP & GOATS BRUCELLOSIS” TASK FORCE SUBGROUP HELD IN FARO (ALGARVE), PORTUGAL, ON 21-22 OCTOBER 2004****Thursday, 21st of October**

9.00h	Welcome and introduction
9.15h	The national sheep and goats brucellosis eradication programme (SGBEP): epidemiological situation (Dr. António Pina Fonseca)
10.15h	Discussion
11.00h	Coffee
11.30h	The SGBEP in Algarve: measures in place and epidemiological situation (Dr. António Madeira)
12.00h	The SGBEP in Algarve: the perspective of the farmers associations (Dr. Paulo Pina)
12.30h - 13.00h	Discussion
13.00h	Lunch
14.30h	The sheep and goats brucellosis control programme in Trás-os-Montes: measures in place and epidemiological situation (Dr. Armada Nunes)
15.00h	The programme in Trás-os-Montes: future strategies and perspectives (Dr. Francisco Neto)
15.30h	The programme in Trás-os-Montes: serological diagnosis (Dra. Maria Inácia Corrêa de Sá)
16.00h	Coffee
16.30h - 18.00h	Discussion

Friday, 22nd of October

8.30 - 10.00h	Field visits to farmers associations and small ruminants farms
10.15h	The system of control of the implementation of the programme at the farm level – the control of OPP (Dr. António Pina Fonseca)
10.45h	Discussion
11.15h	Coffee
11.30h	Discussion of the subgroup
12.30h - 14.00h	General discussion; Recommendations and Closing meeting