FINAL REPORT

ON THE ASSESSMENT OF THE

GEOGRAPHICAL BSE RISK OF

TURKEY

27 June 2002

NOTE TO THE READER

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were supplied by the responsible country authorities. Both, the methodology and the process are described in detail in the final opinion of the SSC on "the Geographical Risk of Bovine Spongiform Encephalopathy (GBR)", 6 July 2000 and its update of 11 January 2002. These opinions are available at the following Internet address:

<http://europa.eu.int/comm/food/fs/sc/ssc/outcome_en.html>

This report, and the opinion of the SSC based on it, are now serving as the risk assessment required by the TSE-Regulation EU/999/2001 for the categorisation of countries with regard to their BSE-status. The final BSE-status categorisation depends also on other conditions as stipulated in annex II to that TSE-Regulation.

1. DATA

- The information available was suitable to carry out a qualitative assessment of the GBR. Reasonable worst-case assumptions have been used whenever the available information was not fully sufficient.

Sources of data

Country Dossier consisting of:

- Report of the Republic of Turkey for the evaluation of its status with respect to bovine spongiform encephalopathy. Version: December 2001.

- Response to the draft report on the GBR assessment for Turkey, May 2002.

Other sources:

- EUROSTAT data on exports of "live bovine animals" and of "flour, meal and pellets of meat or offal, unfit for human consumption; greaves" from EU Member States, covering the period 1980 to 2000.
- UK-export data on "live bovine animals" (1980-1996) and on "Mammalian Flours, Meals and Pellets" (1980-2000). As it was illegal to export mammalian meat meal, bone meal and MBM from UK since 27/03/1996, exports indicated after that date should only have included non-mammalian MBM.

2. EXTERNAL CHALLENGES

2.1 Import of cattle from BSE-Risk[1] countries

Table 1 below provides an overview of the data on live cattle imports, as provided in the country dossier (CD) and the corresponding data on relevant exports as available from BSE risk countries that exported to Turkey. Only data from risk periods are indicated, i.e. those periods when exports from a BSE risk country already represented, according to the SSC opinion on the GBR method of January 2002, an external challenge.

[1] BSE-Risk countries are all countries already assessed as GBR III or IV or with at least one confirmed domestic BSE case.

Country	data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
Austria	CD											0	0	50	0	0	3720	2655	0	0	0	2	0	6.427
	other																4499	4729			2			9.230
Belgium	CD											1423		2998			617	782						5.820
	other																	35						35
Czech Rep.	CD											30659	4778	65691	51580	4092		100						156.900
	other														50585	3492		340						54.417
Denmark	CD											133	217	921	0	0	0	0	0	0	412	67	0	1.750
	other											37		204										241
Estonia	CD														52									52
	other																							-
France	CD											1532	1777	4666	3415	692	28553	7783						48.418
	other											1600	1838	4634	3219	692	31914	7841						51.738
Germany	CD	2267	3287	1922	596	1956	154	90	6189	16615	14979	9218	24489	28314	32053	7328	155274	63140	16		196	2443		370.526
	other		4496	2028	545	2220	139	110	5437	13600	14524	7117	23259	31234	29527	7514	138545	82062	61	24		2936		365.378
Hungary	CD						182	460	19226	1373	840	16783	39248	14307	10990	1467	6985	6522						118.383
	other														10275	706	5936	4769						21.686
Ireland	CD								4183		836													5.019
	other								2100															2.100
Italy	CD								11	8		404	395	718			7888	2988				132		12.544
	other								11	8	553	940	1876	524		72	6528	3108				132		13.752
Netherlands	CD								73			982	643	4021	2092		12739	14831	30					35.411
	other								73	140		903	543	2474	1447	42	11682	12538	30			165		30.037
Poland	CD								17662	4464		106761	55137	7542	3102		2695	1047						198.410
Portugal	CD													490										490
Romania	CD								9968			4140	40935	55598	29070	5414	21488	5176						171.789
	other																							-
Slovak Rep.	CD														5354									5.354
Slovenia	CD														578	232								810
	other								2.541	495														3.034
Spain	CD											338	296											634
Switzerland	CD		50															1711						1.761
	other	35	50																					-
Greece	CD								435															435
Japan	CD												543											543
UK	CD										369			560										
	other	193	632											55										
Totals																								
non UK	CD	2267	3337	1922	596	1956	336	550	57747	22460	16655	172373	168458	185316	138286	19225	239959	106735	46	0	608	2644	0	1.141.476
	other	35	4546	2028	545	2220	139	110	10162	14241	15077	10597	27516	39070	95.053	12.518	199.104	115.422	91	24	2	3233	0	551.734
UK	CD	0	0	0	0	0	0	0	0	0	369			560										929
	other	193	632	0	0	0	0	0	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	880

Table 1: Cattle import (CD) into Turkey and corresponding cattle export data (other) from BSE-Risk countries. For EU Member States the data source is Eurostat. For UK the data are also confirmed against the UK export statistic. Note: Only imports in Risk periods (grey shaded) are taken into account. Risk periods are defined according to the SSC opinion of January 2002.

Eurostat records 825 live cattle exported from the UK in 1980 and 1981 to Turkey and 55 in 1992. The country dossier, on the other hand lists imports of 3.515 live cattle from the UK in 1989, 1992 and in 1996, all for immediate slaughter (age = 24 months) or fattening (age at slaughter = 24 month).

The country dossier provides a detailed breakdown of the 1.141.476 live cattle that, according to the CD, were imported into Turkey between 1980 and December 2001 from other BSE-risk countries than the UK. Of these 867.500 (76%) were for fattening and immediate slaughter, not older than 24 months at import if destined for immediate slaughter and not older than 18 months if for fattening. The latter would then be slaughtered within 180 days after import.

For the purpose of this risk assessment it is assumed that a small fraction of all cattle imported for immediate slaughter or fattening entered the national cattle herd, adding to the external challenge Turkey was exposed to.

However, between 1980 and 2000 over 270,000 breeding cattle were, according to the country dossier, imported from BSE-risk countries, in particular Germany, the Netherlands and France but also from Poland and Austria. This data are largely in line with Eurostat and other export data that were available.

Several import bans were instated in 1996 (see below) and after this date only 3298 (CD) animals were imported from BSE-risk countries.

It is concluded that the substantial imports make it likely that Turkey imported live cattle that were carrying the BSE agent into its domestic breeding stock.

At least since 1996 all bovine animals imported for breeding purposes are closely monitored in Turkey.

2.2 Import of MBM[2] or MBM-containing feedstuffs from BSE-Risk countries

Table 2 provides an overview of the imports of MBM that have occurred between 1980 and 2001. Two data sources are compared: CD (Country dossier) and "other", i.e. export data from BSE risk countries (either Eurostat or individual country export statistics, as available).

In Turkey prior to 1996 imports of MBM were recorded under the commodity "meal, course meal and pellets unfit for human consumption, of meat, offal, fish, molluscs and other aquatic invertebrate, and greaves". Import data referring to this code were supplied for 1984-1995. Since 1996 this code was broken down into "2301.10: Meal, coarse meal and pellets of meat and offal; cartilage", and "2301.20: Meal, coarse meal and pellets of

[2] For the purpose of the GBR assessment the abbreviation "MBM" refers to rendering products, in particular the commodities Meat and Bone Meal as such; Meat Meal; Bone Meal; and Greaves. With regard to imports it refers to the customs code 230110 "flours, meals and pellets, made from meat or offal, not fit for human consumption; greaves".

fish, molluscs and other aquatic invertebrate“. Also this new code does not differentiate between different source species (ruminant/non-ruminant/non-mammalian) from which the MBM is produced. The Turkish authorities have traced back the imports since early 1996 and concluded that since then 620.5 tons of mammalian MBM were imported, all in 1996: 2.5 tons from France, 15 tons from Germany, and 603 tons from Italy. No confirmation of the composition of the earlier MBM-imports was provided.

According to the country dossier as well as UK-export data, no mammalian MBM was imported from the UK into Turkey throughout the period 1980-2000. On the other hand Turkey imported 65.000 tons of MBM from other BSE risk countries.

For 65 tons imported from DE (44/1999 and 25/2000) the Turkish authorities clarified that this was only poultry meal.

The CD states that 99% of the imported, as well as domestic, MBM were used for feeding poultry animals and pets, as well as fish. It was explained that use of MBM in cattle feed would have been/is uneconomical because the price for plant proteins was about 50% lower than for MBM (per ton).

Country	data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
Austria	CD										0			11	0									11
	Other										20			6	40									66
Belgium	CD					21504			2485															23.989
	Other					19476	301		270															20.047
France	CD					60			10329									2,5						10.392
	Other								9910															9.910
Germany	CD					0,3			20	800	0		0					15			44	21		900
	Other									499	299		180								44	25		1.047
Italy	CD								22747		0						140	603						23.490
	Other								24342		246						30	703						25.321
Netherlands	CD										0													
	Other					2002					63			1				0						64
Spain	CD								6410															6.410
	Other								5949															5.949
UK	CD																							
	Other																							
TOTALS																								
non UK	CD	0	0	0	0	21564	0	0	41991	800	0	0	0	11	0	0	140	621	0	0	44	25	0	65.191
	Other	0	0	0	0	21478	301	0	40471	499	627	0	180	7	40	0	30	703	0	0	44	25	0	64.406
UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Other	0	0	0	0	0	0	0	0							0							0	

Table 2: MBM imports into Turkey (CD) and corresponding MBM exports from BSE-Risk countries. Source for export data: Eurostat and UK and other BSE-risk countries export statistics. Note: Only imports in Risk periods (grey shaded) are taken into account. Risk periods are defined according to the SSC opinion of January 2002. Figures refer to MBM as defined for the purpose of the GBR assessment, see footnote on page 4.

Importation of live ruminants and ruminant products from the UK was initially restricted in 1990. Full bans, prohibiting import of live cattle as well as of certain products of bovine origin (MBM) were instated as follows:

- 1996- UK, Ireland, Switzerland, Portugal, France
- 1997- Netherlands, Belgium
- 2000- Denmark, Germany, Spain, Luxembourg, Liechtenstein
- 2001- Italy, Czech Republic, Greece, Slovak Republic, Japan, Slovenia, Finland, Austria

2.3 Overall assessment of the external challenge

The level of the external challenge that has to be met by the BSE/cattle system is estimated according to the guidance given by the SSC in its final opinion on the GBR of July 2000 (as updated in January 2002).

- Live cattle imports:

In total the country imported over the period 1980-2001 more than 1.1 million live cattle from BSE-risk countries, of which 929 came from the UK. Most of these cattle were imported for immediate slaughter or fattening but accumulated over the entire period these imports represent a very high external challenge. Broken down to 5-years periods the resulting external challenge is as given in table 3. This assessment takes into account the different aspects discussed above that allow to assume that certain imported cattle did not enter the domestic BSE/cattle system, i.e. were not rendered into feed, when approaching the end of the BSE-incubation period.

- MBM imports:

In total the country imported over the period 1980 to 2001 more than 65.000 tons of MBM, as defined on page 4, from BSE-risk countries but nothing from the UK. The claim that 90% of these imports were fishmeal or non-mammalian MBM was not substantiated. Together these imports therefore are assumed to represent a very high external challenge. Broken down to 5-years periods the resulting external challenge is as given in table 3. This assessment takes into account the different aspects discussed above that allow to assume that certain imported MBM did not enter the domestic BSE/cattle system or did not represent an external challenge for other reasons.

External Challenge experienced by TURKEY				
External challenge		***Reason for this external challenge***		
Period	**Overall Level**	**Cattle imports**	**MBM imports**	**Comment**
1980-1985	**High**	Very Low	High	
1986-1990	**Very High**	High	Very High	
1991-1995		Very high	Moderate	
1996-2000	**High**	High		

Table 3: External Challenge resulting from live cattle and/or MBM imports from the UK and other BSE risk countries. The Challenge level is determined according to the SSC-opinion on the GBR of July 2000 (as updated in January 2002).

3. STABILITY

3.1 Overall appreciation of the ability to avoid recycling of BSE infectivity, should it enter processing

Feeding

According to the country dossier feeding MBM to ruminants has never been common practice due to "traditional and economic" reasons. Evidence was provided to support the economic disincentive of using MBM for the year 2001, showing that a ton of MBM was nearly twice as expensive as a ton of cotton-seed meal or sunflower seed meal. Climatic and geographical factors are said to enable the country to support large populations of cattle, however, concentrated feedstuffs are used in the dairy and beef industries and MBM is used for feeding poultry.

A ruminant MBM to animal (except poultry) ban was implemented on 22 April 1996. On 25/12/97 it was partially lifted for laboratory animals, fish, fur animals and pet animals.

The banning of ruminant material from ruminant feedstuffs is regularly monitored by the official authorities. Feedstuffs are controlled and sampled from the point of production to consumption by Government officers. These samples are analysed microscopically and in case of suspicion by an ELISA test. Violations are punished, e.g. by revoking the licence to produce feed. Packages of feedstuffs containing proteins of animal origin are labelled since 1996 "This feedstuff must not be fed to ruminants such as bovine, ovine or caprine animals".

- There are 40 plants producing MBM or BM. Information on the location of these plants and also the annual production from 1988 to 2000 was provided. There was a sharp increase in domestic production of MBM in the late 1980's and this coincides to some extent with a steady increase in the size of poultry industry. The CD states that 99% of domestically produced MBM is fed to poultry and 1% to pet animals.

Cross-contamination

The CD states that in Turkey, MBM-containing feed is used primarily in the poultry industry, located in different places from bovine, ovine and caprine farms. The concentrate-feed production industry (poultry and cattle) is described as follows:

Type of feed plant	Number of feed plants	Feed production (tons)
Produce only poultry feeds	33	1.029.350
Produce only ruminant feeds	193	931.506
Produce both poultry and ruminant feeds	160	Poultry:1.259.089 Ruminant: 1.577.799
Plants that are not working	44	-----
Total	430	4.797.744

Table 4: Compound feed stuff production in Turkey, 2001.

In addition to this feed industry, some of the large beef farms (which have no dairy cattle) produce their own feed for fattening.

It must be assumed that cross-contamination could take place at the feed plants producing feed for poultry as well as for ruminant: until 1996 (feed ban) there were no measures in place to avoid cross-contamination. Since 1996 these feed plants are regularly monitored and controlled by Government officials with the aim to prevent cross-contamination.

- Measures are described that reduce the potential of cross-contamination after production. Government officers collect random samples from plants producing ruminant feedstuffs and examine them for mammalian tissues using microscopy and ELISA. These controls are made without notification, and target feed plants, storage centres, retail stores, plant outlets, transportation systems and ruminant farms. The results of inspections are stated to be available for audit and details of the examination of ruminant feed samples for the presence of MBM are provided in Table 5.

Year	Number of Controls			N° of feed samples	Results
	Compound feed plants and plant outlets	Animal waste processing plant	Retail stores, storage centres, transportation systems and ruminant farms	Ruminant feeds	Microscopic examination and ELISA test for MBM in Ruminant feeds
1997	1556	96	22955	8174	negative
1998	1572	125	24493	8481	negative
1999	1324	146	21926	8820	negative
2000	1275	122	22179	8381	negative
2001	1315	119	21902	7820	negative

Table 5: Feed controls in Turkey since the introduction of the feed ban in 1996. The threshold above which a contamination is defined as "positive" is presence of any mammalian material, even only traces.

Note: the above reported results of the controls in Turkey are contrary to all experience in other countries where similar feed controls have been carried out, in particular as more than 1.5 million tons of ruminant feed is annually produced in feed mills that also produce poultry feed. It should, however, be taken into account that the differentiation between mammalian and non-mammalian tissues and bone particles by microscopy is very difficult and that ELISA tests are not reliably working if the protein is too denatured, e.g. by the harsh process conditions said to be applied in Turkish rendering plants.

Rendering

40 rendering plants produce annually between 6.000 (1988) and 46.000 (1995) tons of MBM in Turkey (see table 6).

The steep increase in production (see table 6) in 1988/89/90 is explained in the CD by the corresponding increase of the poultry animal population in Turkey and this is used as argument that most of the domestic MBM production was anyway for poultry feed. On the other hand a similar increase in the poultry population as in 1988-1993 occurred in 1996-1998 and did not lead to an increase in domestic MBM production. However, the CD also explains that MBM is not the only protein source for poultry as also plant and fish meal is used. An increase in soy bean and soy bean meal imports in 1997-2000

is provided as explanation why the recent increase in poultry production does not correspond to a similar increase in MBM production.

Year	Total production (tons)	Poultry population (10^3-heads)
1988	6.129	60.000
1989	14.736	60.000
1990	32.391	100.000
1991	38.463	150.000
1992	38.908	155.000
1993	31.370	180.000
1994	39.587	190.000
1995	46.496	140.000
1996	38.018	155.000
1997	40.523	170.000
1998	31.278	250.000
1999	30.000	250.000
2002	32.862	260.000

Table 6: Total annual domestic MBM production and poultry population in Turkey. Source: Country Dossier of December 2001. Data on poultry population derived from a graph in the document.

All rendering plants in Turkey are approved and licensed by the Ministry of Agriculture and Rural Affairs (MARA). According to the CD, the regulation 1734 on Feed-stuffs lays down the minimum technical and sanitary conditions for rendering plants producing feed-stuffs of animal origin and plants producing mixed feed-stuffs. Processes are always "batch" and parameters are stated to always have been of high standard: temperature (145-160°C), time (2-3 hours), average pressure (4-6 bars), maximum size of raw materials before heating (50mm), maximum particle size after heating (10 mm). It seems that the temperature of 145-160°C refers to the steam used for heating but it is claimed that after 2 hours the core temperature of the raw material always reaches 133°C or more while the average pressure is around 4-6bar. It remains unclear if the pressure refers to the pressure in the airless cooker or in the steam. The latter seems to be more likely. Ministerial order YGT-YK-68-61 (3/10/2001) specifies that rendering has to fulfil at least the 133°C/20min/3bar-standard. Compliance with the above described standards is claimed to be good and controls are apparently carried out twice a year without notice. However, it was not clarified how the appropriate time/temperature/pressure combination is recorded and how these records are, and have been in the past, verified.

Raw materials used in rendering are stated to be bones (95-98%), fats and other animal waste. Poultry bones and wastes are the other source of raw material. Raw materials come from the nearest slaughterhouses and meat processing plants, and must be obtained from animals subjected to ante-mortem and post-mortem veterinary inspection in the slaughterhouse and found fit for human consumption. Since 1996 no import

licenses were issued for raw material for rendering. Live animals imported into Turkey can be rendered after the end of their productive life.

SRM and fallen stock

There is no official SRM ban in Turkey but some SRM (intestines, heads of healthy slaughter) are traditionally consumed by humans or are sold for pet food production.

Fallen stock is dealt with on the farm and is not allowed to enter rendering. Regardless of species or reason for death (disease, treatment, transportation) fallen stock is disposed of in burial pits under veterinary supervision.

Carcasses or materials (incl. SRM) which are found to be diseased, suspicious or condemned during post-mortem inspection are incinerated. The compliance with these practices cannot be assessed on the basis of the available information.

Conclusion on the ability to avoid recycling

In light of the above-discussed information, it cannot be excluded that prior to 1997 the BSE agent, should it have entered the territory of Turkey, would have been recycled and potentially amplified. In 1997, after the official feed ban of 1996 and the feed controls that apparently started since 1997, this risk was reduced.

3.2 Overall appreciation of the ability to identify BSE-cases and to eliminate animals at risk of being infected before they are processed

Cattle population structure

There has been a gradual decline in the numbers of bovines over the last 20 years. This is due to a decline in the number of cattle of native- or cross-breeds. Culture cattle stock has increased from 1 million in 1990 to 1.8 million in 2000.

The CD gives details of the geographical distribution of the animals by breed type. Most culture cattle are found in the Marmara, Aegean, Middle South and Middle North regions. Cross-breed and native cattle dominate in the other 5 agricultural regions. Most animal holdings in Turkey are small family units. 72% of cattle holdings have 1-4 cattle heads fattening animals normally being over 1-1.5 years old. 27% have 5-19 heads, 2% are larger fattening units with up-to 1000 or more cattle for fattening but no own calf production.

As no statistics on mixed farms were provided, it is assumed that most of the smaller holdings will also have some poultry, if not for commercial purposes so at least for their own consumption. It cannot be assessed if and to which degree poultry feed would be used for these co-farmed poultry.

42% of the Turkish cattle population are native breeds, used for meat and calf production and some milk supply. From spring to autumn these cattle are on pasture but

in winter cows and calves are in stables and fed with straw, forage crops and concentrated cereal grains.

The main "cultured breed" of cattle is Holstein Friesian. These animals are kept in stables for dairy purposes. Their feed consists of wheat straw, fodder, forage crops and silage for maintenance requirement and concentrates of plant origin such as cereal grains and forage crops to meet their productive needs. The number of "culture" cows increased from 530.330 in 1990 to 904.849 in 2000 while that of native cows decreased from 3.4 million to 2 million heads. The third group of cows are cross breeds, their number increased from 1.9 million in 1990 to 2.3 million in 2000. Their husbandry is similar to that of the cultured breed.

Data on the age structure of bovine population in Turkey are recorded only on the basis of calves and adult cattle. The number of heads of cattle and calves (by breed) for 1999 are shown in Table 5.

In 2000 the age distribution at slaughter was 53.2% cattle (1.1 million) and 46.8% calves (978,000). In general the ratio was about 50/50 in all years since 1979.

Bovine Animals	Number (Head)	% of total
Calves (Culture)	647,652	6.0%
Calves (Cross-Breed)	1,739,501	16.2%
Calves (Native)	1,495,892	13.9%
Total calves:	**3,821,769**	**35.5%**
Cattle (Culture)	1,134,348	10.5%
Cattle (Cross-Breed)	3,086,499	28.7%
Cattle (Native)	2,950,108	27.4%
Total adult cattle:	**6,939,231**	**64.5%**

Table 7: Numbers (head) of cattle and calves by breed in 1999.

With regard to cattle productivity Turkey provides average figures for annual milk yield (1,830 kg/head) and carcass productivity (166 kg/head for cattle and 167 kg/head for calves). Turkey argues that this low productivity makes use of rather expensive animal protein in cattle feed economically unattractive, given the fact that the conversion ratio in poultry is much better.

BSE surveillance

Turkey first started an identification and registration system for bovine animals in 1991. Since 1995 breeder associations exist that keep registers for breeding cattle in Turkey. Preparations of legislation fully in line with the EU-"aquis" started in 2001. Complete ear-tagging and registration of all bovines begun in Turkey on 10 September 2001 while a computerised database was already set-up in February 2001. So far about 6 million cattle have been tagged and registered and 3 million are already introduced into the computerised database, as well as about 510.000 cattle holdings. Also breeder organisations started

tagging animals of their members and have now more than 500.000 cattle in their databases.

Imported breeding cattle are said to have been already identified and traceable in the existing system.

The animal identification and registration system for animal movements is described in detail in the CD. A number of recent improvements to the ID system are described but no evidence to support the efficacy of tracing is supplied.

BSE has been notifiable since 21/10/1997. Awareness/training for veterinary officers and private veterinarians as well as veterinarians working in the municipal and private slaughterhouses includes the subject of BSE. However, no detailed information is provided. Publications of articles on BSE have been issued in veterinary and human medicine journals especially since 1996. A brochure on BSE has been distributed to the Provincial and District Directorates of MARA, the municipalities, private veterinarians and other relevant organisations. The media also transmit reports and discussion on BSE. No compensation or reward schemes are described.

Samples from diseased animals are examined at the Veterinary Control and Research Institutes in Turkey. Those that died indicating neurological symptoms are subjected to histopathological, bacteriological, virological, toxicological and biochemical examinations. The CD provides detailed information on the procedures followed.

Brains are subjected to a differential diagnosis for BSE on histopathological grounds. Neurological diseases confirmed by the laboratory examinations are as follows: Rabies, Malignant Catarrhal Fever, Listeria Encephalitis, Botulismus, Babesiosis, Theileriosis, Enzootic Ataxia, Hypomagnesaemia, Lead Toxication, Nervous Ketosis, and Endosulfan Toxication.

Year	Number of total samples	Suspected cases for Neurological diseases	% Incidence of Neurological disease	BSE
1988	982	163	17	0
1989	1578	248	16	0
1990	1505	184	12	0
1991	1033	141	14	0
1992	1251	132	11	0
1993	1222	111	9	0
1994	1521	85	6	0
1995	1634	168	10	0
1997	1552	102	7	0
1998	1799	80	4	0
1999	2047	98	5	0
2000	2150	126	6	0

Table 8: Data on the total number of samples examined for all diseases, those that had neurological diseases and the number of BSE cases found.

A Committee for Monitoring and Surveillance has been established in Turkey and an active surveillance began in June 2001. Brain and tissue samples were collected at random from cattle over 30 months old, fit for human consumption, at slaughterhouses. 312 samples

were tested each with 3 diagnostic methods. All samples were negative. The number of samples is to be increased in 2002 from 311 to 3,000, focusing on animals over 24 months at the slaughterhouse. All imported live cattle will be subjected to quick tests when they are slaughtered.

On the basis of the available information it is concluded that it is unlikely that small numbers of BSE cases could have been discovered during the period of 1980-2000, even if the surveillance was apparently in line with the valid OIE recommendations. Also the numbers of the active surveillance are still too low to detect low levels of BSE incidence.

3.3 Overall assessment of the stability

For the overall assessment of the stability the impact of the three main stability factors and of the additional factor surveillance has to be estimated. Again, the guidance provided by the SSC in its opinion on the GBR of July 2000 is applied.

Feeding

Until a feed ban was adopted in 1996/97, feeding MBM to ruminants was legally possible. Therefore feeding is assessed as **"not OK"** before 1997. Since 1997 ruminant MBM is banned from ruminant feed and controls are in place. Therefore feeding is regarded as **"reasonable OK"** since 1997.

Rendering

Rendering was and is common practise in Turkey. SRM appear to be included in the rendering but fallen stock is excluded. The process conditions seem to be reasonably harsh but cannot be fully assessed as evidence for these and for controls is not supplied. However, taking account of the fact that fallen stock and condemned material is apparently not rendered and that all rendering facilities operate batch pressure processes, rendering is assessed as **"reasonable OK"** throughout the reference period.

SRM-removal

There is no SRM ban. It cannot be excluded that some SRM enter rendering therefore SRM removal is assessed as **"not OK"** throughout the reference period.

BSE surveillance

Passive BSE surveillance existed since some time but BSE only became notifiable in 1997. A new active surveillance has begun in 2001 but this is not yet regarded to be sufficient to detect low levels of BSE-incidence.

Stability of the BSE/cattle system in TURKEY over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM removal	BSE surveillance
1980-1996	Very Unstable	Not OK	Reasonably OK	Not OK	–
1997–2000	Unstable	Reasonably OK			

Table 9: Stability resulting from the interaction of the three main stability factors and BSE surveillance. The Stability level is determined according to the SSC-opinion on the GBR of July 2000.

On the basis of the available information it has to be concluded that the country's BSE/cattle system was very unstable from 1980-1995 and has been unstable since 1996/97.

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

In conclusion, the stability of the Turkish BSE/cattle system in the past and the external challenges the system has coped with are summarised in the table below. From the interaction of the two parameters "stability" and "external challenge" a conclusion is drawn on the risk that an "internal challenge" emerged that subsequently had to be met by the system, in addition to external challenges that occurred.

An external challenge resulting from cattle imports could only lead to an internal challenge once imported infected cattle were rendered for feed and thus contaminated domestic feed reached domestic cattle. Cattle imported for immediate slaughter or fattening would normally be slaughtered at an age too young to harbour plenty of BSE infectivity or to show signs, even if infected prior to import. However, as long as no evidence of the contrary is provided it is assumed, as a reasonable worst case assumption, that a certain fraction (less than 10%) of the cattle imported for slaughter end-up in the national breeding stock. The previously existing cattle identification and monitoring systems cannot ensure that this did not happen. These animals would pose a similar external challenge as cattle imported for breeding purposes.

Imported breeding cattle, however, would normally be about two years at import and live several years after import. Animals having problems would be slaughtered younger than normal. If being at an age of 4-6 years when slaughtered, they could approach the end of the BSE-incubation period and harbour, while being pre-clinical, as much infectivity as a clinical BSE-case. Hence the date when cattle imports could have led to an internal challenge is about 3 years after the import of breeding cattle that could have been infected prior to import. Special measures taken to avoid processing of imported cattle into feed could influence the risk of this happening.

On the other hand contaminated MBM would lead to an internal challenge in the same year it was imported because it is normally incorporated into feed soon after import and would than reach domestic animals, including cattle. This exposure could then induce an internal challenge.

Before 1996 the very unstable system was exposed to very high external challenges resulting from live cattle and MBM imports from BSE risk countries. It is therefore likely that the BSE agent entered Turkey and reached domestic cattle in that period. In view of the very unstable system it was recycled and amplified. The external challenges that continued to be experienced fuelled the growth of the resulting internal challenge.

INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN TURKEY			
Period	**Stability**	**External Challenge**	**Internal challenge**
1980-1985	Very Unstable	High	Likely to occur against the end of this period and growing
1986-96		Very High	Likely present and growing
1997-2000	Unstable	High	

Table 10: Internal challenge resulting from the interaction of external challenge & stability. The internal challenge level is determined according to guidance given in the GBR-opinion of July 2000.

4.2 Risk that BSE infectivity entered processing

If the BSE-agent was imported into the country by the earliest imports of breeding cattle, these cattle could have been processed while being close to the end of their incubation period in the mid to late 80s. If BSE-contaminated MBM was imported and reached domestic cattle, incubating domestic cattle could also have been processed since the mid- 80s. A processing risk therefore could have existed since the mid- 80s. In view of the instability of the system, this risk increased over time.

4.3 Risk that BSE infectivity was recycled and propagated

Given the instability of the system the BSE infectivity was probably recycled and amplified since the mid to late 80s when a processing risk began to emerge. The risk of propagation of the disease increased continuously since then.

5. CONCLUSION ON THE GEOGRAPHICAL BSE-RISK

5.1 The current GBR as function of the past stability and challenge

- The current geographical BSE-risk (GBR) level is *III, i.e. it is likely but not confirmed* that one or several domestic cattle are (clinically or pre-clinically) infected with the BSE-agent**.**

5.2 The expected development of the GBR as a function of the past and present stability and challenge

- As long as the stability remains as it is, the probability of cattle to be (pre-clinically or clinically) infected with the BSE-agent will continue to increase, even if further external challenges would be avoided.
- Any further external challenge will increase the risk that, over time, a BSE epidemic develops in the country.

5.3 Recommendations for influencing the future GBR

- Improving the stability of the system would render it less vulnerable to external challenges and would reduce, over time, the GBR.
- Improving passive (i.e. reliable notification and examination of animals showing clinical signs compatible with BSE) surveillance and expanding the recent active surveillance system would provide a better basis for assessing the validity of the current zero incidence. The efficiency of active surveillance is significantly increased if sampling by means of rapid screening of asymptomatic animals would be concentrated on at-risk cattle populations (adult cattle in fallen stock, emergency and sick slaughter).