

FINAL REPORT

ON THE ASSESSMENT OF THE

GEOGRAPHICAL BSE-RISK (GBR) OF

ICELAND

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, is 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 is suitable to carry out a qualitative assessment of the GBR.

Sources of data

- Country dossier (CD) consisting of information provided from the country's authorities in 2001 and 2002.

Other sources:

- EUROSTAT data on export of "live bovine animals" and on "flour, meal and pellets of meat or offal, unfit for human consumption; greaves", covering the period 1993 to 2000.
- UK-export data (UK) on "live bovine animals" 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.
- Revised UK export data from August 2001.
- Export data from the Czech Republic, Cyprus, Estonia, Hungary, Lithuania, Slovenia and Switzerland.
- Comments on the draft report and the final draft report received in May and June 2002.

2. EXTERNAL CHALLENGES

2.1 Import of cattle from BSE-Risk¹ countries

According to Iceland, no live cattle have ever been imported from UK and from any other BSE risk country since 1980. This is not in conformity with Eurostat data, nor with UK export figures. Eurostat indicates that in total 138 (UK: 150) live cattle were exported from UK to Iceland in the years 1980 (only UK data), 1981, and 1982 but none thereafter. Eurostat does not indicate any live bovine exports from any other MS to Iceland. The other BSE risk countries reported no live bovine exports. The Icelandic authorities confirmed that no such imports could possibly have happened.

2.2 Import of MBM² or MBM-containing feedstuffs from BSE-Risk countries

Table 1 gives an overview of the MBM-imports into Iceland, as provided in the country dossier and compares it with the available export statistics from BSE risk countries.

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

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 2301 10 "flours, meals and pellets, made from meat or offal, not fit for human consumption; greaves".

Iceland explained that all imported feedstuffs have to be registered by the FSFI³ before it can be shipped to the country. Then 24 - 48 hours prior to importing, FSFI has to be notified of the shipment. Both during registration and individual shipments a strict paper control is performed concerning quality as well as veterinary matter. Samples are taken at random as necessary.

Feedstuffs that are not registered are either destroyed or returned to the country of origin.

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
Denmark	CD										0												0	0
	other										1												6	7
Netherlands	CD									0														0
	other									25														25
UK	CD			0									0	0	0	0	0	0	0	0	0	0	0	0
	other			0									0	53	12	0	15	0	1725	1355	786	637		4607
Total																								
non UK	CD	0	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	25	1	0	0	0	0	0	0	0	0	0	0	0	6	32
UK	CD	0	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	0	0	53	12	0	15	0	1725	1355	786	637	0	4607

Table 1: MBM imports (metric tons) into Iceland (CD) and corresponding exports from BSE risk countries. Source for export data: Eurostat and UK export statistics and, where available, export statistics from other BSE risk countries. Note: Only imports in Risk periods are taken into account. Risk periods (grey shaded) are defined according to the SSC opinion of January 2002.

It has been prohibited since 1968 to sell feedstuffs containing imported MBM, BM and MM in Iceland. Since April 7th 1993 there is a ban on import of MBM, BM, MM, greaves and/or feedstuffs including any of these to Iceland (except for pet-food) in article 10.a of Act No. 25/1993 governing animal diseases and preventive measures against them. According to the CD no control for the absence of MBM has been carried out in imported feed.

According to Iceland, no MBM has ever been imported from UK and from other BSE risk countries since 1968.

This is not consistent with UK and Eurostat export figures that record around 5,850 tonnes of MBM exported from UK to Iceland, mainly since 1991.

- However, according to the revised UK export figures of August 2001, for the 53 tons recorded as export to Iceland in 1992 UK authorities are not able to find any record. For 12 tons exported in 1993 to Iceland a trader declaration is available, but the commodity is not specified and for 15 tons exported in 1995 an electronic record is available but details are missing.
- According to Eurostat another 4,503 tons of MBM have been exported from the UK to Iceland from 1997 to 2000. According to the UK authorities these exports, if they happened, must have been poultry meal because since 1996 any MMBM export from UK was banned. The UK authorities did not try to confirm whether these exports took place or not. Iceland provided documentation from its statistical office confirming that except for the 6 tons of feather meal imported from Denmark in 2000, no MBM also not of poultry origin has been imported within the reference period.

³ Active feed control has been in force in Iceland since 1921, first under the supervision of the Department of Agriculture, University Research Institute and later by the Agricultural Research Institute. Since 1994 the control has been within the Feed, Seed and Fertilizer Inspectorate (FSFI).

- Icelandic authorities contacted the Danish authorities and asked them whether they are able to confirm the MBM exports to Iceland in 1989 (1 ton). The Danish authorities replied that no MBM exports to Iceland took place in 1989.
- Iceland confirms that 6 tons of feather meal have been imported from Denmark in 2000. However, this feather meal was used for the production of fishmeal on an experimental basis in a feed mill not producing ruminant feed.
- Additionally, Eurostat registered exports from The Netherlands in 1988 (25 tonnes). Icelandic authorities have asked Dutch authorities to verify whether this export took place but did not get any reply so far.

In their latest comments the Icelandic authorities confirmed once more that no such MBM imports happened and stated that they assume miscoding had happened with regard to the country of destination.

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:

The country did not import live cattle from any BSE-risk country in the period 1980 to 2001.

- MBM imports:

On the basis of the information as described above it is assumed that at most 31 tons of MBM may have been imported into Iceland from the Netherlands and Denmark (feather meal) in the period 1980 to 2001. Together these imports represent a negligible external challenge.

External Challenge experienced by Iceland				
<i>External challenge</i>		<i>Reason for this external challenge</i>		
Period	Overall Level	Cattle imports	MBM imports	Comment
1980-2000	Negligible	Negligible	Negligible	

Table 2: 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). For the time being it is assumed that poultry MBM was imported from the UK and could have been contaminated with mammalian MBM.

On the basis of the available information, the overall assessment of the external challenge is as given in the table above. It is unlikely that the BSE-agent entered the country within the reference period.

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, it has been prohibited since 1968 to sell feeding-stuffs other than pet food or fur-feed including imported MBM, BM, MM and greaves in Iceland. It also was stated that MBM was never fed to cattle during the reference period. In 1978 a verbal agreement between the veterinary services and the domestic MBM producers was reached that MBM should not be used in feed to other animals than fur animals. This agreement was monitored by the veterinary service but no regulation was issued and no compliance data provided.

In Iceland, fishmeal is abundant and is used as protein source for food producing animals instead of MBM, MM and BM. No information was provided on the relative domestic prices for MBM and fishmeal during the last 20 years. However, Iceland indicates that monogastric animals could be legally fed with domestically produced MBM, MM and BM until January 2001, although it was not common (due to availability of fishmeal).

Since the EEA agreement in 1994, Iceland has had the same legislation as EU concerning feeds and feeding-stuffs. The EU veterinary legislation taken onboard so far however only covers legislation applicable to fish.

Since January 2001, there is a ban on use of MBM in feed for any food producing animals. MBM can still be fed to fur animals and used as fertiliser or as pet food. According to the CD, no control measures seem to be in place so far.

Potential for cross-contamination and measures taken against

Little information was provided on the structure and size of the Icelandic feed industry, its total annual production of different feeds and measures taken to avoid cross-contamination of MBM-free cattle feeds with MBM or MBM containing feeds.

According to the CD, feed control has been in force in Iceland since 1921⁴.

According to the CD 60.000 tons is the annual production of feed for livestock. Five feed mills are producing this and a sixth feed mill is only producing fish feed. Two plants are producing pet food and several plants/kitchens are producing feed for fur animals. It is declared that only the fur feed kitchens are permitted to use MBM in their production; they are not allowed to produce feed for any other type of animals.

Iceland stated that fishmeal is always supplied directly from the fishmeal manufactures to the feed manufacturers. It argues that therefore MBM, MM, BM and Greaves have not been on the premises where compound feeds for ruminants have been produced. Because of this argumentation, the inspection services have

⁴ Feed control was first under the supervision of the Department of Agriculture, University Research Institute, and later of the Agricultural Research Institute. Since 1994 the control has been within the Feed, Seed and Fertilizer Inspectorate (FSFI)

not called on microscopic or analytical measures to test the presence of MBM, MM, BM and Greaves in ruminant feedstuffs. It is hence not possible to assess on the basis of feed controls if indeed MBM was absent from ruminant feed, even in traces.

As little information is provided on feed transport and on mixed farms it is concluded that cross-contamination of cattle feed could occur, at least during transport and storage or via (accidental) cross feeding on farms throughout the period since 1980, i.e. before and after the various feed bans.

Rendering

A small rendering-plant operated in Iceland from the early fifties until 1995. In 1971 another rendering plant was built which closed down in 1999. A new rendering plant started in August 2000 and is now operating as the only rendering plant in Iceland.

The greatest part of animal raw material is buried, but animal waste including SRM from slaughterhouses in South- and Southwest Iceland is rendered in the only rendering plant in Iceland. In this context it is explained that the whole country has for 60 years been divided into quarantine zones (currently 36). There has always been a ban on movement of sheep between different zones and strict movement control on all ruminants between zones. It has been strictly forbidden to bring animal waste from a quarantine zone where scrapie exist for rendering in one of the above mentioned plants. Such animal waste therefore always should be buried.

According to the CD, since 1996 rendering plants have been operating in Iceland at the 133°C/3 bar/20min standard. This processing method became mandatory in 2000.

Historically there have been three rendering plants in Iceland and they are/have been under regular supervision by district veterinary officers. The veterinary officers check the origin of the raw materials in the rendering plant, general hygiene, processing conditions in the plants and labelling of the finished products. The two plants not anymore in operation were located at slaughterhouses. The inspection of the rendering facilities is carried out by the local district veterinary officers responsible for the meat inspection. A Special Veterinary Officer on ovine and bovine diseases from Chief Veterinary Office also monitored the plant during the sheep slaughtering season. Outside this season the inspection on rendering was less frequent.

The new plant now in operation is an independent enterprise not located at a slaughterhouse. This plant is inspected 3 – 4 times a year for general hygiene by the District Veterinary Officers and the local Environmental Officer inspects the environmental aspects of the plant.

In addition since 1994, the Feed, Seed and Fertilizers Inspectorate carries out quality control of the products, their distribution and usage.

No information was provided on details with regard to types of controls carried out in rendering plants, nor on their outcome. It is just stated that since 1996 no reports indicated that the rendering standard was not met.

Most of the MBM produced (no volume or share indicated) has been exported or it has been used for feeding of fur animal or as fertilizers. This fertilizer can be used on pastures and rangelands used for grazing according to the CD.

SRM and fallen stock

There is no SRM ban in place.

The rendered material will normally include SRM within the slaughterhouse offal or waste from slaughterhouses in South and Southwest Iceland. In other parts of the country all bovine waste material will be buried.

Fallen stock is buried.

Conclusion on the ability to avoid recycling

In light of the above-discussed information it is assumed that the BSE-agent, should it have entered the territory of Iceland could have reached domestic cattle, most likely due to cross-contamination of cattle feed or cross feeding on farms. Theoretically it could then have been recycled because SRM was rendered, even if the rendering processes are said to have been respecting the 133/20/3 standard and fallen stock is not rendered.

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

Period		Total all ages	Over 24 months old		
			Male **	Female	
			breeding	meat	dairy
1995-1999	n°	75,568	Very few	808	31,457
	age*	6.0			
2000	n°	72,135	Very few	949	27,064
	age*	5.9			

Table 3: Key data on the cattle population (age*: average age at slaughter).

**Almost all males are slaughtered before they become 30 months, most of them are slaughtered at 24 – 26 months old.

“Meat females above 24 months old” are beef breeds like Limousine, Angus etc.

The only breed of dairy cattle is the old native breed. The cows are small in size, weight on average around 450 kg and yield about 4.800 kg of milk per year. The cows are inwintered for approximately eight months, from mid/late September to late May or early June. The bulk of the feed is grass hay or silage with only 800kg of cereal concentrates being fed on average per cow per year. The concentrate is based on barley or maize with fishmeal as the primary protein source.

Co-farming, i.e. cattle and pigs/poultry on the same farm, does exist to a little extent and has been declining. According to the CD co-farming occurred on a level in the order of 3.8 % in 1982 and 0.7 % in 2001.

BSE surveillance

BSE has been notifiable since 1993 according to Act no. 25/1993 on animal diseases and preventive measures against them. When suspect cases are found they have to be reported to the Chief Veterinary Officer. Every animal showing signs of a disease of the central nervous system must be reported by the farmer to the local veterinary officer. He shall as soon as possible examine the animal without cost for the owner and judge the seriousness of the case and then report it to the Chief Veterinary Officer.

Compensation (full price of animals and compensation for loss of production) has been in place since 1993.

Awareness training is in place since 1988. All practising veterinarians and farmers have repeatedly received instructions based on the signs of scrapie and descriptions from England of BSE.

Laboratory personnel have been trained in Weybridge (UK) in 1993. Histopathology, immunohistochemistry (IHC) and PrP^{res} techniques are used, and samples from few animals (number not specified) have been sent to Weybridge, England for SAF.

Confirmation on suspect cases (clinical signs + histopathology positive + immunohistochemistry positive) would be requested from Weybridge (UK). (*Note: the requirement to be positive with all three methods makes it difficult to confirm a suspect as a case.*)

There is one laboratory for diagnostic services and research activities on TSE diseases both in animals and humans in Iceland.

According to the CD, a BSE-surveillance programme is in place since 1996 on the following principles:

- all suspect cases are reported, examined on the farm or slaughterhouse and then verified by laboratory examination of the brain;
- fallen stock and emergency slaughtered animals are examined randomly;
- random-sampling of asymptomatic cattle.

Year	Total n° of normal cattle surveyed (all > 36 month)	n° of CNS signs			Differential Diagnosis	n° of doubtful	n° of positive
		Total	> 24 months	> 36 months			
90-95	0	0	0	0		0	0
1996	1	2	1	1	Abscess	0	0
1997	13	2	1	1	Listeria, Abscess	0	0
1998	11	4	0	4	Abscess, inflammation, necrosis	0	0
1999	0	2	0	2	Brain tumor, abscess	0	0
2000	29	1	0	1	Brain tumor	0	0
Total 96-2000	54						
2001	422						
Total 96-2001	476	11	2	9		0	0

Table 4: Results of BSE examination on domestic animals.

The table provided by Iceland lists a total of 54 normal animals over 36 months tested within the surveillance programme between 1996 until end 2000. For 2001 the number of tested normal animals were 422. The total number of normal animals tested during 1996-2001 therefore is 476.

In addition, 11 cattle showing signs of CNS were tested during 1996 to 2000. These were declared not to have BSE-like symptoms but by way of precaution they were given special attention to exclude BSE. In all examined cases all three diagnostic methods gave negative result. No such animals were identified in 2001.

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 stability 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

According to Iceland there is a “verbal agreement” not to use MBM for ruminant feeding purposes since 1978 however, without any provisions issued and no compliance data were provided. There is a ban of MBM from feed for animals used for food production in place since January 2001 but fishmeal is still permitted. Feeding is regarded as “**not OK**” until 2000 and as “**reasonably OK**” thereafter. It is not “OK” because cattle feed is not examined for MBM contamination and cross-contamination cannot be excluded to occur.

Rendering

It was not convincingly demonstrated that rendering plants in Iceland have been operating under 133°C/3 bar/20min conditions since 1996. Only since 2000 these conditions are legally mandatory. Rendering is therefore assessed as “**Not OK**” until 1996 and “**reasonably OK**” since 1997.

SRM-removal

No SRM ban is in force in Iceland. Fallen stock is buried but rendered material included and includes SRM. SRM removal is therefore assessed as “**not OK**” throughout the reference period.

BSE surveillance

BSE surveillance is not adequate to detect clinical BSE incidence.

Stability of the BSE/cattle system in Iceland over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM removal	BSE surveillance
1980 - 1996	Extremely unstable	Not OK	Not OK	Not OK	↓
1997 – 2000	Very unstable		Reasonably OK		
2001	Unstable	Reasonably OK			

Table 5: Stability resulting from the interaction of the three main stability factors and the other stability factors. 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 extremely unstable until the 1996, very unstable from 1997 until 2000 and unstable since 2001. This indicates that BSE infectivity could have reached domestic cattle and could have been recycled and amplified.

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

In conclusion, the stability of the Iceland 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 level of "internal challenge" that emerged and that had to be met by the system, in addition to external challenges that occurred.

INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN ICELAND			
Period	Stability	External challenge	Internal challenge
1980-1996	Extremely Unstable	Negligible	Highly Unlikely
1997-2000	Very Unstable		
2001	Unstable		

Table 6: Internal challenge resulting from the interaction of the external challenge and stability. The internal challenge level is determined according to guidance given in the SSC-opinion on the GBR of July 2000.

Imports of contaminated MBM, MM, BM or Greaves would lead to an internal challenge in the year of import, if fed to cattle. The feeding system is of utmost importance in this context. If it could be excluded that imported, potentially contaminated feed stuffs reached cattle, such imports might not lead to an internal challenge at all.

In the case of Iceland the small MBM imports from The Netherlands which were not yet confirmed by the exporting country posed only a negligible external challenge to an extremely unstable system (1980-1996), which improved to very unstable (1997-2000) due to improvements of the rendering system.

Given the negligible level of the external challenge, it is highly unlikely that any internal challenges occurred.

4.2 Risk that BSE infectivity entered processing

- Given the negligible (or as close to zero as feasible) risk that BSE has been imported into Iceland, the processing risk was always negligible.

4.3 Risk that BSE infectivity was recycled and propagated

- Due to the fact that no BSE-infectivity was present in the system there was no risk that BSE-infectivity was recycled or propagated.

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 *I*, i.e. it is *highly unlikely* that 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

- Assuming that Iceland can continue preventing the BSE-agent from entering the country, it will remain highly unlikely that cattle are (pre-clinically or clinically) infected with the BSE-agent.
- However, given the still unstable system, any undetected or accidental external challenge could have very severe consequences, which would only become visible many years after such an accident.

5.3 Recommendations for influencing the future GBR

- All measures that improve the stability of the BSE/cattle system of Iceland would make the system less vulnerable and less dependent on the perfect functioning of a singular control measure. Of particular importance is a convincing monitoring and control of the 2001 feed ban and of the effectiveness of the rendering, or of the incineration of the rendering products. An improved surveillance would provide a better control of the efficiency of measures taken to counteract the BSE risk.