

FINAL REPORT  
ON THE ASSESSMENT  
OF THE  
GEOGRAPHICAL BSE RISK OF  
NIGERIA  
JUNE 2001

**NOTE TO THE READER**

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were voluntarily 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. This opinion is available at the following Internet address:

**<[http://europa.eu.int/comm/food/fs/sc/ssc/outcome\\_en.html](http://europa.eu.int/comm/food/fs/sc/ssc/outcome_en.html)>**

In order to understand the rationale of the report leading to its conclusions and the terminology used in the report, it is highly advisable to have read the opinion before reading the report. The opinion also provides an overview of the assessments for other countries.

## 1. Data

- The available information was suitable to finalise the GBR risk assessment.

### Sources of data

Country dossier, consisting of

- Questionnaire for the assessment of the GBR of Nigeria, completed by the Federal Ministry of Agriculture and Natural Resources, Dept. of Livestock and Pest Control Services on 27/10/2000, received by fax on 31/10/2000.
- Application for BSE-free Status of Nigeria (23/7/99).
- Press release of the Nigerian Federal Ministry of Agriculture (9/4/96)
- Comments on the Draft Report on "the Assessment of the GBR of Nigeria", received on 3 may 2001 by the European Commission from the Federal Ministry of Agriculture and Rural Development of Nigeria.

Other sources:

- EUROSTAT data on "live bovine animals" and on "flour, meal and pellets of meat or offal, unfit for human consumption; greaves", 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 might have included non-mammalian MBM.

## 2. EXTERNAL CHALLENGES

### 2.1 Import of cattle from BSE affected countries

According to the Country dossier there were no cattle imported from the UK or other BSE-affected countries. However, the UK export data registered 450 cattle as being exported in 1981 to 1983 to Nigeria, of which 120 were destined for slaughter. 18 cattle were exported from UK to Nigeria in 1987 and 6 in 1988. In addition, about 1,400 live cattle were exported to Nigeria from BSE-affected countries other than UK (see table 1).

In the comments of the Nigerian competent Authority in reply to the first version of the present report it is stated that the information available indicated that the animals imported went to a private farm and that the ages ranged between 1-2 years. They were young calves imported for breeding purposes to upgrade local stock. However, climatic conditions were unfavourable for their retention and they were slaughtered and consumed; no breeding took place within the 1-2 months of their presence. However, it was not specified to how many of the imported cattle this information referred.

In conclusion it is assumed that the Eurostat/UK export data correctly represent the import of live cattle into Nigeria from BSE-affected countries.

Import of live cattle (n°/period) into <u>Nigeria</u> from BSE-affected countries															
Origin:	UK			DK		IT		FR		DE		NL		Non-UK	
Data Source:	CD	EU	UK	CD	EU	CD	EU	CD	EU	CD	EU	CD	EU	CD	EU
1980		41	80												
1981		290	290				779								779
1982		78	78												
1983		2	2		189										189
1984													6		6
1985															
1986													23		23
1987		18	18												
80-87:		429	468		189		779						29		997
1988		6	6												
1989										217					217
1990										70					70
1991															
1992															
1993															
88-93:		6	6							287					287
1994															
1995															
1996															
1997															
1998									107						107
1999															
2000															
94-00									107						107

**Table 1:** Live Cattle imports. Shading indicates period of different risk that UK-exports carried the BSE agent, 1988-1993 being the period of highest risk. Sources: CD = Country Dossier, EU = Eurostat and export country data, UK = Export data from UK.

On the basis of the available data it is concluded that Nigeria received about 1,000 cattle between '80 and '87, nearly 300 between '88 and '93 and 107 in 1998 from BSE-affected countries other than UK. In addition Nigeria imported about 450 cattle from UK, mostly before '83, and only 24 in '87/88.

## 2.2 Import of MBM or MBM-containing feed stuffs from BSE - affected countries

According to the country dossier Nigeria did not import any MBM, BM, MM or Greaves, or feed stuff containing this from BSE-affected countries. On the other hand the EU and UK export statistics show exports of mammalian flours, meals and pellets from the UK to Nigeria in several years and the EU export statistics also indicate significant exports from several BSE-affected countries other than the UK.

Nigeria did not provide its own import statistics, therefore the Eurostat data are taken into account in this assessment.

On the basis of the Eurostat export data it is therefore concluded that Nigeria received about 10,630 tonnes of MBM from BSE-affected countries other than UK and 205 from UK.

While most of the non-UK exports came from FR before 1989, 117 tonnes were imported from UK in the period regarded to be of highest risk (1986-1990) for MBM to be contaminated.

Import of MBM, MM, BM or greaves (t/year) into Nigeria from BSE-affected countries													
Origin	UK			IT		DK		BE		FR		All non-UK	
Data Source:	CD	EU	UK	CD	EU	CD	EU	CD	EU	CD	EU	CD	EU
1980		7	7								644		
1981											708		
1982		36	36								2,630		
1983											375		
1984											200		
1985											100		
80-85		43	43								4,657		4,657
1986											590		
1987		17	17						80		1,923		
1988									250		300		
1989			100		700		10		644		49		
1990									250				
86-90			117		700		10		1,152		2,862		4,724
1991									40		72		
1992									163		54		
1993									254				
91-93									457		126		583
1994			2										
1995									21				21
1996													
1997													
1998													
1999					215								215
2000			43		430								430
94-00:			45		645				21				666
80-00			205		1,345		10		1,630		7,645		10,630

**Table 2: MBM-imports. Shading indicates period of different risk that exports carried the agent, 1986-1990 being the period of highest risk for UK imports. Sources: CD = Country Dossier, EU = Eurostat and French export statistics, UK = UK export statistics.**

### 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.

Nigeria experienced a moderate external challenge due to live cattle imports from UK and other BSE-affected countries in the period 1980 to 1987, mostly before 1983. After that, it was very low and negligible.

The MBM-imports represented a high external challenge between 1980 and 1990 and a moderate one from 1991 onwards.

The accumulated external challenge is therefore assessed to have been high between 1980 and 1990 and moderate since 1991.

This indicates that the BSE-agent is likely to have entered the country since early '80s, most probably by contaminated MBM-imports from France and UK between 1987 and 1989.

<b>External Challenge experienced by <u>NIGERIA</u></b>				
<i>External challenge</i>		<i>Reason for this external challenge</i>		
<b>Period</b>	<b>Level</b>	<b>Cattle imports</b>	<b>MBM imports</b>	<b>Comment</b>
<b>1980-1985</b>	<b>High</b>	<b>Moderate</b>	<b>High</b>	Based on export data.
<b>1986-1990</b>		<b>Very low</b>		
<b>1991-1993</b>	<b>Moderate</b>	<b>Negligible</b>	<b>Moderate</b>	
<b>1994-2000</b>				

**Table 3: Assumed external challenge that might have been experienced by Nigeria due to imports of live cattle and/or MBM.**

### **3. STABILITY**

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

##### **Feeding:**

There is no official feed ban.

According to the country dossier cattle are only fed agricultural residues and pasture (free range grazing) and it was “always the tradition” not to feed MBM or similar material to cattle. Bone meals are stated to be fed to poultry. Plans for installing a feed-ban were mentioned in the documentation submitted in 1999 (banning meat meal and bone meal from animal feed for all species) but they were apparently not yet realised until 3 May 2001, when the latest comments were received from the country.

The dossier further states that the co-operative sector prohibited the use of animal by-products for cattle feed and that there is also a prohibition of SON (Standards Organisation of Nigeria) of MBM in cattle feed. However, it is not clear how well these prohibitions are implemented and controlled and how relevant they are in relation to the total cattle population.

Without additional information it is assumed that feeding cattle with MBM, BM, MM or greaves was and is not general practice but is legally possible. As a reasonable worst case assumption it therefore is considered possible that by this route, domestic cattle could have been exposed to the BSE-agent, should contaminated MBM have been present in the country.

**Rendering:**

According to the country dossier bovine raw materials are currently not rendered because they are considered abattoir waste, which is "usually burned or carted off as refuse". It was also not rendered for feed in the past because "Nigeria is a developing country and its husbandry practices have not incorporated scientific feed regimes", which probably meant to indicate that no supplementary feeding takes place.

Under the Second Livestock Development Programme (SLDP) funded by the World Bank which ended recently (1999), pilot rendering plants were proposed but they were never operative. Presently, Nigeria has no rendering plants. Earlier proposed plants are now being used as Hides/Skins sheds. Rendering of bovine material was found being uneconomical in Nigeria because humans consume almost all parts of the carcass.

The only processing of bovine parts that exists in Nigeria is the crushing and/or burning of bones for local poultry feed or for export.

In view of the fact that rendering industries were apparently considered but never realised because humans consume most parts of the carcasses, it is accepted that no rendering exists in Nigeria. Also sub-industrial scale rendering is considered unlikely but cannot fully excluded.

**SRM and fallen stock**

There is no SRM ban and bovine brains, spinal cord and probably other SRM are regarded as edible and normally consumed by humans. Fallen stock is always burnt or buried.

**Cross-contamination:**

There is no information on cross-contamination. It is assumed, as a reasonable worst case scenario, that cross-contamination occurs. This makes involuntary feeding of MBM to cattle likely, for example during the late '80s when significant amounts of MBM were imported from BSE-affected countries.

**Conclusion on the ability to avoid recycling**

In light of the above-discussed information it has to be assumed that the BSE agent, should it have entered the territory of Nigeria via MBM could have reached domestic cattle. However, due to the absence of industrial rendering and the fact that sub-industrial scale rendering is also regarded unlikely, it would most probably not have been recycled and amplified.

### **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**

According to the information provided, Nigeria has a cattle population of about 14 million heads, 65% male, 35% female. Iron branding and ear tagging is applied for farmed animals but no information is given as to identification of nomadic animals.

According to the country dossier female cattle are used for milking and both female and male cattle are used for farming and transport. There are no intensively managed dairy farms. However, larger managed farms exist in which animals are not nomadic but on fixed free range. Beef cattle are slaughtered between the age of 2 and 4 years and it is unclear if specialised dairy cows exist and if these live longer.

#### **Surveillance and culling**

According to the country dossier (Oct, 2000), BSE has been a notifiable disease since 1988, together with all other diseases in the A and B lists of OIE. The Official Gazette of the Federal Republic of Nigeria of 26.2.1988, however, does not list BSE as a notifiable disease and does not refer to the A and B list of OIE. This legislation is currently undergoing review to include BSE and other emerging diseases.

The July 1999 dossier stated that **awareness / training** measures started in 1996. These measures are targeting official veterinarians, veterinary practitioners and farmers. However, on the basis of the available information the efficiency of these measures cannot be judged.

**Compensation** is provided for notifiable diseases. According to the above-mentioned Official Gazette this concerns rabies, as the only listed disease with CNS symptoms.

**Surveillance** of BSE has been carried out, according to the country dossier (Oct. 2000), in 1998. In a nation-wide BSE-surveillance programme 188,000 non-symptomatic cattle were visually examined for BSE, 70% older than 36 months, and the other 30% at least older than 24 months. The National Veterinary Research Institute is the main research Institute of Nigeria. No information on laboratory capacities and manpower for BSE-examination is given but it is indicated that the national reference laboratory would confirm BSE-cases by means of histopathology and histochemistry. Apparently no BSE-surveillance took place before and after 1998.

### **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 factors, mainly cross-contamination and surveillance plus culling, has to be estimated. Again the guidance provided by the SSC in its opinion on the GBR of July 2000 is applied.

**Feeding** of MBM to cattle is still not forbidden by law. Although a high importance of free-range pasture as basis of cattle nutrition can be assumed, it

cannot be excluded that MBM reached cattle, at least occasionally or involuntarily. Therefore, feeding was and is “not OK”.

**Rendering** is reported to be completely absent in Nigeria. It, therefore, is assumed that this stability factor was and is “OK”.

**SRM-removal:** SRM are regarded edible and are consumed by humans. Non-edible materials are normally burnt or buried. This factor, therefore, is considered as “OK”.

The **other** factors are reducing stability: Surveillance is inadequate and would not ensure identification of clinical cases and cross-contamination is likely to occur if MBM is available and included in non-ruminant feed.

On the basis of the available information it is concluded that the country's BSE/cattle system was and is stable.

Stability of the BSE/cattle system in <u>NIGERIA</u> over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM	Other*
1980 at current	stable	not OK	OK	OK	

Table 4: Stability over time in function of the three main stability factors. The influence of the other stability factors is indicated by an arrow.

#### 4. CONCLUSION ON THE RESULTING RISKS

##### 4.1 Interaction of stability and challenges

The conclusion on the stability of the Nigerian BSE/cattle system over time and on the external challenges the system had to cope 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 <u>NIGERIA</u>			
Period	Stability Level	External Challenge Level	Internal challenge
1980-1990	Stable	High	Unlikely but cannot be excluded
1991-2000		Moderate	

Table 5: Internal challenge over time, resulting from the interaction of stability and external challenge.

Nigeria was exposed to a high external challenge, from imports of live cattle and MBM between 1980 and 1990, and to a moderate challenge from 1991 onwards, also due to MBM imports. The country's BSE/cattle system was stable throughout this period. However, the feeding was not OK and while it is unlikely, it cannot be



excluded that imported MBM reached domestic cattle. This would have led to an internal challenge. However, from 1993 to 1998 no MBM exports to Nigeria were recorded, implying that no new infections could have happened in that period.

As recycling of the agent was virtually impossible, the internal challenge that might have existed in the late 80s decreased since '93 at the rate with which the cattle infected died and left the system. Hence the source of a potentially still existing internal challenge in addition to old cattle infected before '94 are the MBM imports after 1998. Accordingly it is concluded that at present it is unlikely that an internal challenge exists but it cannot be excluded.

#### **4.2 Risk that BSE infectivity entered processing**

It cannot be excluded that already in the 80s incubating live cattle or contaminated MBM was imported into Nigeria. This imported MBM could have reached domestic Nigerian cattle. Infected domestic or imported cattle could have entered processing in the late 80s, early 90s. Theoretically new infections could have resulted from MBM-imports after 1998 but this is regarded unlikely, albeit not excluded. These cattle would enter processing when slaughtered.

#### **4.3 Risk that BSE infectivity was recycled and propagated**

As there was no industrial rendering, the risk that the BSE-agent was recycled and propagated is very small throughout the period 1980-2000.

### **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 *II*, i.e. *it is unlikely, but not excluded* 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**

As long as stability or external challenge remains constant, the probability of cattle to be pre-clinically or clinically infected with the BSE-agent will remain proportional to the external challenge resulting from MBM-imports and the efficiency by which it is prevented that imported MBM could reach domestic cattle.

#### **5.3 Recommendations for influencing the future GBR**

- Improving the stability of the system, in particular by avoiding any (imported) MBM being fed to cattle would, over time, reduce the GBR further.
- Improving passive surveillance measures and initiating active surveillance, e.g. by systematic testing of adult cattle in fallen stock and emergency slaughter, would enhance the capacity to confirm absence of the disease from the country or at least to ensure that the incidence is below a certain statistical threshold.