MINK FARMING IN ITALY:

Mapping and future prospects

STUDIO COME

HUMANE SOCIETY INTERNATIONAL EUROPE

The research presented in this report was carried out by Studio COME srl on behalf of Humane Society International - Europe.

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ABSTRACT

Mink farming in Italy: status quo and future prospects

How many mink farms are still active in Italy? How and under which conditions do they operate, especially following the COVID-19 emergency? What is their economic relevance for the sector? What is their future?

The present work – commissioned to Studio COME srl by Humane Society International - Europe (HSI/Europe) – tried to answer these questions with the aim to outline the current situation, identify possible conversion strategies, and come to a permanent closure of this activity – incompatible with animal welfare and public health – in Italy, as is already the case in many other European countries.

The research was based on the collection and analysis of data from as neutral sources as possible (statistics, records, and data from public registers and institutions). To ensure objectivity, information was collected from different stakeholders: environmental and animal protection organizations on the one hand and fur farming and retail representatives on the other.

With reference to mink farming activities, the research shows that:

- In Italy there are only **10 active mink farms left**, **5 of which presently without animals** due to COVID-19.
- All farms are small agricultural enterprises, with a total of **14 workers** (employed on a part-time or full-time basis).
- Most enterprises carry out **at least one more activity** besides mink farming; in some cases, mink farming is not the primary activity.

Available data on the market for mink fur show that:

- The sector is going through a **worldwide crisis** and Italy is no exception.
- The average price of mink fur exchanged at the Kopenhagen Fur Auction (the most important fur auction in Europe) of September 2021 is **lower than €30/skin.**
- In Italy, the fur market is characterised by small levels of production of raw skins and by the primacy of manufacturing.
- Italian mink farmers' revenue – considering current fur prices – can be estimated between 550.000 and 800.000 euros.
- Even assuming these revenues contribute entirely to the export value of the Italian supply chain, it would be a percentage close to **0.15%.**

The research shows a relevant environmental impact of mink farming, as well:

- The **carbon footprint** of mink fur production is the highest of all textiles, 5 times higher than the footprint of wool, which is already extremely high, with a relevant impact on climate change.
- Mink farms contribute to **water and soil pollution**.
- Captivity has a relevant impact on **the health and wellbeing of minks**, with health problems such as gastric ulcer and tooth fall, but also stereotypies and other behavioural issues such as feeding difficulties, self-mutilation, cannibalism, infanticide.
- Both fur farming and production can be a risk to **human health**.

Numerous conditions are therefore currently favouring the closure of mink farms in Italy. Since many mink farms currently carry out secondary or other agricultural activities already, a first conversion hypothesis is towards a model of **circular agriculture**. This will ensure an innovative and sustainable development that is financially supported by the European Commission. Another viable option – that is going to benefit from dedicated funding from the National Plan for Recovery and Resilience for the reduction of CO_2 emissions – is the conversion of spaces currently used for fur farming into renewable energy plants. Even small plots of land, such as those currently used for farming mink, are suitable for installing **agrivoltaic systems,** ensuring the continuation of agricultural activities, providing shade for various crops, and producing energy at the same time.

MINK FARMING IN ITALY. MAPPING AND FUTURE PROSPECTS

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INTRODUCTION

The aim of this research study — commissioned by Humane Society International - Europe (HSI/Europe) and conducted by Studio COME Srl — is to map mink farms in Italy and provide information about their main characteristics and current economic situation, in order to identify possible strategies to convert the mink farms that are still operational.

The purpose of the analysis is to provide a useful information framework to evaluate bringing a definitive end to fur farming in our country, as has already happened in several other European countries (United Kingdom, Austria, the Netherlands, Slovenia, etc.), providing farmers and workers involved with some viable options for the reorganization of activities, orienting them towards ecological transition and environmental sustainability, also taking advantage of the new opportunities offered by the funding of the National Resilience and Recovery Plan (PNRR) (Mission 2: Green Revolution and Ecological Transition).

The analysis highlights the difficulties encountered in recent years by the fur farming sector, and in particular mink production, further aggravated by the COVID-19 pandemic, which led to the culling of many mink due to the spread of the virus on fur farms.

In the early 1990s, the fur industry was flourishing in Italy, with 125 mink, fox, and chinchilla farms; hundreds of thousands of animals were killed annually. Since then, the situation has changed significantly, also due to the actions of animal protection groups who have been exposing the cruelty of fur production for decades. The fur market is, in fact, consistently in decline worldwide. Public opinion has reached, also thanks to awareness campaigns, a new awareness: in Italy in 2015, for example, 90.7% of the population stated that they were opposed to the breeding of animals for fur[1].

The pandemic has further aggravated the situation throughout Europe, and in particular in our country, where mink farms are located in the regions most affected by the SARS-CoV-2 virus (Lombardy, Veneto, Emilia-Romagna) and the animals, as reported by some animal protection groups in October 2020[2], have been infected. In fact, animal protection groups have publicly denounced that at least two of the samples taken[3] in August 2020 from mink on a single farm in Capralba (CR), were positive for SARS-CoV-2 and that this information was obtained only after numerous and persistent appeals and requests for access to documents to the Ministry of Health, to the Scientific Technical Committee, to the Regions and to the Experimental Zooprophylactic Institutes (of Lombardy and Emilia-Romagna). Only in October were the results of molecular testing made public.

The following month, with the Ordinance of 21st November 2020, the Ministry of Health established that *"in case of confirmation of the disease, the minks on the farm are subject to killing, with euthanasia methods, and destruction"* (Art. 2, paragraph 3) and that *"in accordance with the precautionary principle, with the exception of the maintenance of breeding animals already present at the entry into force of this order, the activities of mink farms on the national territory are suspended until February 28, 2021 included"* (Art. 3, paragraph 1)[4]. The Health Authorities did not immediately report mink infected with SARS-CoV-2 and, instead of starting a rigorous screening with diagnostic tests in all mink farms in Italy, even after the confirmed cases of positivity, the Ministry of Health (and the Regions) limited themselves to clinical observation, even though they knew that minks can also be asymptomatic.

Between November and December 2020, 30,000 minks present in the Capralba (CR) farm were slaughtered. Subsequently, also in the farm of Villa di Conte (PD) the first cases were recorded with positivity to SARS-CoV-2 antibodies confirmed in 100% of the animals sampled for serological neutralisation tests[5]. Also, in this case, the passive surveillance was not timely or preventive, and the Lazio Regional Administrative Court ordered the killing of the animals following the precautionary principle. On 25th February 2021, the provisions of the ordinance of the Minister of Health from 21st November 2020 were extended until 31st December 2021.

The present research is based on the collection and analysis of official data (Registry of Companies, National Institute of Statistics - ISTAT, etc.) and existing mapping carried out by some animal protection groups to verify and update the data. Contacts have been made with the Italian Fur Association and Confindustria Moda, which provided some data on market

[1] https://eurispes.eu/ricerca-rapporto/rapporto-italia-2015/
[2] https://www.lav.it/news/covid-in-allevamento-visoni-italia
[3] https://www.lav.it/cpanelav/js/ckeditor/kcfinder/upload/files/files/2020.10.26%20Risposta%20IZSLER.pdf
[4] https://www.oie.int/fileadmin/Home/MM/Ordinanza_21_novembre_2020.pdf
[5] https://www.sivempveneto.it/la-zona-gialla-dellallevamento-dei-visoni-nel-quadro-pandemico-attuale-il-28-febbraio-scade-lordinanza-di-sospensione-verso-quale-tipo-di-sorveglianza/

trends in Italy. The Italian Fur Producers' Association (AIP) communicated that it does not have specific data on mink farms, both with regards to turnover and balance sheet data, given that this information is the exclusive property of the farmers who, as owners of the farm, decide whether and how to make them public. Moreover, when asked about the fur market trend in the last 3 years, AIP specified that the market data collected do not concern the specifics of mink nor of Italian farms, but the product made with any type of leather, coming from the international market.

Data on the finished product are collected and processed for AIP by the Study Centre of Confindustria Moda, like any market study that is based on various sources (from sample analyses of the sector to data from sources, such as Unioncamere, ISTAT and customs) and are available, but do not include information on the Italian mink market, on the number of mink pelts produced or sold in Italy and on the relevance of the farms in order to identify possible paths of conversion, because specific mink analysis is not relevant for the purposes of the Observatory. The data on the market trends in 2021 will be processed in mid-February: due to the seasonal nature of the product, only annual surveys are carried out (the aforementioned data are collected between December and January and the research results are released between mid and late February).

As far as the associated breeders are concerned, they have declared, through the AIP, that they are not interested in collaborating in identifying possible scenarios for changing their activities.

The main sources used are:

- the mapping of active farms in Italy, carried out periodically by some animal protection groups;
- the business registers kept by the Chambers of Commerce, through the use of the Telemaco database;
- the veterinary services of the National Health Services (ASL) since active mink farms fall under their purview;
- ISTAT data regarding companies in the sector of the economic activity of interest;
- national ISTAT data and international data from UN Comtrade, OEC and the World Bank regarding the international trade in mink skins and furs;
- scientific articles regarding the environmental impact of farms.

In particular, to reconstruct and analyse trends in the international market for mink fur, ISTAT data and international data from UN Comtrade, OEC and the World Bank were collected and analysed, as well as data collected and published by the International Fur Federation, the main reference organisation for the sector at an international level. The data relating to fur sales at the main European fur auction houses were then analysed, focusing the analysis on the performance of Kopenhagen Fur, the main European auction house. In particular, the trend of prices of raw pelts and tanned furs in the month of September for the years 2014 to 2021 were analysed.

METHODOLOGY

The research, which was conducted during the period July-October 2021, made use of desk analysis methodologies, aimed at reconstructing the entire regulatory and operational framework of mink breeding and integrating it with specific in-depth studies aimed at outlining the economic and environmental context of the activity.

Data and information were collected with regard to the farms currently active in Italy and the economic size of the sector. To guarantee the objectivity of the analysis, the research is based primarily on the collection and examination of data from institutional sources (in particular statistical data, information and data from registers and public institutions) and, where possible, we tried to collect data and information from the various stakeholders. For this reason, the analysis was conducted by consulting both sources of environmental and animal protection groups (such as Essere Animali, LAV, PETA, etc.) and sources linked to the world of producers and the fur industry (AIAV, Confindustria Moda). Desk research was also accompanied by contacts and exchanges of information, on the one hand with animal protection groups that work to improve the welfare of animals (Green Impact, HSI/Europe) and, on the other, with trade associations in the fur industry that are interested in the continuation of fur farming (AIP, Federfauna). Finally, information was collected on the impact of mink farms on human and animal health, and on the environment.

This research report includes an annex, which provides more in-depth information on the regulatory and procedural framework related to mink farming. European and Italian legislation on fur farming – and mink production in particular – has been analysed and systematised, including brief references to the legislation of non-European countries. The most

relevant information on the conditions and procedures used on mink farms has been collected and summarised, as well as a specific focus on the COVID-19 emergency, which has had a very significant impact on farmed mink. Finally, the annex provides some brief information about the fur-free policies adopted within the international fashion system.

THE ITALIAN SITUATION

Mapping of mink farms

From the mapping carried out by some animal protection groups[6], which have been engaged in the monitoring of fur farms for several years, it appears that there were 13 active fur farms in Italy in January 2020. As of February 2021, after the hardest months of the SARS-CoV-2 pandemic, there were 6 operational mink farms remaining, while 4 other farms were still in business but did not have any animals present and 3 had ceased their activities in January 2020. The information on operational fur farms was also confirmed by the relevant competent National Health Services (ASL), which, when contacted, could not provide data on the number of animals and the situation of the farms, but confirmed the presence of active mink farms in their territory.

In total, as of February 2021 **there were 10 active mink farms in Italy**,[7] but only 6 had reported the presence of animals, while the other 4 – which are formally active – at the date of the survey did not have any animals on site, but were waiting to restock their cages. According to the same mapping, in February 2021, there were just under 30,000 mink present on the farms. However, in September 2021, after finding positive cases of SARS-CoV-2 in mink on the farm located in Villa del Conte (PD), the Lazio Regional Administrative Court ordered the culling of all (approximately 10,000) mink present.

The COVID-19 emergency has therefore drastically changed the world of mink farming, decreasing the numbers of animals significantly. In particular, the absence of mink on the 5 farms mentioned above has led to a reduction of 58,500 breeding mink in Italy today. Therefore, once the pandemic crisis has passed, the number of breeding mink in our country could increase to a total of almost 80,000 mink.

The territorial distribution of farms is concentrated in three regions of Northern Italy (Lombardy – 5 farms; Veneto – 2 farms; Emilia-Romagna – 2 farms). Only one farm is located in Central Italy, in Abruzzo.

As can be seen from table 1, these are agricultural businesses or individual businesses whose owner is a small breeding entrepreneur. Only one of the 5 agricultural companies is an S.r.l. (limited liability company), while all the others are simple companies. Simple companies and sole proprietorships are not required to file financial statements. It is, therefore, not possible to access public data regarding the economic performance of these companies.

The year of registration at the Chamber of Commerce reveals that these enterprises are mostly consolidated companies, since they all have been active during the twenty-year period from 1996 to 2016; the breeding farm of Castel Di Sangro (AQ) is not an exception; it moved to the Register of Companies of L'Aquila in 2017, but had already been active since 1996.

Table no. 1 - Farms in Italy as of February 2021

Municipality of location	STATUS	Number of animals	Presence of animals	Legal form	Year of registration
Calvagese della Riviera (BS)	Active	4,000	Yes	individual enterprise - small entrepreneur direct farmer	1996
Capergnanica (CR)	Active	1,500	Yes	simple company - agricultural enterprise	2016
Capralba (CR)	Active	30,000[8]	No	simple company - agricultural enterprise	2008

[6] https://www.essereanimali.org/visoniliberi/allevamenti-visoni-italia/

[7] https://www.essereanimali.org/2021/02/allevamenti-di-visoni-in-italia-ecco-dove-sono-quelli-attivi/

[8] Between November and December 2020, 30,000 mink on the Capralba (CR) farm were culled after the presence of SARS-CoV-2 positive mink had been detected.

Castel di Sangro (AQ)	Active	1,500	Yes	limited liability company - agricultural enterprise	2017
Galeata (FC)	Active	10,000	Yes	individual enterprise - small farmer entrepreneur	2010
Misano (BG)	Active	2,000	No	simple company - agricultural company	2013
Montirone (BS)	Active	1,500	No	simple company - agricultural undertaking	1996
Rovolon (PD)	Active	15,000	No	individual enterprise - small farmer	1996
San Marco (RA)	Active	2,500	Yes	individual enterprise - small entrepreneur, direct farmer	1996
Villa del Conte (PD)	Active	10,000[9]	Yes	individual enterprise - small entrepreneur, direct farmer	2015

The data collected from the mapping carried out by the animal protection groups were compared with data from the Italian Chambers of Commerce with reference to the specific sector of activity.

The Ateco code of reference for the activity of mink farming is code 1.49.2 which, as is evident from the list of activities shown in figure 1, is not specific in itself since it refers to "breeding of animals for fur," which include animals, such as chinchillas that are currently bred also as domestic pets.

» A AGRICOLTURA, SILVICOLTURA E PESCA
» 01 COLTIVAZIONI AGRICOLE E PRODUZIONE DI PRODOTTI ANIMALI, CACCIA E SERVIZI CONNESSI
» 01.4 ALLEVAMENTO DI ALTRI ANIMALI

01.49 - Allevamento di altri animali

01.49.10	Allevamento di conigli
01.49.20	Allevamento di animali da pelliccia
01.49.30	Apicoltura
01.49.40	Bachicoltura
01.49.90	Allevamento di altri animali nca

The data extraction from the Italian Chambers of Commerce's Telemaco database concerning all the companies registered with Ateco code 1.49.2 reveals the presence of 311 companies throughout the country, which report "breeding of fur-bearing animals" as their main or secondary activity. Of these, 46 are active, while all the others have ceased operations. Restricting the search only to those companies that report code 1.49.2 as their main activity, the database lists only 26.

In this list of 26, it is possible to find only 6 of the farms that have been identified by the existing mappings as still being active. The reason for this is linked to the fact that, as shown in table 2, which reports the information extracted from the Chamber of Commerce records of the farms involved, not all the mink farms currently active in Italy have been registered at the Chamber of Commerce with the main activity corresponding to Code 1.49.2 – breeding of animals for fur.

Table no. 2 – Characteristics and activities of mink farms in Italy

Municipality of location	Gender of entrepreneur/ Owner	Description of prevailing Ateco code	Other activities	N. of employee
Calvagese della Riviera (BS)	M	breeding of other animals	1.62.09 - other support activities for animal production (excluding veterinary services) - with specification "mink pelting" in the chamber of commerce listing	2
Capergnanica (CR)	M + F	breeding of fur animals		1
Capralba (CR)	3M + 1F	breeding of fur animals		3

[9] In September 2021, after finding in April 2021 positive cases inside the breeding farm of Villa del Conte (PD), the killing of all minks present has been ordered.

Castel di Sangro (AQ)	2M + 2F	pig farming		
Galeata (FC)	M	cultivation of non-permanent agricultural crops	1.49.2 - breeding of animals for fur; 35.11 - electric power generation; 55.20.52 - farm-related lodging activities	2
Misano (BG)	3 F	breeding of fur animals		1
Montirone (BS)	2 F	cultivation of flowers in the open air	1 1.49.2 - breeding of animals for fur 1.62.09 - other support activities for animal production (excluding veterinary services); 56.10.12 - farm-related food service activities; 1.61 - support activities for crop production; 47.91.1 - Internet commerce of any product	2
Rovolon (PD)	M	breeding of animals for fur	1.13 - growing of vegetables and melons, roots and tubers; 1.21 - growing of grapes	1
San Marco (RA)	M	breeding of animals for fur		1
Villa del Conte (PD)	M	breeding of animals for fur	41.2 - construction of residential and non-residential buildings	1

Consistent with the data extracted from the Telemaco database, it emerges from the surveys that there are only 6 farms registered with the specific Ateco code (1.49.2). Of these, four are those for which the breeding of animals for fur is the sole business activity. Two farms, which indicate that mink breeding is their main enterprise, are also engaged in other activities.

The other four active farms are registered at the Chamber of Commerce with a different enterprise as their main activity: in two cases, the sector is still farming, in two others it is horticultural (cultivation of non-permanent agricultural crops, cultivation of flowers in the open air and the farming of other animals). For three companies, mink farming and related activities are still distinguishable as secondary activities or through specific information provided in the Chamber of Commerce register. In one case, there is no link between the business activity recorded in the business card and mink farming. Nonetheless, the presence of mink and of farming activities has been confirmed by the competent National Health Service (ASL), confirming that it is to all intents and purposes a fur farm.

The data suggest that these companies are operating in a sort of "grey area," which does not always make them immediately identifiable through the Chamber of Commerce documents. Moreover, most of the companies do not engage exclusively in mink breeding, but also carry out other activities (in some cases as a secondary activity, in others as their main activity). The other activities indicated in the Chamber of Commerce records of the 10 companies examined include:

- cultivation of non-perennial agricultural crops;
- cultivation of vegetables and melons, roots and tubers; cultivation of grapes;
- cultivation of flowers in the open air;
- plant production support activities;
- production of electricity;
- accommodation activities related to farms;
- farm-related food service activities;
- construction of residential and non-residential buildings.

There is, therefore, the possibility that mink farms may focus their activities on other aspects of the agricultural sector, developing or strengthening – possibly with the necessary economic support – lines of activity that are already partially present.

With regard to the owners and employees of the 10 active farms, the Chamber of Commerce records provide information on the company structure and the number of employees for simple companies and sole proprietorships.

The small farmers owning sole proprietorships that raise mink are all male (n = 5). The four sole proprietorships are owned by between 2 and 4 partners, in which women primarily prevail: there are 7 female managing partners and 4 male managing partners. 2 of these 4 companies are exclusively female. The only limited liability company is made up of four partners equally divided by gender, even though women own only 20% of the company shares.

As far as the number of employees is concerned, the enterprises are very small, with a maximum of three employees, often only one. According to the Chamber of Commerce records, there are a total of 14 employees on the ten farms. In many farms the owner is directly involved with the help of one or two people, sometimes family members.

These data are entirely consistent with those of the periodic ISTAT survey on agricultural enterprises.

It is useful to point out that agricultural businesses, like all enterprises, are subject to a compulsory periodic survey, the data from which are incorporated into the database called ASIA – Statistical Register of Active Businesses. The information relating to the entire macro-sector A – agriculture, forestry and fishing – was, however, not publicly available to users in the ISTAT data published and available online, so it was necessary to ask ISTAT to deliver a customised extraction.

Given the numerical limitation of the data relating to the specific sector of interest (Ateco Code 1.49.2), ISTAT researchers were able to extract only the data shown in Table 3, referring to the year 2019.

Table no. 3 – Data extracted from the 2019 ASIA survey on agricultural enterprises with reference to Ateco code 1.49.2 - farming of animals for fur

YEAR	NUMBER	EMPLOYEES	INDEPENDENT (*)	STAFF	BUSINESS_VOLUME_ASIA	UAA (ha)
2019	24	7.59	35.14	42.73	2,382,291	131.86

The data relate to agricultural enterprises that list fur farming as their main activity: there are 24 in 2019 (while the extraction from the Telemaco database lists 26). Overall, there are about 43 staff members in these 24 companies[10], of which only slightly more than 7 employees. This data also seems to be in line with what emerges from the Chamber of Commerce records, in which the average number of employees per company is around 1.5.

The last two data sets extracted by the ISTAT researchers concern two variables on which the Chamber of Commerce records do not provide information. It is, therefore, interesting to analyse them, while taking into account that the data set in this case does not exclusively comprise active mink farms, but companies that engage in fur farming as their main activity.

The turnover for the entire Ateco 1.49.2 sector amounts to about 2 million 300,000 euros, an average of less than 100,000 euros per annum for each company. It is evident, therefore, that we are not talking about a wealthy and flourishing sector from an economic point of view.

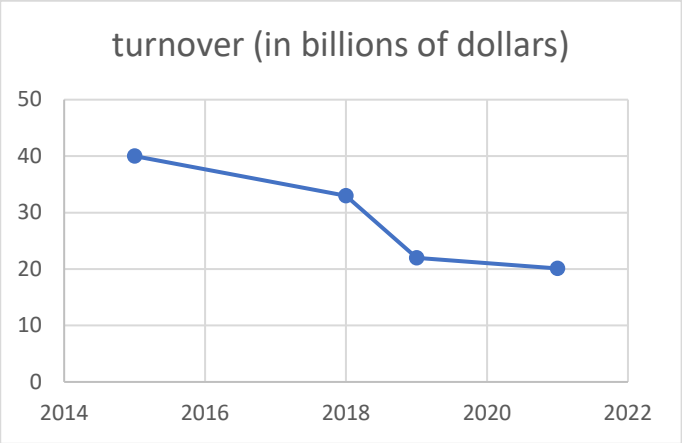
The data on the usable agricultural surface (UAA) indicates that, overall, the whole sector comprises a little more than 130 hectares, corresponding with an average of about 5.5 hectares per company. This is a fairly small average area, lower than the Italian figure, which, although with considerable regional differences, is approximately 11 hectares.

[10] The decimals in the number of employees refer to working time, which can be full or part-time in differentiated percentages.

Therefore, overall, the information gathered from the mapping of active mink farms confirms that in our country there are currently a small number of companies, which have limited areas of land at their disposal and employ a very small number of workers, generating a limited volume of business.

Analysis of the fur market

A general analysis of fur market trends in both our country and Europe is useful to obtain indications about the future potential for recovery and the development of the sector.



European and world market trends

After a particularly positive period between 2000 and 2013, the global fur market has been in sharp decline, both in terms of production and turnover.

The International Fur Federation, which is the leading international fur industry organisation, reports a decline in the total turnover of the global fur market from $40 billion in 2015 to $20.1 million in 2021 (see chart no. 1)[11], with a 50% decrease over the last 6 years.

After a peak in 2014, global production has also strongly declined, with about 40 million pelts traded in 2020 (see figure taken from Hansen, 2020,[12] which reports world data on the production and price of mink pelts from 1990 to 2020).

The declining trend in the production and cost of mink pelts is also confirmed by the analysis carried out for the purposes of this research on the number of pelts traded and the average price achieved at Kopenhagen Fur – the main European auction house – in September auctions from 2014 to 2021 and reported in Table No. 3.

Table no. 3 – Kopenhagen Fur Auction data for September auctions

	2014	2015	2016	2017	2018	2019	2020	2021
Number of pelts sold	4,971,690	7,131,404	4,160,282	5,520,050	7,794,853	7,348,206	6,501,972	2,089,319
Average cost in euros	€36.01	€23.47	€26.18	€25.46	€19.90	€24.73	€17.23	€27.29

The Italian fur market: trends and characteristics

In this general context, the Italian market is no exception.

AIP has testified that the effects of COVID-19 have heavily impacted the turnover of small and medium-sized companies in the fashion industry, which have recorded a fall in profits of about 30% in 2020. The world of fur has been affected by the problems linked to the pandemic, not only due to the compulsory closure of retail stores due to lockdowns, but also because international auctions for the sale of skins were not held, thus preventing the supply and production of orders acquired in the trade fairs held immediately before the spread of the pandemic[13]. According to data processed by the Confindustria Moda study centre for AIP, the value of Italian production at the retail level stood at €593 million in 2020, compared to €1.38 billion in 2019 and €1.275 billion in 2018. Early forecasts for 2021 attest to a small post-COVID-19 recovery in the fourth quarter of the year.

[11] The graph was constructed with IFF data reported from several sources: https://www.ilsole24ore.com/art/pellicce-continua-battaglia-naturali-e-sintetiche-qual-e-piu-ecologica-AC4RHE4?refresh_ce=1, https://www.ice.it/it/news/notizie-dal-mondo/166692, https://www.wearefur.com/global-fur-retail-trade-worth-20-1bn-indicating-strong-bounce-back-post-pandemic/

[12] https://static-curis.ku.dk/portal/files/247984541/UK_Fur_Ban_Report_03_09.pdf

[13] Data provided by AIP for the purposes of this research.

At the last TheOneMilano trade fair, which was held in September 2021, the president of the trade fair company Norberto Albertalli quantified the decline for the entire fashion sector (-26%) for 2020, which was far greater than the figure calculated by the Confindustria Moda study centre. *"The cross-section of the fur industry shows production values down 42.8% in 2020 compared to 2019."* The decline in exports to the Far East are among the biggest causes of the sales slump for specialty companies. Overall exports fell from 37% to 160.1 million. The industry declined from 1.028 billion to 593 million in revenue[14]. Despite this, Albertalli reports that Italy continues to be one of the world leaders in fur exports.

Production	
Production of mink skins: (1,000)	150
Export (million USD):	
Raw fur skins	4.6
Tanned or dressed fur skins	79.5
Articles of apparel, clothing access. etc. of fur skin	389.1
Import (million USD):	
Raw fur skins (USD)	83.9
Tanned or dressed fur skins	78.6
Articles of apparel, clothing access. etc. of fur skin	92.6
Fur supply chain	
Farming: Total fur animal farmers	27
CMT: Number of operating businesses	1,199
Wholesale: Number of operating businesses	323
Retail: Number of operating businesses	17,445
Fur wholesale value (million EUR)	682
Fur retail value (million EUR)	1,275

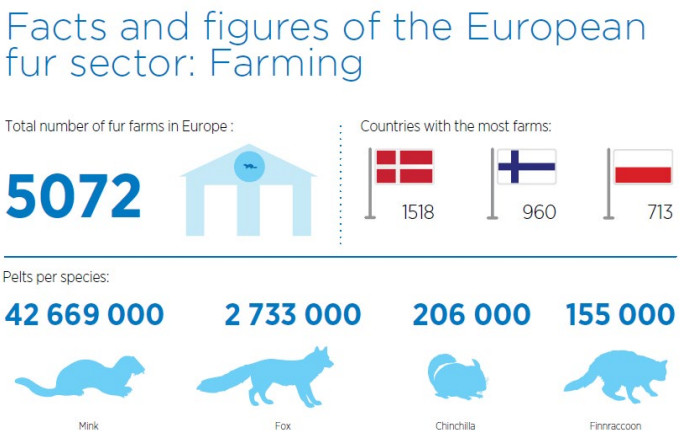
Sources: UN (2020), Kopenhagen Fur (2020) and Associazione Italiana Pellicceria (2019)

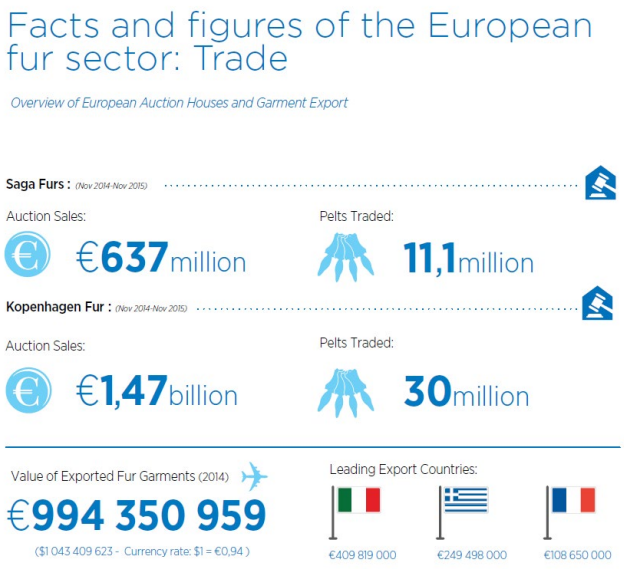
The Italian market is in fact characterised by two aspects: reduced production of raw pelts and European primacy in manufacturing. Data provided by Hansen (2020)[2] and related to the mink fur supply chain in Italy clearly show these characteristics. The production is estimated at 150,000 skins per year (with 27 active farms reported in the article, currently there are 10, of which only 5 with animals), while the total number of companies engaged in the wholesale and retail sectors is close to 20,000. In a document presented to the Senate Justice Committee in 2019, AIP themselves estimate the number of fur operators at around 19,000, 90% of which are specialised retailers or fashion collection retailers[15].

Therefore, Italy mainly processes imported skins from abroad and exports finished products.

These data are also confirmed by the International Fur Federation, which, in its 2015 annual report, summarises the figures for the fur industry in Europe, differentiating the production of pelts (farming) from the trade of furs (trade).

Source: International Fur Federation (IFF) – Annual Report 2015





These figures highlight Italy's very limited contribution to the production of mink fur. Indeed, the report identifies 27 farms in Italy, corresponding with 0.5% of the more than 5,000 farms in Europe. In the fur trade, on the other hand, Italy is the first country in terms of export value, covering alone, in 2015, 41% of the exports from European countries.

These data are entirely consistent with the information gathered from foreign trade databases at a national (ISTAT) and international (UN Comtrade) level.

[14] https://www.mffashion.com/news/livestage/la-pellicceria-42-8-nel-2020-cerca-il-riscatto-a-theonemilano-202103191634232646

[15] https://www.senato.it/application/xmanager/projects/leg18/attachments/documento_evento_procedura_commissione/files/000/196/201/ASSOCIAZIONE_ITALIANA_PELLICCERIA.pdf

In fact, table 4 shows the data relative to the information published by ISTAT on the import-export of goods coded with the Ateco 2007 code AA01492 – Animals for fur; raw hides and skins for fur, reptile or bird skins, available for the last three years. These data do not refer exclusively to mink pelts, but they do confirm the information on the Italian market trend. The data show a foreseeable collapse of trade between 2019 and 2020, both in terms of value and volume; but a general decline is also detectable between 2018 and 2019.

Table no. 4 Commercial exchange for code AA01492	IMPORT			EXPORT		
	2018	2019	2020	2018	2019	2020
Value of exchanges in €	335,700,075	332,095,623	194,152,506	22,170,776	20,681,869	12,835,172
Volume of trade in kg	4,622,037	3,694,252	2,389,167	2,992,006	4,740,916	4,787,192

The value of hides exported by Italy is much lower than the value of imports. The geographical areas to which Italy primarily exports are in Europe – namely, in order of significance, United Kingdom, Denmark, Romania – and Asia (China). On the other hand, the countries from which Italy imports most pelts from fur-bearing animals and raw hides are China and Russia, followed by Finland and the United Kingdom in Europe.

The Combined Nomenclature (CN8) provides a higher level of detail with respect to the type of goods traded. The CN8 code 43021100 – in fact, tanned or processed furskins, whole, with or without heads, tails or paws (not assembled) of mink relate precisely to trade in processed mink skins.

Table no. 5 Commercial exchange for the code NC8 43021100	IMPORT			EXPORT		
	2018	2019	2020	2018	2019	2020
Value of trade in €	162,740	134,389	114,811	701,038	911,326	712,783
Volume of trade in kg	364	635	92	1,468	2,961	3,150

Table 5 shows that the exports of tanned or prepared pelts are much higher than imports to Italy. The countries to which Italy exported the most (in terms of trade value) in 2020 were the United Kingdom, China and the Philippines, while in 2019 the highest value exports were to Greece and Russia. Imports of processed mink skins are very limited, as shown in the table.

The UN Comtrade database also reports information on the value and volume of trade with foreign countries[16]. The search was carried out for two codes: 430110, corresponding to raw mink skins, whole, with or without heads, tails or paws, and 430211, corresponding to mink skins, tanned or processed, whole, with or without heads, tails or paws (not combined). Again, the data clearly indicate that Italy mostly imports raw hides and exports processed products.

Period	Trade Flow	Reporter	Partner	Commodity Code	Trade Value (US$)	Netweight (kg)	Qty Unit
2020	Import	Italy	World	430110	$5,339,423	37,951	Weight in kilograms
2020	Export	Italy	World	430110	$913,754	3,330	Weight in kilograms
2020	Import	Italy	World	430211	$2,484,879	8,919	Weight in kilograms
2020	Export	Italy	World	430211	$6,665,909	18,142	Weight in kilograms
2020	Re-Export	Italy	World	430211	$2,791,517	8,499	Weight in kilograms

The information collected shows an **indirect link between the number of mink skins produced in Italy** (and therefore the number of animals raised) **and the economic values of the fur market,** which is taken into account within the Italian Fashion System: a 2017 document published by AIP states that *"the Fur supply chain is structured in such a way as to favour the internationalisation of sector operators whose "core" activity is Design & Finished Goods"* and again that *"production is integrated into the clothing and textile sectors [...] in order to promote synergies between the world of fur*

[16] https://comtrade.un.org/Data/

and the Italian Fashion System."[4] More specifically, with reference to the request for data on the Italian fur market for the purposes of this report, AIP specified that: "*The market data collected do not concern the specifics of mink or Italian farms, but the product made with any type of skin, from the international market. The data on the finished product are collected and processed for AIP by the Centro Studi di Confindustria Moda, like any market study that is based on various sources (from sample analyses of the sector to data from sources such as Unioncamere, ISTAT and customs) and are available but do not include information on the Italian mink market, on the number of mink furs produced or sold in Italy and on the importance of the farms in order to identify possible paths of conversion, because the mink analysis is not relevant for the purposes of the Observatory."*

The "contribution" of Italian mink farms

Considering what has emerged on the characteristics of the Italian market and the clarifications of AIP itself with reference to mink farms, it seems clear that the contribution of the 5 farms currently active and with animals on site can be considered minimal – if not irrelevant – to the performance of the Italian and global market.

Assuming as a starting point what was presented in the 2015 Annual Report of IFF, which described the presence of 27 farms for a production of 180,000 mink pelts per annum, the estimated value of the annual production of the 5 active farms with live mink should be around 30,000 pelts. From the data collected, there are currently about 20,000 mink on the 5 active farms. It is, therefore, possible to consider this range – between 20,000 and 30,000 animals – to calculate an estimate of the annual income of the Italian mink farmers. Considering that the average selling price of a mink pelt at the last auction of Kopenhagen Fur (September 2021) was €27.29, we can estimate a total revenue of between about 550,000 and 800,000 euros per year.

Even if these revenues were to contribute entirely to the export value of Italian supply chain – and we have seen that, in reality, the contribution of Italian farms is not even specifically noted – it would be a percentage close to 0.15%[17].

The small number of remaining farms with a reduced number of employees and a negligible contribution to the fur market are elements that contribute to being able to create a scenario in which the definitive closure of this activity seems feasible without serious economic repercussions to the Italian fur industry itself.

Moreover, it should be noted that the trend of the sale price of a mink skin has been consistently decreasing and has been so low at the last European auctions (less than €30), that the mink breeding activity itself does not seem to be sustainable, especially if it is managed in compliance with all the norms and legislative constraints that are claimed to safeguard the "welfare" of the animals.

THE ENVIRONMENTAL IMPACT OF FARMS

Although the following data do not refer specifically to the Italian context, it is useful to also briefly mention the environmental impact of mink production, since it is an element that contributes significantly to its characterisation as an unsustainable activity.

The environmental impact of farming activities is notoriously high. Already in 2006 – now 15 years ago – the FAO published a report that drew the world's attention to and influenced public opinion on the significant impact of intensive farming activities[18]. With specific reference to mink farms, the main study is the research of Bijleveld *et al.* (2011),[19] which delved into the environmental impact of mink farms, indicating that:

- to produce 1 kg of mink, 11.4 raw skins are needed, so more than 11 animals;

[17] The percentage was calculated on the value of exports also presented in IFF's 2015 Annual Report, amounting to about 409 million euros.

[18] https://www.fao.org/3/a0701e/a0701e00.htm

[19] Bijleveld, M.; Korteland, M.; Sevenster, M. (2011). The environmental impact of mink farm production. Delft, CE Delft report. https://www.gaia.be/sites/default/files/campaigns/attachments/environmental_impact_mink_fur_production_1.pdf

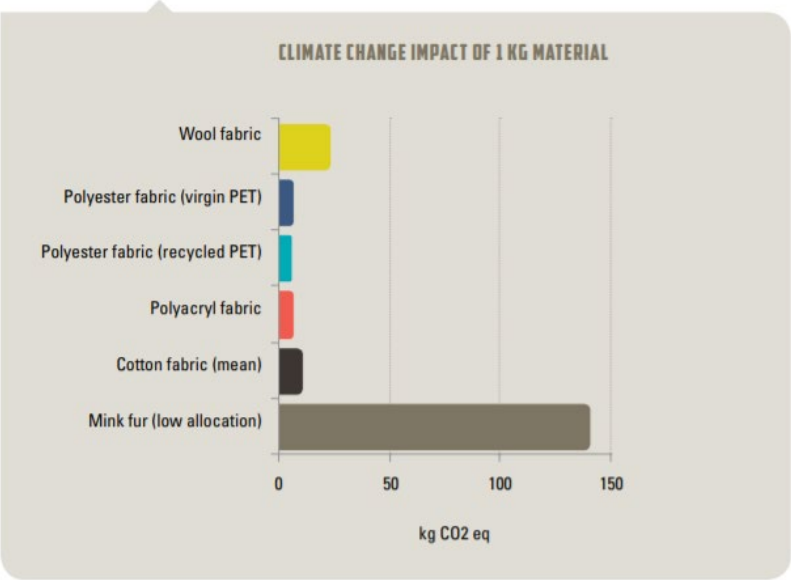
- for the same number of mink pelts, 563 kg of feed is needed, an incredibly high amount for a single kilogramme of finished product.

The environmental impact of farms can be seen in numerous aspects such as:

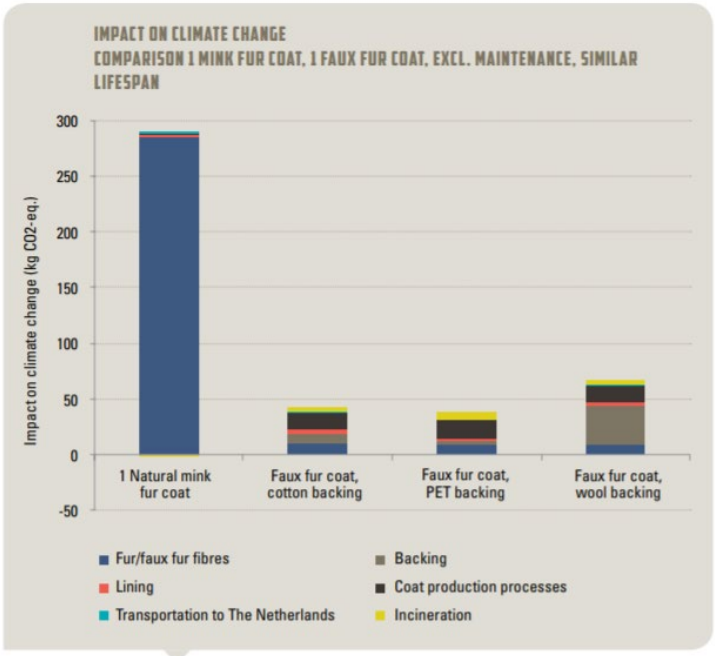
- **Climate change.** According to research by MTT Agrifood Research Finland in 2011[20], the carbon footprint of a mink pelt is equal to that of an average Finnish consumer, and much higher than that of the production of alternative textiles to mink. In addition, the energy consumption for mink production and the entire fur production and sales cycle is very high, as it includes – in addition to farming, food transport, and waste disposal – the transport of the pelts to auctions and then to buyers around the world, processing and transport to the final buyer, and maintenance (e.g. in a cold or cool environment) by the consumer. Overall, the climate footprint of mink is 5 times greater than that of wool[5].
- **Soil and water pollution.** Mink farms also produce large amounts of manure and processing waste, which, if not managed properly, have a significant impact on soil pollution. In countries, such as Lithuania and Poland, ad hoc inspections have been conducted on how organic waste is disposed of by mink farms and an alarming number of violations have been found[21]. In terms of water pollution, organic waste from farms flowing into nearby rivers or reservoirs produces abnormal algal growth. In 2012, in a region of the Canadian Province Nova Scotia, mink farms were reported as the most likely source of pollution in some lakes near to which the farms were located[22]. In addition, tanning and dyeing also have a significant impact on the environment: when the animal has been slaughtered and skinned, its pelt is treated with a mixture of toxic chemicals to "convert the raw hide into a durable material" (in other words, to prevent it from rotting in the buyer's wardrobe). Several types of sodium chloride – along with ammonia, formaldehyde, hydrogen peroxide, and other chromates and bleaching agents – are used to preserve and dye fur.
- **Animal and human health**. The very ways in which mink are kept in captivity and bred have a negative impact on their health and welfare: the inability to run or swim, the confinement in small cages, the way they are handled, etc. Mink in captivity may display health problems, such as gastric ulcers or tooth loss, but also stereotypies and other behavioural issues, such as difficulty feeding, self-mutilation, infanticide, or cannibalism[23].
  The SARS-CoV-2 virus had a very heavy impact on the health of mink, which is a species particularly susceptible to respiratory diseases and were culled in large numbers, primarily to prevent the risk of transmission of the virus from mink to humans and vice versa. This culling also was to address the possibility of viral mutations in mink, which scientists immediately identified as a possibility and risk to the effectiveness of vaccines, recalling the need for a holistic approach to health, which takes into account simultaneously humans, animals and the environment[24].
  In general, as the pandemic has amply demonstrated, mink farms can pose a threat to human health. Infections, such as leptospirosis that can cause serious kidney problems in humans, have been found in mink raised in countries like Denmark and the United States[25]. Even a very recent 2021[26] study reports that mink farms can form a reservoir of bacteria resistant to key antibiotics used in human health.
  In addition to diseases and bacteria that can be transmitted from mink to humans, it should be noted that the mink fur manufacturing process itself can have a negative impact on human health. This is mainly due to the use of potentially dangerous chemicals, such as formaldehyde and chromium, during the tanning process. Independent laboratories in several countries around the world, including Italy, have found high levels of toxic products in fur-

[20] http://www.mtt.fi/mttraportti/pdf/mttraportti29.pdf
[21] https://www.furfreealliance.com/local-pollution/
[22] https://www.cbc.ca/news/canada/nova-scotia/mink-farms-likely-polluted-lakes-study-finds-1.1238053
[23] https://www.theguardian.com/environment/2020/sep/29/film-showing-cannibalism-prompts-probable-ban-on-fur-farms-in-poland
[24] https://www.tandfonline.com/doi/full/10.1080/01652176.2020.1867776; https://ncceh.ca/content/blog/mink-farming-and-sars-cov-2-staying-vigilant-human-animal-interface
[25] https://www.science.org/doi/10.1126/science.abf0461
[26] Agga, G.E.; Silva, P. J; Martin, R.S. (2021). Detection of extended-spectrum beta-lactamase-producing and carbapenem-resistant bacteria from mink feces and feed in the United States. Foodborne Pathogens and Diseases. Jul 2021, 497-505. https://doi.org/10.1089/fpd.2020.2898

trimmed children's products from several fashion brands. However, there is no specific legislation on the levels of hazardous chemicals permitted in the fashion industry in Europe[27].



These data on the environmental impact of mink farms have also prompted researchers to investigate comparisons with the production of other types of textile material. For example, although wool is an animal product with a significant impact on climate change, its impact is far lower than for mink. Even lower is the impact of man-made textiles, as summarised in Figures 2 and 3 from the www.furfreealliance.com website and based on the 2013 Bijleveld study[28].



It is clear from the figures that even synthetic materials (which in many cases make extensive use of fibres responsible for forms of microfiber pollution) have an environmental impact at least five times lower than that of mink fur. Although there are some vegan products that have an important environmental impact, with reference to textiles, the available

[27] https://www.furfreealliance.com/toxic-fur/

[28] Bijleveld, M. (2013). Natural mink fur and faux fur products, an environmental comparison. Delft, CE Delft. https://www.furfreealliance.com/wp-content/uploads/2016/01/CE_Delft_22203_Natural_mink_fur_and_faux_fur_products_DEF-1.pdf

data confirm that it is animal production that causes the greatest environmental damage, especially with regard to climate change[29].

PROPOSALS FOR CONVERSION

The data presented above regarding the performance of the fur market in Italy and in Europe show that this is certainly not a strategic sector for the Italian economy. The sector appears to be in crisis from an economic point of view, demand in the domestic market is falling and, as far as the foreign market is concerned, it is mainly Russia and China that are the most flourishing markets, which have sustained the world market. In the last decade, the economic crises that hit Russia in 2016 and China in 2020 have shown the undoubtedly growing fragility of the industry worldwide. In Russia, in September-October 2021, demand for mink fur, compared to the same months in 2019, nearly halved.[30]

The demand for animal fur is, in fact, constantly decreasing. Fur is no longer in demand and consumers, especially younger ones, have become more attentive and sensitive to the use of eco-sustainable fabrics and products that respect the environment and animals. For example, the analysis of the data collected on the trend of the Kopenhagen auction house in recent years has clearly shown how, despite the fact that the costs of farming are rising in both Europe and in our own country to ensure the quality of the skins, the decrease in demand and the entry into the market of countries with fewer regulatory constraints on breeding lead to a significant decrease in the price of skins. After the boom recorded in the period 2000-2010, in which sales increased by 70%, the market has once again been on the decline in recent years, recording a total of 60 million furs sold in 2019 compared to 80 million in 2014. In addition to the decline in demand, the value of the pelts has also declined substantially. In 2013, a typical mink pelt sold for over $90, while in 2019 the average yield was around $30.

In addition to the global data, as we have seen, the Italian market is also in a steep decline.

In this context, the farms remaining in Italy are residual and currently have few animals. They are companies that operate in a "grey area" and are not always easily identifiable through Chamber of Commerce documents. Almost all of them are not exclusively involved in farming mink, but carry out other activities (in some cases as a secondary activity, in others as their main activity). The 10 companies involved in the research were involved in agricultural activities (i.e. cultivation of flowers, vegetables, melons, grapes, etc.), restaurant and accommodation activities related to agricultural tourism and, finally, the production of electricity.

Therefore, there are presently many conditions that favour the closure of mink farms in our country: the small number of companies and the reduced number of employees, which obviously means that the economic and social impact of the decision to close farms in the sector would be relatively low.

Also in our country, as has already happened in the Netherlands, which brought forward to 2021[31] the permanent closure of all mink farms that had been previously scheduled for 2024, the current COVID-19 situation seems to be particularly favourable due to the low number of animals present in the farms, eliminating the need for a transition period for the closure and conversion of activities.

Finally, as we have seen from the information collected for the mapping, many of the companies that are currently engaged in mink breeding are already involved in secondary agricultural activities on which they could focus more, strengthening – with the economic support also guaranteed by access to National Recovery and Resilience Plan (PNRR) funding – lines of activity already present.

In this direction, the **conversion towards models of circular agriculture** guarantees an innovative and sustainable economic development, because it allows the critical problems associated with the high environmental impact of

[29] https://goodonyou.eco/the-environmental-impact-of-animal-products-in-fashion/

[30] https://thegoaspotlight.com/2021/10/31/the-pandemic-collapsed-sales-of-fur-coats-in-russia-business-rbc/

[31] On August 27, 2020, the Dutch government decreed the definitive closure of all mink farms starting from 2021, thus anticipating by 3 years the already planned total ban on the breeding of "fur" animals which, according to a law of 2012, should have come into force in 2024.

traditional agriculture[32] and animal farming to be overcome. Circular agriculture, in fact, is a sustainable and non-intensive model in which everything produced is reused, becoming a resource. Circular agriculture includes farming of crops associated with animal farming, organic farming and agroforestry, along with recycling and use of wastewater: a model, therefore, in which "waste" is reduced to a minimum and the use of land respects and enhances its characteristics. It is also particularly suitable for small, family-run agricultural land, such as the land utilised by the mink farms that are presently active. It is also a model strongly promoted, including financially, by the European Commission, through initiatives, such as the European Green Deal, which includes, for example, the *EU Farm to Fork* strategy that aims to promote the sustainable production, distribution and consumption of food, together with waste reduction throughout the food chain. In a broader perspective, the Italian government has taken measures to promote and support circular economy through the Ministerial Decree of 11th June 2020 of the Ministry for Economic Development (MISE) for research and development projects for circular economy[33], a decree that *supports the research, development and experimentation of innovative solutions for the efficient and sustainable use of resources, with the aim of promoting the conversion of productive activities towards a model of circular economy in which the value of products, materials and resources is maintained for as long as possible, and the production of waste is reduced to a minimum.*

The funds available to work on circular agriculture include the European Fund for Agricultural and Rural Development (EAFRD) and the LIFE Programme, as well as the PNRR, which allocates about 6.8 billion euros for agriculture and its sustainable development[34]. In addition, ISMEA (Institute of Services for the Agricultural Food Market) provides subsidised loans for agricultural businesses and manages specific funding and support calls such as "Più impresa" (More business) to encourage generational turnover in agricultural businesses and "Donne in campo" (Women in the field) to support agricultural businesses run and managed by women[35].

Innovative investments in agricultural equipment and machinery, which can contribute to the transition towards a model of circular agriculture, are supported by a special fund of the Ministry for Economic Development[36], which allows grants to be obtained for up to 40% of the cost for the purchase of capital goods, up to a maximum of 20,000 euros for each beneficiary.

Moreover, during this period our country has the opportunity to count, for the first time since the post-war period, on a significant amount of European funding – those provided by the PNRR – which can really open up new perspectives and a new model of economic and social development based on respect for the environment, on social and environmental sustainability. The PNRR is oriented towards the achievement of global and European objectives for 2030 and 2050 (e.g. *Sustainable Development Goals*, Paris Agreement objectives, *European Green Deal*), which we know are very ambitious. In fact, it aims at a progressive and complete de-carbonisation and to strengthen the adoption of circular economy solutions, to protect nature and biodiversity and ensure a fair, healthy, and environmentally friendly food system. In particular, to meet the Paris targets, cumulative emissions must be limited to a global budget of ~600GtCO221, it being understood that the recovery times for the various ecosystems will in any case be very long (centuries).

According to PNRR, Italy "can benefit more and quicker" than other countries from the transition, given the relative scarcity of traditional resources (e.g., oil and natural gas) and the abundance of some renewable resources (e.g., the South can boast up to 30-40 percent more sunshine than the European average, making the costs of solar generation potentially lower). At the moment, the transition is strongly oriented towards some sectors, such as the electricity sector, which accounts for 22% of CO2 eq. emissions (but potentially a higher share of decarbonisation, thanks to direct and indirect electrification of consumption). Moreover, the transition is extremely slow in Italy due to the bureaucratic and authorisation difficulties that generally concern all infrastructures and that have slowed down the full development of

[32] https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-105-circular-agriculture-for-sustainable-rural-development/

[33] https://www.mise.gov.it/index.php/it/normativa/decreti-ministeriali/2041283-decreto-ministeriale-11-giugno-2020-progetti-di-ricerca-e-sviluppo-per-l-economia-circolare; https://www.mise.gov.it/index.php/it/incentivi/impresa/r-s-economia-circolare

[34] https://agronotizie.imagelinenetwork.com/agricoltura-economia-politica/2021/05/06/pnrr-ecco-tutti-i-fondi-stanziati-per-gli-agricoltori/70324

[35] https://www.ismea.it/istituto-di-servizi-per-il-mercato-agricolo-alimentare

[36] https://www.mise.gov.it/index.php/it/68-incentivi/2042755-fondo-per-gli-investimenti-innovativi-delle-imprese-agricole

renewable or waste treatment plants (for example, while in the last renewable auctions in Spain supply exceeded demand by 3 times, in Italy less than 25% of capacity was assigned to renewable plants).

In this direction, the choice of **converting the spaces currently occupied by fur farms into plants for the production of renewable energy seems** to be one of the most viable paths for this type of business that would thus have the opportunity to access funding and continue to use agricultural land that has suffered damage from mink farming. For the realisation of **agri-voltaic plants**, even small plots of land can be used, and the 10 farms mapped by the research, as reported above, have a fairly limited surface area.

The agri-voltaic system is an innovative system, but one that is already widely used and widespread both in Europe and in the United States, which combines in a synergistic way agriculture and photovoltaics, without generating competition between the two activities, but creating a virtuous synergy that improves both. The need to use clean energy sources – initially fixed at no less than 30% of renewable sources in 2030 – was subsequently increased by the RED II Directive to 32%[37] and increased again by the EU Commission itself, which proposed to go to 38-40% by 2030, doubling the contribution of wind, solar and other RES compared to current levels. The revision of the RED II Directive (which is already being updated again, with even more ambitious targets at European and national level) is, therefore, part of a much broader project, called the *Fit for 55* or Climate Package adopted by the EU on 14th July 2021: an ambitious plan to make European climate and energy legislation "fit for 55," i.e. the target of reducing emissions by 55% by 2030[38].
In view of the drastic reduction of CO2 emissions, the National Integrated Plan for Energy and Climate (PNIEC) has foreseen an increase of 40 GW produced from renewable sources, 30 of which are attributable to photovoltaics. It is, therefore, a technology destined for even greater use in the coming decades. Unlike traditional ground-mounted photovoltaics, agri-voltaic (or agro-voltaic) systems have the advantage of producing energy without "eliminating" agricultural land, but rather supporting it (for example, for crops that need more shade)[39]. Recent research by ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development) conducted in collaboration with the Università Cattolica del Sacro Cuore[40] points out that the performance and cost of agri-voltaic systems are quite similar to those of ground-based PV. In addition, agri-voltaic systems contribute positively to 14 of the 17 development goals of the 2030 Agenda. This means that it is a sector in which it is particularly strategic to invest. As pointed out by the coordinator of the task force AgrivoltaicoSostenibile@Enea Alessandra Scognamiglio, the investments provided by the PNRR for the implementation of hybrid systems agriculture-energy production amount to 1.1 billion euros[41] and is working to allow a custom adaptation of the systems to the use and characteristics of agricultural land, to choose from time to time the most environmentally and economically sustainable solution for the introduction of this system.

With agri-voltaic systems, the land occupied by photovoltaic installations ceases to be an item of cost, purchase and maintenance. It is a model in which electrical production and soil maintenance are integrated and compete to achieve the productive, economic and environmental objectives of the land. In addition, the installation of agri-voltaic systems is sufficiently flexible to allow adaptability to the production needs of the company according to its profile[42]. Technological evolution is thus making it increasingly convenient to install photovoltaic systems raised above the ground, despite the fact that the initial costs are higher than photovoltaic systems on the ground, in ways that do not alter the underlying agricultural production, but may even promote it, if installed on uncultivated areas[43].

On-farm agri-voltaic installations can be used in alliance with crops that do not exceed the exposed surfaces of the panels in height. Many of these crops, especially in hot climates, benefit from the partial shading offered by panels in a suitable configuration, which improves soil moisture and reduces ground-level windiness. Worldwide, several "light" systems have also been adopted for fruit and vegetable crops. The reference model is Japanese, a country whose insular nature,

[37] https://ec.europa.eu/info/sites/default/files/amendment-renewable-energy-directive-2030-climate-target-with-annexes_en.pdf
[38] https://www.rinnovabili.it/energia/politiche-energetiche/cingolani-72-elettricita-rinnovabili-2030/
[39] https://www.infobuildenergia.it/approfondimenti/agrivoltaico-agrovoltaico-agricoltura-energia-rinnovabile/
[40] Agostini, A.; Colauzzi, M.; Amaducci, S. (2021) Innovative agrivoltaic systems to produce sustainable energy: An economic and environmental assessment. *Applied Energy*, vol. 281, Jan 2021. https://www.sciencedirect.com/science/article/abs/pii/S0306261920315245
[41] https://agronotizie.imagelinenetwork.com/bio-energie-rinnovabili/2021/08/19/l-agrivoltaico-conviene-e-a-chi-ecco-le-risposte-a-tutti-i-dubbi/71137
[42] https://www.solareb2b.it/newsletter/agrovoltaico_2021.pdf
[43] Coordinamento FREE, (Position Paper n.3 Fotovoltaico e agricoltura Proposte di una relazione virtuosa www.free-energia.it)

geopolitical tensions and small agricultural areas have traditionally discouraged photovoltaics on agricultural land, even prohibited by a legal provision. The ban has been overcome with the concept, developed by Akiro Nagashima[44], of *"solar sharing",* the coexistence of lightweight PV systems, often movable and adaptable to the underlying crops, and small and medium-sized farms that derive substantial income integration. Although there are much larger installations, up to utility-scale, which always follow the principle of coexistence with agricultural crops, the current idea of farm support in Japan favours the use of solar power as a benefit to small farms.

As reported by ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development) the costs for the realisation of agri-voltaic systems vary according to different factors, related to height, type of panels and tracking system. Therefore, it is complex to estimate a reference value. The agri-voltaic systems consist of panels raised from the ground that can be single-sided or double-sided, fixed or mobile and under which, as we have seen above, can be carried out agricultural activities of cultivation. You can have approximately 300-500 kW installed per hectare (while with the realisation of a traditional ground photovoltaic you can reach 750 kW installed per hectare). An example of an agri-voltaic plant in Italy is installed in a farm of Monticelli d'Ongina (PC), which adheres to the network "Sustainable Agri-voltaic" of ENEA. This plant, realised on 17.17 hectares, has a capacity of 3,229.80 kW and in the space below is occupied by cultivated soybeans. In the same province, another plant, located in a farm of Castelvetro Piacentino, occupies an area of 6.13 hectares with a production capacity of 1,293.60 kW and allows the cultivation of barley.[45] In April 2021, ENEA presented its Task Force "Sustainable Agri-voltaics," coordinated by Dr. Scognamiglio, whose main purpose is to develop national guidelines for operators in the sector, and at the same time guide the installation of agri-voltaic systems. The plan is to establish and coordinate a network to support a national working group by offering the opportunity to participate as a partner in projects for the development and implementation of agri-voltaic systems, with a dedicated budget.

In addition to agri-voltaic systems, another element to be taken into account within the PNRR is certainly agrisolar, i.e. plants that, according to the legislator, do not directly affect agricultural land, but only areas related to agricultural activity. According to this definition, the roofs of sheds find an important space. Fur farms are equipped with sheds that, if properly oriented, can be used to install voltaic panels and bring a great benefit. The economic activities to be carried out inside the shed can be multiple, as long as they are not oriented to the breeding and farming of other animals in the same spaces.

In both cases, the investment is successful and suitable to meet new and ambitious climatic and environmental requirements to which the CAP support, in the 2020-27 programming, is clearly aimed. The challenge that our country faces today is to accompany the necessary, large-scale diffusion of solar energy in every territory to make it become a factor of development and value creation.

On the other hand, another great challenge is to put a definitive end to fur farms, after two years in which the practice of farming has in fact already been suspended. The possibility of reconverting the farms into agri-voltic farms could be a great solution and an entrepreneurial investment in the future for the owners of the land.

[44] www.renewableenergyworld.com/2013/10/10/japannext-generation-farmers-cultivate-agriculture-and-solar-energy/
[45] https://www.agrivoltaicosostenibile.com/

ANNEX A

This section of the report aims to reconstruct the characteristics and conditions of mink farming in the world and to analyse the regulatory context at a global, European and Italian level in order to understand both the economic and social performance of the sector and the evolution of the regulatory framework.

MINK FARMS IN THE WORLD

In the US, mink have been bred for fur for nearly 130 years, and in 2010 the US ranked fifth in production behind Denmark, China, the Netherlands and Poland.

Mink production in Canada occurs in several provinces, the main ones being Nova Scotia, British Columbia and Ontario. In Nova Scotia, there were 116 licensed farms in 2016, which generated revenues for nearly $54 million, contributing about 1.4 million furs to global markets. Black mink fur production has grown significantly since 2000, with the emerging markets of Russia, China and South Korea accounting for most of the new demand. Black-coloured mink were first bred in Nova Scotia in the late 1950s and this breed has become very popular due to its versatile colour. Most of Nova Scotia's products are sold to China, where they are made into luxury garments.

China's fur industry is the largest in the world. In 2019, China raised 14 million foxes, 13.5 million raccoon dogs and 11.6 million mink, which are also primarily destined for overseas export to countries such as Italy. In 2019, the value of raw and tanned furs and fur articles imported was $478 billion, of which 7.34% ($35.1 billion) came from China. Italy also imports from Germany, France, Spain, the Netherlands, Belgium, the United States and Russia.

According to ANSA estimates from before the COVID-19 crisis period, there were 60 million mink raised in 24 countries: the top country is China with 20.6 million mink raised in 2018, followed by Denmark with 17.6 million mink and Poland with 5.2 million mink raised on 550 farms.

Denmark produces 28% of the world's mink fur and is Europe's largest producer of mink fur, produced almost entirely for the Asian market, particularly China. There are more than 1,000 mink farms in Denmark, mainly located in the north of the country. It is a small nation with a population of 5.83 million people, but one that produces about 17 million mink pelts per year. After the discovery of cases of SARS-CoV-2 virus transmission from mink to humans, the Danish government decreed the complete extermination of all mink on the country's fur farms.

Until this year, another major global fur producer was the Netherlands, which was home to approximately 128 fur farms, with a total of 4.5 million minks bred in the country per annum. Fur farms were largely concentrated in one area of the country, primarily in the province of North Brabant and on the borders of Limburg and Gelderland. These areas are generally characterised by a high density of intensive animal farming. In the Netherlands, a law passed in December 2012 banned the practice of fur farming, allowing farmers to profit from their investments until 2023. With the COVID-19 crisis, it was decided to bring forward the permanent closure of fur farms to January 2021.

Greece is another fur producer with a large number of fur farms. In particular, in Western Macedonia, one of the poorest areas of the country, there is a high concentration of farms and the local economy is claimed to be highly dependent on the fur industry; there are about 1.5 million mink bred. Akis Tsoukas, the current president of the Kastorian Fur Association, maintains that without the fur industry, the region would collapse economically.

THE CONTEXT AND THE REGULATORY FRAMEWORK

The fur trade developed in Europe starting from the 12th century, in 1670, in London by the *Hudson's Bay Company*, which regularly organised auctions to sell not only its own goods, but also those of other North American companies or private hunters. The auction system developed rapidly and within a few years it gathered in London, during the period of sale, most of the fur traders of Europe. It quickly spread to other European cities and currently the most important European markets are Kopenhagen and Helsinki.

As time went on in Europe, fur became an increasingly popular item of clothing until the 1980s. Subsequently, the increase in consumer awareness of their social responsibility in choosing eco-sustainable products that do not entail the exploitation of and cruelty to animals has had a strong impact on the fashion world.

Fur-free brands in the world

In recent years, increasingly more people have become aware of the nature of fur production, leading to a decrease in the demand for animal fur and the fashion world has responded with the spread of faux fur (produced with natural, artificial or synthetic fibres). Moreover, thanks to the dialogue and collaboration with animal protection groups, including Humane Society International, in recent years many of the major fashion houses and brands have also abandoned animal fur and joined the *"Fur Free Retailer Program,"* an international programme promoted by more than 40 animal protection groups.

Among the most important brands that have chosen a fur-free future is Prada, which, since 2020, no longer uses animal fur; Gucci abandoned fur as early as 2018, and Versace also eliminated it starting with this year's collections, as part of a broad project by the brand to develop an increasingly eco-sustainable approach. On 24th September 2021, the Kering Group announced that starting with the "Fall 2022" collections, none of the Group's fashion brands will now use animal fur[46]. The list is long, continuing with Mulberry, Lacoste, Burberry, Michael Kors, Armani, but also high-street fashion brands, such as Mango, Pull&Bear, H&M and Zara, which also fit into this trend, as do activewear brands (The Northface, Napapijri) and footwear brands (Jimmy Choo, Timberland, Vans).

In 2018, the British Fashion Council committed to making London Fashion Week "fur free." Among retailers, the Yoox Net-a-Porter Group – an enterprise composed of 4 multi-brand online stores (Net-a-porter, Mr Porter, Yoox and The Outnet) and numerous online flagship stores developed on the same logistics and technology platform that reaches over 4.3 million customers in 180 countries worldwide – announced a stop to fur sales in 2017, while Farfetch – another British-Portuguese platform active in the online sales of fashion, luxury and design goods, selling products from more than 700 boutiques and brands around the world – has pledged to eliminate products that contain fur or skins from endangered animals. American retailing giant Macy's, which previously sold fur by the hundreds and even thousands of dollars, has declared its intention to eliminate it by 2021.

In recent years, technology also promises to revolutionise the world of fashion, creating fur and wool in the laboratory without breeding and killing animals. It is well-known that studies and research projects are underway to produce meat in the laboratory and this technology could also be applied to the clothing industry. However, the scientists of the start-up Furoid[47], a company that began operations in 2017 in Amsterdam, have succeeded in recreating the structure of animal hair in the lab, resulting in the world's first in vitro hair follicle. The applications of this technology are really hinting at big changes in the clothing industry and the final demise of the fur farming business.

The positions taken by the major fashion houses certainly play a fundamental role in increasing consumer awareness of animal fur, but despite the positions taken by the world's leading brands, every year around 100 million animals are still bred and killed for their fur. Over 95% of the fur sold globally comes from farmed animals, such as minks, foxes, raccoon dogs, rabbits, and chinchillas. To properly analyse the data, it is important to remember the difference between "wild fur" – fur from animals caught in the wild – and farmed fur.

In 2019, prior to the COVID-19 emergence, most of the world's farmed fur was produced by European farmers with nearly 5,000 farms located in 22 countries. This production collectively accounted for 50% of global farmed fur production: the EU accounted for 63% of global mink production and 70% of fox production. Denmark is the main mink producing country, representing about 28% of world production. Other major producers include China, the Netherlands, Poland and Russia. The United States is also a major exporter of fur skins. Major export markets include China, Russia, Canada and the EU, but China is the largest importer of fur in the world and the largest exporter of finished products.

In Italy, mink are the only species that are kept for fur production; fox farming has not been practiced since the late 1980s, and the last chinchilla fur farm ceased operations in 2012.

[46] https://www.kering.com/en/news/kering-goes-entirely-fur-free
[47] https://www.furoid.com/intro

The legislation of non-EU countries

In Japan, the Invasive Alien Species Act was passed in 2016 and outlawed fur farming; 10 years later, the last animal farm for this purpose closed. However, in the United States, some states have banned fur production, but the vast majority regulate the matter through laws that make these activities economically prohibitive, trying to discourage their continuation. In 2019, California became the first state in the United States to ban the production and sale of fur: the law will take effect in 2023. In January 2017, India also adopted a ban on the import of mink, fox, and chinchilla skins from other countries, as was the case in 2015 in São Paulo, Brazil's largest city, where the production of fur garments was also banned the previous year.

The first country in the world to also ban the sale of fur is Israel. The Minister of the Environment of the government that fell in 2021 was committed to making the sale of fur illegal and, in June 2021, signed the decree banning it, gaining the support of 86% of the population. The ban will enter into force six months after the signing of the document in December 2021. It will, however, still be possible to use fur for scientific, educational, and religious purposes in the country.

The legislative process in the EU

The EU rules relating to fur farming are set down in Directive 98/58 EC concerning the protection of animals kept for farming purposes and on Regulation 1099/2009 EC concerning the protection of animals at the time of killing.

In 1998, the aforementioned directive was approved, laying down general rules on the protection of animals kept for farming purposes, applicable to animals kept for the production of food, wool, skin or fur or for other farming purposes, including fish, reptiles and amphibians. Member States must ensure that the owners or keepers of farms adopt appropriate rules to ensure the welfare of their animals and that those animals are not caused unnecessary pain, suffering or injury.

Ten years after the adoption of this directive, the need arose to establish EU rules to "protect," as far as this term is possible and appropriate, animals not only on farms, but also during their killing. In 2009, Regulation 1099/2009/EC was adopted, which defines the permissible killing methods for each category of animal in order to limit their suffering. As far as mink are concerned, as stated in the European regulation, the primary method used for the killing is gassing with carbon monoxide.

In recent years, the COVID-19 crisis has focused the attention once again on a topic that for far too long in Italy, as well as in other European countries, has been needing a new legislative solution.

Box. no. 1

European countries that have banned fur farming

United Kingdom (2000)	Hungary (2020)
Switzerland (200)	Netherlands (2021)
Austria (2005)	Germany (2022)
Slovenia (2013)	Ireland (2022)
Republic of Macedonia (2014)	Belgium (2023)
Croatia (2018)	Norway (2025)
Luxembourg (2018)	Slovakia (2025)
Czech Republic (2019)	Estonia (2026)
Serbia (2019)	Bosnia and Herzegovina (2028)

As far as the European Union is concerned, it was the United Kingdom, a Member State until January 2020, that paved the way towards the banning of fur: in 2000 the breeding of animals for this purpose was made illegal; initially the ban only applied to England and Wales, but Scotland and Northern Ireland passed bans in 2002. Austria followed, banning fur production in 6 of its 9 federal states 5 years later, while the other 3 applied stricter laws regulating the keeping of animals on farms. In December 2012, it was the turn of the Netherlands, Europe's second-largest producer of mink fur, which was initially scheduled to cease production by 2024, but brought forward that deadline to 2021 given the risks associated with the SARS-CoV-2 virus. Slovenia banned fur farming in March 2013, following a 3-year phase-out period for farms. Poland,

the world's third largest fur producer with more than 5 million animals killed annually, is also moving closer to a decision to close all farms. On 18th September 2020, the Polish Parliament overwhelmingly approved a bill to introduce a ban on fur farming and other animal protection legislation. The vote follows the release of Anima International's[48] investigation and is consistent with a decrease in demand that has led to the closure of 200 fur farms in 4 years. Sweden, Italy and Denmark all have suspended mink breeding activities for 2021, while Hungary, which has never had mink farms, banned them as a preventive measure against the possible relocation of farms from other countries. In France, where a ban was supposed to be in place from 2026, in October 2021 the Parliament reached an agreement on the strengthening of animal welfare protection and foresees the closure of mink farms with immediate effect after the promulgation of the law[49].

BOX no. 2:

Directive 98/58 EC of 20 July 1998 concerning the protection of animals kept for farming purposes – Summary

- WHAT IS THE OBJECTIVE OF THE DIRECTIVE?

The Directive establishes general rules regarding the protection of animals on farms, regardless of species. They apply to animals raised for the production of food, wool, skin or fur or for other farming purposes, including fish, reptiles and amphibians.

- KEY POINTS

All Member States have ratified the European Convention for the Protection of Animals kept for farming purposes. These articles cover housing, feeding and care appropriate to the needs of these animals. Member States must take full account of these animal welfare requirements when drafting and implementing EU legislation, in particular in the field of agricultural policy. Member States shall ensure that owners or keepers adopt appropriate rules to ensure the welfare of their animals and to ensure that these animals are not caused unnecessary pain, suffering or injury. Breeding conditions primarily concern:

- *Staffing:* Animals must be cared for by a sufficient number of workers with appropriate skills, knowledge and professional competence.
- *Inspection:* All animals kept in breeding systems are inspected at least once a day. Injured or sick animals are treated immediately and, if necessary, isolated in suitable rooms. The owner or keeper of the animals keeps a record of any medical treatment carried out for a period of at least three years.
- *Freedom of movement and breeding premises:* Even when tethered, chained, or restrained, the animal shall be given adequate space to move without unnecessary suffering or injury. The materials used in the construction of housing areas must be clean and disinfected. Air circulation, dust levels, temperature and humidity must be kept within acceptable limits.
- *Fodder, water and other substances:* The animals must be provided with healthy food, suitable for their species, in sufficient quantities and at regular intervals. All other substances are prohibited except those administered for therapeutic, prophylactic, or zootechnical treatment purposes. In addition, feed and water administration equipment must be designed to reduce the risk of contamination.
- *Breeding methods:* Breeding methods that cause suffering or injury shall not be practiced unless their impact is minimal, momentary, or expressly authorized by national regulations. No animal shall be kept on a farm if this would be detrimental to its health or welfare.

- SINCE WHEN HAS THE DIRECTIVE BEEN APPLIED?

Since 8th August 1998, EU Member States had to transpose it into their national legislation by 31st December 1999.

For further information you can consult the official document of Directive 98/58/EC in Italian language:

➔ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01998L0058-20191214

Recent legislative action from the European Commission has introduced (Implementing Decision n.788 of May 12, 2021) an obligation for all Member States to initiate diagnostic screening for SARS-CoV-2 on all mink farms. The need for this was further reiterated by the World Organisation for Animal Health (OIE), which has published an update[50] of the guidelines for those working in farms of animal species susceptible to infection by SARS-CoV-2 and in which it has again classified the risk of spill-over of the coronavirus from humans to animals bred for fur production as high, and in particular for the species of mink (and raccoon dogs). Fur farms can thus become reservoirs of SARS-CoV-2.

[48] https://animainternational.org/blog/goreczki-investigation
[49] https://www.greenme.it/informarsi/svolta-storica-francia-vietati-cani-gatti-negozi-animali-circhi-cetacei/
[50] https://www.oie.int/en/what-we-offer/emergency-and-resilience/covid-19/#ui-id-3

BOX no. 3:

REGULATION 1099/2009 EC of 24 September 2009 on the protection of animals at the time of killing

In November, after selecting the animals to be used for reproduction, the minks for fur production are killed. The method used for the slaughter of mink is exposure to carbon monoxide.

In summary, the rules applied to carbon monoxide exposure:

- the cell in which the animals are exposed to the gases must be designed, constructed and maintained in such a way as to prevent injury to the animals and to allow them to be monitored;
- the animals must not be introduced into the cell until a carbon monoxide concentration of at least 1% by volume from a source of carbon monoxide at a concentration of 100% has been reached in the cell
- the gas produced by an engine specially adapted for the purpose may be used for the killing of mustelids and chinchillas provided that tests have shown that the gas used:
  - ❖ has been properly cooled
  - ❖ has been sufficiently filtered;
  - ❖ is free of any irritating material or gas;
  - ❖ that animals may be introduced only when the concentration of carbon monoxide reaches at least 1% by volume;
- when inhaled, the gas must first produce a deep general anesthesia and eventually safe death;
- the animals must remain in the cell until they are dead.

For further information you can consult the official document:

➔ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R1099-20191214

A few months ago, during an AGRIFISH Council meeting of the Council of the European Union on 28th and 29th June 2021, Austria and the Netherlands presented an information note, which had been signed by several other delegations, on the issue of fur farming in the European Union. These Member States called on the European Commission to take appropriate action to end fur farming in Europe, explaining the reasons for this request in terms of animal welfare, ethical considerations and public health risks. The proposal was supported by Belgium, Germany, Italy, Poland, Ireland, Luxembourg, Slovakia, and Bulgaria. The signatories of the proposal also took into account the specific risk that this type of farming has for public health, calling for drastic measures to limit the dangers to humans and to improve the welfare of the animals in question. Romania, Greece and Lithuania were totally opposed to the ban on fur farming, while Hungary accepted the initiative, but only with regard to carnivores and not herbivores. This position is also supported in part by France, which would support a ban on wild species, excluding those bred for both meat and fur, such as rabbits.

Legislation in Italy

In our country, Legislative Decree n. 146 of 26th March 2001, "Implementation of Directive 98/58/EC on the protection of animals kept for farming purposes" regulates fur farming. This legislative decree establishes that all animals bred for the sole and main purpose of slaughter for the value of their fur must be kept in properly constructed and enriched enclosures, capable of ensuring the welfare of the animals. The legislation also provides that the breeding must take place in compliance with certain rules, such as the minimum size of the space for the mink bred in cages (free area with the exclusion of the nest):

- for single adult animals, 2,550 square centimetres
- for adult and small animals, 2,550 square centimetres
- for young animals after weaning, up to two animals per cage, 2,550 square centimetres.

The height of the cage must not be less than 45 cm.

These dimensions do not seem to be suitable parameters to "satisfy animal welfare." Twenty years later, Legislative Decree 146 of 2001 is still in force, with the exception of cat and dog fur, which Italy was one of the first countries in Europe to ban by Law n. 189 of July 20, 2004 (article 2) (the ban was then extended to the whole of Europe by EC Regulation 1523/2007). The situation with regard to mink breeding remains unchanged, despite the numerous examples from other European countries that have banned fur farming in the new Millennium and despite the Senate bill no. 62 of

the 17th legislature. In fact, on 15th March 2013, several senators (among the main ones Senators Amati, Granaiola and Cirinnà) communicated to the Presidency this bill, which aims to introduce a *"Ban on the breeding, capture and killing of animals for the production of fur."* The objective of the bill was to prohibit the capture and killing of animals for the main purpose of obtaining leather or fur and to produce, export, economically exploit, transport, transfer or receive for any reason leather or fur, obtained from animals specifically bred, captured or killed in Italy.

The analysis presented specific data on farms, including those for mink *"where there is a mortality of 20 percent for kits and up to 5 percent for adults within a year of age. Health problems, such as gastric ulcers, kidney problems, and tooth loss, are common. Behavioural stereotypies are widespread in farmed mink and caused by several factors; one of the most important is the housing environment. Farmed minks exhibit behavioural problems for prolonged periods during the day, such as sucking or biting their private parts or other body parts causing self-mutilation or severe injury."* The study, attached to the bill, also revealed that *"under experimental conditions, minks show a preference for swimming in water tanks, which is not currently possible in traditional breeding systems. In addition to the breeding conditions, the methods provided for killing these animals are particularly cruel: mechanically operated instruments with penetration into the brain; injection of a lethal dose of a substance having anaesthetic properties; anal electrocution followed by cardiac arrest; exposure to carbon monoxide; exposure to chloroform; exposure to carbon dioxide."*

The report attached to the bill also addressed the issues of pollution and energy consumption with data collected from scientific literature (national and international) on the incompatibility of the industrial phases of obtaining and processing fur and respect for the environment. The proposal draws on the analysis of the Life Cycle Assessment study carried out by the Dutch research company CE Delft and entitled "The environmental impact of the fur production" commissioned by the Lega Anti Vivisezione (LAV) in 2011, which shows that fur is definitely the worst performing of textiles with environmental impacts from 2 to 28 times higher than other kinds. The study also examines the effect of fur processing on climate change, measuring the impact of 1 kg of mink fur, which is 4.7 times higher than that of wool (the highest scoring textile), due to both feeding and N2O and NH3 emissions from mink excreta. It quantifies the environmental impact at various stages of mink fur production, as well as comparing the results with the impact caused by other products normally used in the clothing industry such as cotton, acrylic, polyester and wool.

Despite the relevance of the data presented, bill no. 62 was not approved and the rules regulating fur farms therefore remained unchanged until 2020, when, in the context of the COVID-19 emergency, the debate about fur farms and, specifically, about mink, the only fur animal still bred in Italy, resumed.

Following the spread of COVID-19 on mink farms in Europe, including Italy, on 21st November 2020, an ordinance was signed by the Minister of Health regulating the "Activity of surveillance and management of SARS-CoV-2 outbreaks in mink farms at national level." This ordinance provides for the culling of all mink from farms within which positive cases are detected and the suspension of mink farming activities until 28th February 2021. On 25th February 2021, the provisions of the ordinance of the Minister of Health of 21st November 2020, were extended until 31st December 2021.

Throughout the past year, numerous associations have appealed to the Ministers of Agriculture and Health for Italy to support the proposal to shut-down fur farms made by the Netherlands and Austria at the AGRIFISH Council meeting of 28th and 29th June 2021. The public position of the Minister of Agriculture was in favour of the proposal, but no measures to these ends followed and, on 31st December 2021, when the extension of the ordinance of 28th February 2021 comes to an end, the farming and killing mink for the main purpose of obtaining fur will resume in Italy.

BOX no. 4:

MINIMUM MEASURES FOR BREEDING

Legislative Decree 146/2001 "Implementation of Directive 98/58/EC on the protection of animals kept for farming purposes"

Through the aforementioned DL it is established that all animals bred with the sole and main purpose of slaughtering them for the value of their fur must take place on the ground in appropriately constructed and enriched enclosures, capable of satisfying the welfare of the animals. The dimensions of the cages, provided for by Legislative Decree 146/2001, are those recommended by the EU Commission (Directive 98/58) and reported in the Code of Conduct for Mink Breeders. The legislation states that the minimum dimensions of the spaces for mink bred in cages, free surface with the exclusion of the nest are:

- - 2,550 square centimeters for single adult animals;
- - 2,550 square centimeters for adult and small animals;
- - 2,550 square centimeters for young animals after weaning, up to two animals per space.

The height of the cage must not be less than 45 cm. For these spaces a width of not less than 30 cm and a length of not less than 70 cm must also be respected. The cages are also equipped with a hole for access to the nest where the mink goes to rest, sleep or give birth. Each cage has a drinking trough for the continuous supply of water and a portion of the network that serves as a feeder (feeding net). The cages are raised off the ground to allow the mink to live in a clean, dry environment.

For further information you can consult the official document:

➔ *https://www.camera.it/parlam/leggi/deleghe/01146dl.htm*

The impact of the COVID-19 emergency

Since the COVID-19 pandemic began, farms and slaughterhouses around the world have become sites of SARS-CoV-2 infection for workers. On mink farms, however, animals have also been infected, thus also posing a public health risk. The pandemic has made it even more apparent how, in general, intensive animal production is not only dangerous to animal health, but also to human health. Fur farms are no different. Since March 2020, mink and humans have been infected across Europe. Initially, it was assumed that transmission only occurred from workers to animals, but then it became clear that mink can also infect humans.

On 26th April 2020, the first SARS-CoV-2 infections were detected in two mink farms in the Netherlands. The news was released by the OIE, the World Organisation for Animal Health[51]. The Dutch Ministry of Agriculture immediately hypothesised a human-to-animal transmission of the infection, as some employees had tested positive for the virus. The animals reported gastrointestinal disorders and respiratory problems and a significant increase in mink mortality was recorded on the farms. At the beginning of May, cases of infected mink on other Dutch farms increased, until 20th May 2020, when the Minister of Agriculture told the Dutch Parliament that it is *"plausible that a mink has infected the employees of a farm."* According to the statement, in at least one of the sick workers, the strain of the virus is the same as that detected in mink, making it likely that this species was the source of the infection. On 4th June 2020, the Dutch government ordered the killing of thousands of mink on nine farms beginning the following day. Between late April and mid-June, outbreaks of SARS-CoV-2 were reported in 17 mink farms in the Netherlands and 600,000 animals were culled.

In Denmark, the first case was recorded on 17th June 2020 and led to the killing of 11,000 mink. On 1st October 2020, the government called for the killing of more than one million mink on 100 farms located at the epicentre of the outbreak after confirmed cases of spillover to humans. Epidemiologist Kåre Mølba, director of the Statens Serum Institut, stated: "*It is more dangerous to be a mink farmer than to be employed in the health care system.*" On 13th October 2020, Danish veterinarians and farmers began killing at least 2.5 million minks in northern Denmark after the coronavirus was reported on at least 63 farms. All animals within a five-mile radius of a farm with positive cases had to be culled, even healthy ones. Images of dozens of gas chambers used to kill mink, lined up in rows and headed for farms, were broadcast around the world.

[51] https://old.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/COV19/OIE_SARS_CoV%202_infection_of_mink_in_the_Netherlands_26April2020.pdf

On 20th July 2020, the coronavirus also struck at mink farms in Spain. 92,700 mink from a farm in the Aragon region were slaughtered. The farm had been monitored by Spanish authorities since May, when the wife of a worker fell ill with the coronavirus. The contagion then spread to seven employees and the animals, with 87% of the mink testing positive for the virus.

Since April 2020 in the Netherlands and Denmark, then in many other countries, the coronavirus has forced the culling of thousands of animals. In the following months, the list of cases and countries in which contagions have occurred on farms has expanded. Also in Italy mink farms have been affected by the SARS-CoV-2 virus, but health authorities were late in making this publicly known. In October 2020, the positive results of tests carried out in farms in August 2020 were made public, but only after numerous and insistent appeals and requests for access to the records presented by animal protection groups to the Ministry of Health, the Technical Scientific Committee, the Regions and the Experimental Zooprophylactic Institutes (of Lombardy and Emilia-Romagna).

THE LIFE CYCLE OF MINK AND THE PRODUCTIVE CYCLE ON FARMS

To investigate the impact of farming on the lives of animals and on the environment, the group of researchers attempted to get in direct contact with the Associations representing breeders, the Italian Mink Breeders Association, the Italian Furrier Association and Federfauna with the aim of reconstructing the phases and activities that take place on farms and the systems adopted for breeding and to verify the situation of the sector from their point of view. No association was willing to engage in a dialogue with the research group and make data and information available.

However, through desk research, it was possible to analyse a document published by the AIAV (Italian Association of Mink Breeders) in 2013, which illustrates this, starting from the life cycle of the mink, farming characteristics and activities, going through all the different phases. The document reports the characteristics of mink and the systems adopted to farm them, starting, for example, from the criteria for the construction of the housing units used (sheds or cages with multiple rows, as required by the EU Commission-Directive 98/58) and contained in the Code of Conduct for Breeders. The whole life cycle of the mink develops in the following phases:

Reproduction (December - March)

Upon reaching sexual maturity in March, mink are mated for breeding. The mink is a single-breeding species, with only one breeding season. After about 45 days, approximately between 20th April and 7th May, the females give birth to an average of 5-6 kits that are hairless at birth and weigh 8-10 grammes.

Weaning and growth (June - July)

Between June and July, when the kits reach the age of about 8 weeks, they are weaned and vaccinated against the main diseases: enteritis, pseudomonas and botulism. From July to October, the animals grow reaching their maximum physical size. In September, they start their winter moult.

Selection and pelting (November - December)

At the end of October, the selection of animals for the following breeding season begins. The breeder evaluates for each mink: size, coat quality, behaviour, and health. Animals that are not selected as future breeding stock are slaughtered, according to the provisions of EC Regulation 1099/2009.

Pelting consists of several stages, all carried out by the breeders according to current regulations:

- skinning
- degreasing
- drying
- shipment of the skins to the auctions

The carcasses of the animals can be used for the production of meat flours or of biogas. The fat can used for the production of cosmetic products.

In December, once the pelting phase is over, the cleaning and disinfection of all the structures of the farm is carried out. In January, the breeding females are vaccinated against distemper. Between January and February, through the adoption of a special dietary regime, the animals are prepared for the following mating season (*body score*).