



## MUSHNOMICS

Unlocking data-driven innovation for improving productivity and data sharing in mushroom value chain

### D1.2 - Stakeholder Identification, Consultation and Feedback

#### Document

<b>Deliverable title</b>	Mushroom Value Chain Analysis
<b>Related Work package</b>	WP1
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<b>Delivery date</b>	M12

Version history			
Authors	Comment	Version	Date
Reed Cowden	Draft	1	
Reed Cowden	Draft	2	
Reed Cowden	Final	3	

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**Ministry of Food, Agriculture  
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**NATIONAL  
RESEARCH, DEVELOPMENT  
AND INNOVATION OFFICE**



**An Roinn Talmhaíochta,  
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## **1. Introduction**

Mushrooms are the common name for the fruiting bodies of different types of macrofungi. There are many edible mushroom species that can be grown commercially, but in Europe the white button/champignon mushroom (*Agaricus bisporus*) is almost exclusively grown. There are two main types of cultivated mushrooms: primary decomposers, such as oyster (*Pleurotus ostreatus*) or shiitake (*Lentinula edodes*) mushrooms, and secondary decomposers, such as button mushrooms. In the European Union (EU) 1.06 million tonnes of mushrooms were produced in 2020, with the UK producing 0.1 million tons (<http://appsso.eurostat.ec.europa.eu/nui/>). The consortium countries of the MUSHNOMICS project are Denmark, Romania, Ireland, and Hungary, which are significant producers of mushrooms with a combined 9.3% and 12% share of total mushroom production in Europe in 2016 and 2020 respectively (Table 1). The last year of data for Denmark was in 2016, which showed a production value of 3,930 tonnes; Hungary produced 24,650 tonnes in 2016, and 39,400 tonnes in 2020; Ireland produced 70,020 tonnes in 2016, and 69,260 tonnes in 2020; and Romania produced 14,520 tonnes in 2016 and 14,320 in 2020 (Table 1). In total, these four countries produced 127,662 tonnes in 2020, which was an increase of about 13% in a four year period.

*Table 1. Tabulated mushroom production (tonnes) for consortium countries during 2016 and 2020.*

	<b>MUSHROOM (2016)</b>	<b>MUSHROOM (2020)</b>
<b>DENMARK (TONNES)</b>	3,930	4,682*
<b>HUNGARY (TONNES)</b>	24,650	39,400
<b>IRELAND (TONNES)</b>	70,020	69,260
<b>ROMANIA (TONNES)</b>	14,520	14,320
<b>CONSORTIUM TOTAL (TONNES)</b>	113,120	127,662
<b>EU TOTAL (TONNES)</b>	1,213,000	1,063,000
<b>CONSORTIUM COUNTRY PROD. (%)</b>	9.3%	12.0%

\*ESTIMATED VALUE BASED ON AVERAGE % INCREASE

## 1.1 Aim and objectives of Task 1.2 report

The aim of this deliverable is to list the stakeholders along the mushroom value chain in each of the four consortium countries: Denmark, Ireland, Romania, and Hungary. The primary core categories of these stakeholders are farmers, urban and rural entrepreneurs, small-scale, commercial, or industrial producers of mushrooms, short food supply chains, restaurants, caterers, consultants and other auxiliary actors such as compost and substrate producers, equipment manufacturers, consumers, liquidators and other interested stakeholders. This is done to map out the participating members in order to determine the potential distribution of benefits generated by the MUSHNOMICS project innovations and outputs, while also providing a network of contacts for interested stakeholders. The end objective of this report is to facilitate effective co-creation of MUSHNOMICS outputs and products which can benefit directly from creative feedback loops during their development stage. This will boost the innovation cycle and lead to exploitable and highly relevant project outputs. Listing and mapping stakeholders will help demonstrate the relevance of inter-supply chain relationships (e.g., the interactions between different supply chains).

## **2 List of Stakeholders in Partner Countries**

### 2.1 Stakeholders in Denmark

In the MUSHNOMICS Deliverable 1.1, we identified the different mushroom activity agents as production input providers, producers, processors, and point-of-sale markets, which operate within or between different structural entities (companies). That is, we showed that some companies and stakeholders specialize in a few areas, while others span the continuum of activities. The production input providers supply substrate, culture, or spawn-run grow bags, which are bought by the cultivators to produce the mushrooms for sale and consumption. The processors add value to the fresh mushroom by packaging, drying, or engaging in other means to enhance the shelf life or sell at a higher price compared to the fresh produce. The point of sale, or market section includes transportation and outlets such as supermarkets, restaurants, online webshops, or farmer's markets (short food supply chains), where mushrooms and related materials in different packaging and forms are sold directly to the consumers.

Denmark has a political and economic history relevant to a discussion of the composition and dynamics of current agricultural stakeholders in the country, including mushroom producers and other associated actors. The Danish king, Christian VII, contemporary with the French Revolution of 1789, and observing the overthrow of the French monarchy at the time decided to avoid a similar fate by releasing the serfs from the land to counteract revolutionary pressure in Denmark. This resulted in the formation of highly effective agricultural and trade cooperatives that were of small scale but high-quality. This led to Denmark becoming an agricultural exporter, as it continued to refine its production over the generations. This produced an attitude whereby the people saw the state-as-benefactor instead of state-as-oppressor, with a downstream formation of small-scale market activities around this new-found freedom. Similar attitudes exist in Denmark today, and both the institutional structures—where Denmark is one of the easiest European countries to start a small business in—and the consumptive attitudes are primed for small scale mushroom production activities, which is necessary given the closure of large mushroom producers, such as Egehøj Champignon. However, this small scale nurturing is not inevitable, as there have been massive monopolizations in the mushroom production industry by three large companies, two of which went bankrupt and closed down in the last 15 years. The last remaining company dwarfs the others, but it also primarily focuses on lower quality mass-produced button mushrooms. Even as this large company has begun to transition to more niche market items, such as oyster mushrooms, they do not compete in terms of quality that other small-scale producers have, which are provided to restaurants or home deliveries, for instance.

There is therefore a growing sector of activity within the Danish mushroom production network that is composed of small-scale, niche-market, highly skilled growers who are capitalizing on the void left by mass-produced stock. These small-scale actors provide high-quality oyster, shiitake, or enoki mushrooms, to name a few examples, as well as medicinal mushrooms such as lion's mane, to restaurants and private customers. During the course of our interviews, we also discussed with these different producers, consultants, and other actors about the current market trends. They expressed an understanding that there is currently a 'green revolution' occurring in Denmark, both from the supply and the demand side. This 'green revolution' is concerned with circular products that minimize waste, that are locally produced, that do not travel far to their point of consumption, that are high-quality, and that can be flexibly purchased. Many commercial or small-scale producers interact with the market and plan their operations with the principles of this 'green revolution' in mind. Therefore, the following list of stakeholders should be considered within the context of the above-mentioned historical and contemporary trends and attitudes. For a more thorough description of the Danish mushroom production market and potential interventions, see *Deliverable 1.1: Mushroom Value Chain Analysis*, and *Deliverable 1.3: Gap Analysis*, respectively.



### 2.1.1 Mushroom Producers

Table 2 shows a list of the mushroom producers that operate in Denmark. This is a comprehensive list of actors that are registered in the tax service; it is worth noting that there could be other small-scale growers that operate outside of this registered space. They are classified by the amount of mushrooms they produce per year: for a complete accounting see *Deliverable 1.1: Mushroom Value Chain Analysis*. Small-scale companies produce <2 tonnes mushrooms/year; commercial scale companies produce 2-50 tonnes mushrooms/year; and industrial scale companies produce >50 tonnes mushrooms/year. The specific activity of each mushroom producer is also listed as well, to differentiate where relevant the respective actions of each stakeholder. The final column details the website or point of contact for those who may be interested in connecting with the stakeholders.

Table 2. Overview of mushroom production value chain agents identified in Denmark. Mush. Prod. = Mushroom Production.

Mushroom producers	Category	Activity	Location, Region	Website
<b>Hoefyns Svampe</b>	Small-scale	Mixed Mush. Prod.	Odense, Syddanmark	<a href="https://lasso.dk/firmaer/41955686/hjfyns-svampe-stiftet-pr-18122020/Q1ZSLTEtNDE5NTU20DZ8NC40">https://lasso.dk/firmaer/41955686/hjfyns-svampe-stiftet-pr-18122020/Q1ZSLTEtNDE5NTU20DZ8NC40</a>
<b>Ølstykke Champignon</b>	Small-scale	Mixed Mush. Prod.	Ølstykke, Hovedstaden	<a href="https://cvrapi.dk/virksomhed/dk/olstykke-champignon-aps/12565534">https://cvrapi.dk/virksomhed/dk/olstykke-champignon-aps/12565534</a>
<b>Melholt Champignon</b>	Small-scale	Mixed Mush. Prod.	Hals, Nordjylland	<a href="https://www.proff.dk/firma/melholt-champignon-varne-b-sloth/hals/beplantning-af-haver-og-parkerkanl%C3%A6g/GK5FBF110M0/">https://www.proff.dk/firma/melholt-champignon-varne-b-sloth/hals/beplantning-af-haver-og-parkerkanl%C3%A6g/GK5FBF110M0/</a>
<b>Fra Grums til Gourmet (from grounds to gourmet)</b>	Small-scale, urban entrepreneur	Exotic Mush. Prod.	Aarhus, Nordjylland	<a href="https://www.facebook.com/fragrumstilgourmet/">https://www.facebook.com/fragrumstilgourmet/</a>
<b>FungaFarm</b>	Commercial	Exotic Mush. Prod., Grow kits	Copenhagen, Hovedstaden	<a href="https://www.fungafarm.com/">https://www.fungafarm.com/</a>

<b>Bygaard</b>	Commercial	Exotic and Agaricus bisporus Mush. Prod.	Copenhagen, Hovedstaden	<a href="https://www.bygaard.dk/">https://www.bygaard.dk/</a>
<b>Beyond Coffee</b>	Commercial	Exotic Mush. Prod. Grow kits	Copenhagen, Hovedstaden	<a href="https://www.beyondcoffee.dk/">https://www.beyondcoffee.dk/</a>
<b>St. Restrup Champignon</b>	Commercial	Mixed Mush. Prod.	Aalborg, Nordjylland	<a href="http://strc.dk/">http://strc.dk/</a>
<b>Vejen Champignon</b>	Commercial	Mixed Mush. Prod.	Vejen, Syddanmark	<a href="https://www.proff.dk/firma/vejen-champignon-vtorben-h-thomsen/vejen/jordbrug/GJKG871100F/">https://www.proff.dk/firma/vejen-champignon-vtorben-h-thomsen/vejen/jordbrug/GJKG871100F/</a>
<b>Tvedemose</b>	Industrial	Mixed Mush. Prod.	Lundby, Sjælland	<a href="https://tvedemose.dk">https://tvedemose.dk</a>

### 2.1.2 Mushroom Suppliers and Consultants

Table 3 details the list of mushroom suppliers and consultants in Denmark. They are catalogued by their category, their specific relevant activities, and location and region. Furthermore, the final column details the point of contact information for interested parties.

*Table 3. Overview of auxiliary mushroom production value chain agents identified in Denmark.*

<b>Mushroom Suppliers and Consultants</b>	<b>Category</b>	<b>Activity</b>	<b>Location, region</b>	<b>Website</b>
<b>Fyn Ø Svampe</b>	Consultant	Consulting, education, outreach	Nyborg, Syddanmark	<a href="https://www.fynsoesvampe.dk/">https://www.fynsoesvampe.dk/</a>
<b>Aarhus substrate startup</b>	Consultant, Substrate supplier,	New business models, substrate supply	Aarhus, Nordjylland	n/a

	Peri-urban entrepreneur			
<b>Vinderslev Champignon</b>	Indirect	Mushroom infrastructure liquidator	Vinderslev, Midtjylland	<a href="https://www.proff.dk/firma/vinderslev-champignon-aps/kjellerup/fiansiering/GJS1KSI0FDS/">https://www.proff.dk/firma/vinderslev-champignon-aps/kjellerup/fiansiering/GJS1KSI0FDS/</a>
<b>Tvedemose Ejendom</b>	Substrate supplier	Chicken manure compost maker	Lundby, Sjælland	<a href="https://tvedemose.dk">https://tvedemose.dk</a>

### 2.1.3 Retailers, short food supply chains, restaurants, and caterers

Table 4 follows the same pattern as Tables 2 and 3, with a detailed list of retailers, short food supply chains, restaurants, caterers, and consumer support groups that are related to mushroom production and consumption in Denmark. They are catalogued by their category, their specific relevant activities, and location and region. Furthermore, the final column details a point of contact for interested parties.

*Table 4. Overview of retailers, short food supply chains, restaurants, caterers, and other mushroom-related stakeholders in Denmark.*

Company Name	Category	Activity	Location, Region	Website
<b>Rimmers Køkken</b>	Short food supply chain	Farmer's Market	Taastrup,	<a href="https://www.facebook.com/RimmersKoekken">https://www.facebook.com/RimmersKoekken</a>
<b>Torvehal Bornholm</b>	Short food supply chain	Farmer's Market	Bornholm,	<a href="https://www.torvehalbornholm.dk/">https://www.torvehalbornholm.dk/</a>
<b>Frøken Øko</b>	Short food supply chain	Farmer's Market	Copenhagen,	<a href="https://froekenoeko.dk/shop/frontpage.html?utm_source=GMB+sporing">https://froekenoeko.dk/shop/frontpage.html?utm_source=GMB+sporing</a>
<b>The Food Cooperative</b>	Short food supply chain	Farmer's Market	Copenhagen,	<a href="https://en.hovedbanen.dk/stores/mad-cooperativet/">https://en.hovedbanen.dk/stores/mad-cooperativet/</a>

<b>Birkemosegaard</b>	Short food supply chain	Farmer's Market	Sjællands Odde,	<a href="https://birkemosegaard.dk">https://birkemosegaard.dk</a>
<b>Odense Farmer's Market</b>	Short food supply chain	Farmer's Market	Odense,	<a href="https://www.visitodense.com/tourist/plan-your-trip/biweekly-farmers-market-odense-gdk613032">https://www.visitodense.com/tourist/plan-your-trip/biweekly-farmers-market-odense-gdk613032</a>
<b>Torvehallerne</b>	Short food supply chain, restaurant	Farmer's Market	Copenhagen, Sjælland	<a href="https://torvehallernekbh.dk/">https://torvehallernekbh.dk/</a>
<b>Groent Marked</b>	Short food supply chain	Farmer's Market	Copenhagen, Sjælland	<a href="https://www.groentmarked.dk/">https://www.groentmarked.dk/</a>
<b>Farmer's Market Sunflower</b>	Short food supply chain	Farmer's Market, restaurant supplier	Taastrup	<a href="https://www.farmersmarket.dk/">https://www.farmersmarket.dk/</a>
<b>Birkerød Torvedage</b>	Short food supply chain	Farmer's Market	Birkerød	<a href="http://birktorv.dk/">http://birktorv.dk/</a>
<b>Grønttorvet</b>	Short food supply chain	Farmer's Market	Aalborg,	<a href="http://groenttorvet.dk">http://groenttorvet.dk</a>
<b>Ark</b>	Restaurant	Restaurant	Copenhagen, Sjælland	<a href="https://www.restaurantark.dk/">https://www.restaurantark.dk/</a>
<b>Bistro Lupa</b>	Restaurant	Restaurant	Copenhagen, Sjælland	<a href="https://www.bistolupa.dk/">https://www.bistolupa.dk/</a>
<b>Surt</b>	Restaurant	Restaurant	Copenhagen, Sjælland	<a href="https://surtcph.dk/">https://surtcph.dk/</a>
<b>Friheden</b>	Restaurant	Restaurant	Copenhagen, Sjælland	<a href="https://www.frihedenkbh.dk/">https://www.frihedenkbh.dk/</a>
<b>Frisk fra Gaarden</b>	Transport service	Grocery delivery	Copenhagen, Sjælland	<a href="http://friskfragaarden.dk">friskfragaarden.dk</a>

<b>Eat Grim</b>	Online Marketplace	Upcycles food, delivers food, general marketplace	Copenhagen, Sjaelland	eatgrim.dk
<b>The Danish Association of Family Farms</b>	Farmer Association	Historical archives, network connections	Maribo, Syddanmark	slaegtsgaardsforeningen.dk
<b>Danish Mycological Society</b>	Mycological Society	Project centralization, software, identification, information, databases, pictures, maps, advice, clubs	Hornbaek, Sjaelland	svampe.dk
<b>Ministry of Food, Agriculture, and Fisheries</b>	Danish Ministry	Outreach, education, news, legal updates, database	Glostrup, Sjaelland	en.fvm.dk
<b>Visitnordjylland</b>	Travel Ministry	Mushroom foraging guide	Nordjylland	<a href="https://www.visitnordjylland.com/north-jutland/things-do/mushroom-foraging">https://www.visitnordjylland.com/north-jutland/things-do/mushroom-foraging</a>
<b>Gourmet Svampe</b>	Online retailer	Grow-kit, culture, education	Pinstrup, Nordjylland	svamperiet.dk
<b>TagTomat</b>	Brick and mortar retailer	Education, grow-kit supplier	Copenhagen, Hovedstaden	tagtomat.dk
<b>Mushroom Alchemy</b>	Online retailer	Medicinal products	Copenhagen, Hovedstaden	alchemy.dk

## 2.2 Stakeholders in Ireland

### 2.2.1 *Mushroom Producers*

The mushroom industry is the largest horticultural sector in Ireland and has a farm gate value of €119 million and it currently employs over 3,500 people according to Teagasc. White button mushrooms are of substantial importance to the Irish agri-food export sector, of which 85% is

exported to the UK. Button and closed cup mushrooms hold the largest share of the market followed by flat mushrooms. The number of growers and production units has declined over the past decade as small farms ceased production, while larger farms continued to expand to ensure they remained sustainable. The Irish industry is based on a satellite grower system, whereby growers are linked into a small number of mushroom substrate producers and marketing companies. Mushroom production is holding at ca. 68,000 tones with 37 growers producing champignons on various production units across Ireland. CMP is one of Europe’s leading horticultural producer organizations, representing 50% of Irish mushroom production and growers. A number of mushroom growers around the country are part of the CMP group. CMP provides mushroom producers with training, technology and markets for their businesses. There is a small quantity of specialty mushrooms grown in Ireland, the most common being oyster and shiitake.

*Table 5. Overview of mushroom production value chain agents identified in Ireland.*

<b>Mushroom producers</b>	<b>Category</b>	<b>Activity</b>	<b>Location, Region</b>	<b>Website</b>
<b>Greenfield Mushrooms Ltd</b>	Producer	Agaricus bisporus	Baltinglass, Wicklow	n/a
<b>Cappagh Mushrooms Ltd</b>	Producer	Agaricus bisporus	Kilnaleck, Cavan	n/a
<b>Kildorough Mushrooms Ltd</b>	Producer	Agaricus bisporus	Ballyjamesduff, Cavan	n/a
<b>Sheelin Mushrooms Ltd</b>	Producer	Agaricus bisporus	Kilnaleck, Cavan	n/a
<b>Swanlinbar Mushrooms Ltd</b>	Producer	Agaricus bisporus	Swanlinbar, Cavan	n/a
<b>Woodside Mushrooms Limited</b>	Producer	Agaricus bisporus	Stradone, Cavan	<a href="https://woodsidemushrooms.business.site/">https://woodsidemushrooms.business.site/</a>
<b>Drummully Mushrooms</b>	Producer	Agaricus bisporus	Killesandra Cavan	n/a
<b>Inishowen Mushrooms</b>	Producer	Agaricus bisporus	Inishowen, Donegal	n/a

<b>Drimbawn Mushrooms (Carbury)</b>	Producer		Agaricus bisporus	Carbury, Kildare	<a href="https://www.monaghan.eu/contact/our-locations/">https://www.monaghan.eu/contact/our-locations/</a>
<b>Drimbawn Mushrooms (Claremorris)</b>	Producer		Agaricus bisporus	Claremorris, Mayo	<a href="https://www.monaghan.eu/contact/our-locations/">https://www.monaghan.eu/contact/our-locations/</a>
<b>Claremorris Organic</b>	Producer		Agaricus bisporus	Claremorris, Mayo	<a href="https://www.monaghan.eu/contact/our-locations/">https://www.monaghan.eu/contact/our-locations/</a>
<b>Mc Kenna Mushrooms Ltd</b>	Producer		Agaricus bisporus	Tara, Meath	<a href="http://mckennamushrooms.com/">http://mckennamushrooms.com/</a>
<b>Goldshield Mushrooms</b>	Producer		Agaricus bisporus	Cortown, Meath	<a href="https://www.kerrigansmushrooms.ie/">https://www.kerrigansmushrooms.ie/</a>
<b>Staunton Mushrooms</b>	Producer		Agaricus bisporus	Cavanagarvan, Monaghan	n/a
<b>White Hart Mushrooms Ltd</b>	Producer		Agaricus bisporus	Shercock, Monaghan	n/a
<b>Magheraclone Mushrooms Ltd</b>	Producer		Agaricus bisporus	Cornalaragh, Monaghan	n/a
<b>Tyholland Mushrooms Ltd</b>	Producer		Agaricus bisporus	Tyholland, Monaghan	n/a
<b>Condell Mushrooms</b>	Producer		Agaricus bisporus	Smithborough, Monaghan	n/a
<b>TH Mushrooms Ltd</b>	Producer		Agaricus bisporus	Scotstown, Monaghan	n/a
<b>Markey Mushrooms</b>	Producer		Agaricus bisporus	Ballybay, Monaghan	n/a
<b>Goldcircle (Gowna)</b>	Producer		Agaricus bisporus	Gowna, Cavan	<a href="http://goldcirclemushrooms.com/">http://goldcirclemushrooms.com/</a>
<b>Goldcircle (Tiernaneill)</b>	Producer		Agaricus bisporus	Monaghan, Monaghan	<a href="http://goldcirclemushrooms.com/">http://goldcirclemushrooms.com/</a>

<b>Goldcircle (Hacketts)</b>	Producer		Agaricus bisporus	Monaghan, Monaghan	<a href="http://goldcirclemushrooms.com/">http://goldcirclemushrooms.com/</a>
<b>Goldcircle (Killybrone)</b>	Producer		Agaricus bisporus	Killybrone, Monaghan	<a href="http://goldcirclemushrooms.com/">http://goldcirclemushrooms.com/</a>
<b>Codd Mushrooms</b>	Producer		Agaricus bisporus	Downings, Carlow	<a href="https://coddmushrooms.ie">https://coddmushrooms.ie</a>
<b>Drumbo Mushrooms</b>	Producer		Agaricus bisporus	Carrickmacross, Monaghan	n/a
<b>Errigal Mushrooms</b>	Producer		Agaricus bisporus	Emyvale, Monaghan	n/a
<b>Garryhinch Wood Exotics</b>	Producer		Exotic mushrooms	Garryhinch, Offaly	<a href="https://garryhinchmushrooms.ie">https://garryhinchmushrooms.ie</a>
<b>Milltown Mushrooms Ltd</b>	Producer		Agaricus bisporus	Milltown, Roscommon	n/a
<b>Clune Mushrooms Ltd</b>	Producer		Agaricus bisporus	Clonoulty, Tipperary	n/a
<b>CluneDarby Mushrooms Ltd</b>	Producer		Agaricus bisporus	Clougheen, Tipperary	n/a
<b>Stablefield Ltd</b>	Producer		Agaricus bisporus	Clougheen, Tipperary	n/a
<b>Walsh Mushrooms Golden Limited</b>	Producer		Agaricus bisporus	Golden, Tipperary	<a href="https://www.walshmushrooms.com/">https://www.walshmushrooms.com/</a>
<b>Reilly Mushrooms Ltd</b>	Producer		Agaricus bisporus	Walderstown, Westmeath	<a href="https://reillymushrooms.ie">https://reillymushrooms.ie</a>
<b>Cornacrieve Mushrooms</b>	Producer		Agaricus bisporus	Emyvale, Monaghan	n/a
<b>FancyFungi</b>	Producer		Exotic mushrooms	Killinick, Co. Wexford	<a href="https://www.fancyfungi.ie">https://www.fancyfungi.ie</a>



<b>Ballyhoura Mountain Mushrooms</b>	Producer	Exotic mushrooms	Ballyhoura, Co. Limerick	<a href="https://ballyhouramushrooms.ie/">https://ballyhouramushrooms.ie/</a>
<b>CMP – Commercial Mushroom Producers Co-Operative Society Ltd.,</b>	Ireland's largest mushroom producer organisation	Agaricus bisporus	Monaghan, Co. Monaghan	<a href="https://www.mushrooms.ie/">https://www.mushrooms.ie/</a>

### 2.2.2 Mushroom Suppliers and Consultants

Growers are linked into a small number of mushroom substrate producers and marketing companies. Compost production and cultivation of white button mushrooms are largely integrated in Ireland with a few companies dominating both areas. As far as specialty mushrooms is concerned, they grow on sterilized straw- or sawdust-based blocks or 'logs'. Mushroom spawn and pre-colonized substrate is currently being imported from the Netherlands. Growers can also prepare their own substrates and inoculate them with spawn. This process requires both a high level of technical skill and equipment.

*Table 6. Overview of auxiliary mushroom production value chain agents identified in Ireland.*

<b>Mushroom Suppliers and Consultants</b>	<b>Category</b>	<b>Activity</b>	<b>Location, Region</b>	<b>Website</b>
<b>Carbury Compost</b>	Auxiliary	Compost production	Carbury, Kildare	<a href="https://www.elliottgroup.ie/i-t-life-sciences-and-manufacturing/carbury-compost-carbury-kildare/">https://www.elliottgroup.ie/i-t-life-sciences-and-manufacturing/carbury-compost-carbury-kildare/</a>
<b>Custom Compost</b>	Auxiliary	Compost production	Gorey, Wexford	<a href="https://www.walshmushrooms.com">https://www.walshmushrooms.com</a>
<b>Northway Compost</b>	Auxiliary	Compost production	Ballygawley, Tyrone	<a href="https://www.northwaymushrooms.com">https://www.northwaymushrooms.com</a>

<b>Cabragh mushroom Compost</b>	Auxiliary	Compost production	Tandragee, Armagh	n/a
<b>Harte Peat</b>	Auxiliary	Mushroom Casing/Peat suppliers	Clones, Monaghan	<a href="https://www.hartepeat.com/index.php/en/">https://www.hartepeat.com/index.php/en/</a>
<b>Western Casing Ltd</b>	Auxiliary	Mushroom Casing/Peat suppliers	Boyle, Roscommon	<a href="https://westerncasingltd.wordpress.com/">https://westerncasingltd.wordpress.com/</a>
<b>McDon Peat</b>	Auxiliary	Mushroom Casing/Peat supplier	Coalisland Tyrone	<a href="https://mcdonsubstrates.com/">https://mcdonsubstrates.com/</a>
<b>Donal Gernon</b>	Extension/Research	Mushroom Advisor	Dundalk, Co. Louth	<a href="https://www.teagasc.ie/">https://www.teagasc.ie/</a>

### 2.2.3 Retailers, short food supply chains, restaurants, and caterers

An indicative list of retailers, short food supply chains, restaurants and caterers, that are related to mushroom production and consumption in Ireland is shown below. They are catalogued by their category, their specific relevant activities, and location and region.

*Table 7. Overview of retailers, short food supply chains, restaurants, caterers and other mushroom-related stakeholders in Ireland.*

<b>Company Name</b>	<b>Category</b>	<b>Activity</b>	<b>Location, Region</b>	<b>Website</b>	<b>Project Innovation Benefits</b>
<b>The Super Natural Food Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="http://www.supernatural.ie/">http://www.supernatural.ie/</a>	Specialty mushrooms
<b>The Green Door Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="https://www.thegreendoor.ie/">https://www.thegreendoor.ie/</a>	Specialty mushrooms
<b>The Temple Bar Food Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="https://www.facebook.com/TempleBarFoodMarket/">https://www.facebook.com/TempleBarFoodMarket/</a>	Specialty mushrooms

<b>Honest 2 Goodness Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="http://www.honest2goodness.ie/">http://www.honest2goodness.ie/</a>	Specialty mushrooms
<b>Herbert Park Farmers Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="https://www.facebook.com/Herbert-Park-Market-405930226496273/">https://www.facebook.com/Herbert-Park-Market-405930226496273/</a>	Specialty mushrooms
<b>Airfield Estate's Farmers Market</b>	Short food supply chain	Farmer's Market	Dublin	<a href="https://www.airfield.ie/farmers-market-at-airfield-estate/">https://www.airfield.ie/farmers-market-at-airfield-estate/</a>	Specialty mushrooms
<b>Loam Restaurant</b>	Restaurant	Restaurant	Galway	<a href="https://loamgalway.com/">https://loamgalway.com/</a>	Specialty mushrooms
<b>SuperValu</b>	Retailer	Retailer	Ireland	<a href="https://supervalu.ie/">https://supervalu.ie/</a>	Mushrooms
<b>Dunnes</b>	Retailer	Retailer	Ireland	<a href="https://www.dunnesstoresgrocery.com/">https://www.dunnesstoresgrocery.com/</a>	Mushrooms
<b>Tesco Ireland</b>	Retailer	Retailer	Ireland	<a href="https://www.tesco.ie/">https://www.tesco.ie/</a>	Mushrooms
<b>Mortons</b>	Retailer	Retailer	Dublin	<a href="https://www.mortons.ie/">https://www.mortons.ie/</a>	Mushrooms
<b>M&amp;S Ireland</b>	Retailer	Retailer	Dublin	<a href="https://www.marksandspencer.com/ie/c/food">https://www.marksandspencer.com/ie/c/food</a>	Mushrooms
<b>Donnybrook Fair</b>	Retailer	Retailer/Catering	Dublin	<a href="https://www.donnybrookfair.ie/">https://www.donnybrookfair.ie/</a>	Mushrooms
<b>Avoca</b>	Retailer	Retailer/Food Business	Dublin/Wicklow	<a href="https://www.avoca.com/en">https://www.avoca.com/en</a>	Mushrooms

## 2.3 Stakeholders in Romania

Romania has a long history of mushroom production and consumption. During the Ceausescu era, there were at least eight state-run laboratories in operation, but these closed with the collapse of the regime. In the early 2000's, the Romanian mushroom production industry was considered to be in its infancy, with only a few established compost producers paired with button mushroom production, and even fewer oyster producers, which were largely hobby farmers or sourced in nature. During this early stage, mainly dried oyster mushrooms were sold, as the market

was too unstable to reliably demand fresh mushrooms consistently. One innovative use of infrastructure was the valorization of a WWII-era German-used railway tunnel that was never completed, and was in the early 2000s leased to mushroom growers to utilize. However, since then, Romania has been increasing production, up to a high of around 20,000 tons in 2015. As in the other partner countries, and as is consistent with the rest of the EU, most of the mushrooms produced in Romania are button mushrooms, but with an increasing number of oyster mushrooms being produced as well. In 2015, it was noted that Romanians only consumed around 1 kg per capita per year, which was four times lower than the EU average, at 4 kgs/person/year. Around 20,000 tons of mushrooms were produced in 2015, with a market value of around 50 million Euros. During this year, around 10% of the market for mushrooms was imported, with a similar percent being exported as well. There were around 100 firms that were involved in the production of mushrooms in Romania in 2015. However, it should be noted that there are no statistics on the collection and consumption of mushrooms from local forests in Romania, which is a common pastime. The local foraging of mushrooms also brings these products to market; generally, chanterelles, morels, boletus, and other lesser known varieties are all harvested locally in the wild.

In 2016, it was noted that around 95% of production of these known 100 mushroom-producing companies was destined for the domestic market. During this year, it was noted that the EU was not offering any farm subsidies to mushroom producers in Romania, despite the fact that they were producing a high-quality crop for both domestic and EU consumption. This is because the only subsidies were for crops with 'roots that reach the soil,' which does not include mushrooms. In 2016, it was also noted that the substrate for producing oyster mushrooms in Romania was all imported, and was not produced domestically. An EU-funded project (COMPOSTAR) was involved in the creation of novel business models, which remedied the above problem of relying on imports of mushroom production inputs. A group of Romanian farmers created a cooperative and exploited new funding opportunities to create a local substrate production company, which trained 26 new staff members in this production practice, which in the end resulted in a quality product that was 30% lower than the cost of importing substrate. The cooperative also involved itself with setting up a network where they traded substrate for a portion of the produced mushrooms, and also created a network for collecting, sorting, and distributing mushrooms at regional and national levels.

### 2.3.1 Mushroom Producers

As in other partner countries, there are many mushroom producing companies in Romania, but systematically mapping them all, as many do not have an online presence, is not possible. Table 8 is therefore a list of the known and active mushroom producing companies that can be found registered in the tax service, or are present online. A decent proportion of these producers are active around Bucharest, but there is overall a wide distribution of production actors across the country filling domestic mushroom consumption needs.

*Table 8. Overview of mushroom production value chain agents identified in Romania.*

<b>Mushroom producers</b>	<b>Category</b>	<b>Activity</b>	<b>Location, Region</b>	<b>Website</b>
<b>FRUCTIS PROD S.R.L.</b>	Producer	Producer and supplier of mushrooms	MILOSTEA, VÂLCEA	n/a
<b>SERV. PROD. MIN. S.R.L.</b>	Producer	Producer and supplier of mushrooms	AGHIREȘU, CLUJ	n/a
<b>ȘERBAN IOAN</b>	Producer	Producer and supplier of mushrooms	SATU MARE, SATU-MARE	n/a
<b>ROM SILVIC SRL</b>	Producer	Producer and supplier of mushrooms	BERIU, HUNEDOARA	n/a
<b>FOREST FOOD SRL</b>	Producer	Producer and supplier of mushrooms	CĂPUȘU MARE, CLUJ	n/a
<b>ARFUNGO COMIMPEX S.R.L.</b>	Producer	Producer and supplier of mushrooms	AUȘEU. BIHOR	n/a

<b>REZK INTERNATIONAL TRADE S.R.L.</b>	Producer	Producer and supplier of mushrooms	UNIRII, BUCUREȘTI	n/a
<b>RIVA FOOD SRL</b>	Producer	Producer and supplier of mushrooms	CONȚEȘTI, DÂMBOVIȚA	n/a
<b>AGROIF MUSHROOM SRL</b>	Producer	Producer and supplier of mushrooms	DUMITRANA, ILFOV	n/a
<b>NEW FACTORY IMPEX LTD S.R.L.</b>	Producer	Producer and supplier of mushrooms	ALEȘD, BIHOR	n/a
<b>IAZUL V&amp;V S.R.L.</b>	Producer	Producer and supplier of mushrooms	ZALĂU, SĂLAJ	n/a
<b>LUPA S.R.L.</b>	Producer	Producer and supplier of mushrooms	OLTULUI, BUCUREȘTI	n/a
<b>NATUR CHAMP SRL</b>	Producer	Producer and supplier of mushrooms	OSEBIȚI, BACĂU	n/a
<b>Asociatia Nationala a Producatorilor de Ciuperci din Romania</b>	Association	Mushroom producers	Bucharest	n/a

### 2.3.2 Mushroom Suppliers and Consultants

Table 9 illustrates some of the auxiliary mushroom production actors that have been identified in Romania. Most of these are mushroom input suppliers, with traders, consultants, and other inter or pre-market actors involved as well.

Table 9. Overview of auxiliary mushroom production value chain agents identified in Romania

Mushroom Suppliers and Consultants	Category	Activity	Location, region	Website
STIM PRODAL S.R.L.		Mushroom supplier	BRAȘOV, BRAȘOV	n/a
CONTACT UNISEM SA		Producer and trader.	MATASARI, BUCURESTI	n/a
VEL FUNGO SRL		Mushroom supplier	SCOLII, CIARACIO	n/a
CONTACT L D L IMPEX SRL		Mushroom supplier	CIUCEA, CIUCEA	n/a
CHAMPIGNONS PROD SRL		Mushroom supplier	CALEA BODROGULUI, ARAD	n/a
Consultanta Cultivarea Ciupercilor		Consultant		n/a
Tudor Ioana		Consultant	Bucuresti, Romania	<a href="https://totuldespreciuperci.blogspot.com/">https://totuldespreciuperci.blogspot.com/</a>

### 2.3.3 Retailers, short food supply chains, restaurants, and caterers

Table 10 shows a few key retailers that are involved in mushroom distribution and sales in Romania.

Table 10. Overview of retailers, short food supply chains, restaurants, caterers and other mushroom-related stakeholders in Romania.

Company Name	Category	Activity	Location, Region	Website
<b>CONTACT SERMONA IMPEX SRL</b>		Retailer	ETAJ, AFUMATI	n/a
<b>CONTACT DISSIAL IMPEX SRL</b>		Retailer	STRADA TUDOR, ALESD	n/a
<b>PIEMONTANA LOGISTIC SRL</b>		Retailer	TIMISOARA	n/a

## 2.4 Stakeholders in Hungary

The most important cultivated mushroom species in Hungary are the champignon and oyster mushroom. The per capita consumption of mushrooms in Hungary is very low, around 1-1.5 kilograms per year, according to the overview of the National Chamber of Agriculture. There are 18-20 larger and 300-400 smaller mushroom growers in Hungary, with the sector employing about 4500 people. Mushrooms are grown in closed mushroom growing houses, tents, and to a lesser extent in cellars. Most mushrooms are grown in Pest, Heves and Bács-Kiskun counties, and most mushrooms are exported to Austria and Romania. The old, traditional production areas of Budafok-Budatétény and Kőbánya – where the cellar systems are excellent for growing mushrooms – and Győr and Eger. Recently, there has been a trend to move cultivation to modern, built-in mushroom-growing houses instead of cellars. For oyster mushroom, Budapest and Kecskemét are the biggest production places. In the case of oyster mushroom, most exports go to Germany. Domestic mushroom production in Hungary has increased in the last decade, from 18,000 tonnes in 2008 to nearly 30,000 tonnes in 2016, with a slow increase in mushroom consumption over the past year or two. About 90% of the mushrooms produced are champignons, 7-8% are oyster mushrooms, and nearly 60 percent of them are exported. 75 percent of the mushrooms on the market are fresh produce, 2% are canned, and oyster mushrooms typically go fresh. Shiitake, devil's chariot and shimeji mushrooms are still available as fresh produce, but their proportions are not significant.



### 2.4.1 Mushroom Producers

Table 11 includes the largest mushroom producers in Hungary. There is no public list available containing all mushroom producers, and according to recent research on mushroom producers, especially small scale ones are not active in marketing and not present in the online space, thus it is difficult to identify them. For some of them, there are webpages but mostly with old, outdated content, therefore actual information about the company's operation cannot be decoded.

*Table 11. Overview of mushroom production value chain agents identified in Hungary.*

<b>Mushroom producers</b>	<b>Category</b>	<b>Activity</b>	<b>Location, Region</b>	<b>Website</b>
<b>Magyar Gombakertész Kft</b>	Large-scale	Compost production, Spawn production, Mushroom (Champignons, bio champignons and exotic mushrooms) production, Canned mushroom	Demjén, Budapest, Hungary	<a href="https://koronagomba.hu/en/Mushroom_grower.html">https://koronagomba.hu/en/Mushroom_grower.html</a>
<b>Bio-Fungi</b>	Large-scale	Compost production	Áporka, Hungary	<a href="https://www.biofungi.hu/en/">https://www.biofungi.hu/en/</a>
<b>Eurochampignon Kft</b>	Large-scale	Mushroom (Champignons, bio champignons and exotic mushrooms) production	Ócsa, Hungary	n/a
<b>Új Champignons Kft</b>	Large-scale	Compost production,	Demjén, Hungary	<a href="https://ujchampignons.hu/">https://ujchampignons.hu/</a>
<b>Pilze-Nagy Kft</b>	Large-scale	Substrate production, Mushroom (Oyster) production, Mushroom processing (drying)	Kecskemét, Hungary	<a href="http://pleurotus.hu/">http://pleurotus.hu/</a>
<b>Dofe Kft</b>	Large-scale	Agaricus mushroom production, trade	Budapest	n/a
<b>Xilion Kft.</b>	Large-scale	Agaricus mushroom production, trade	Budapest	<a href="http://www.xilion.hu/">http://www.xilion.hu/</a>

<b>Gombatakaró Kft.</b>	Medium-scale	Agaricus mushroom production	Budapest	n/a
<b>Champex Kft.</b>	Medium-scale	mushroom producer and processor, dried mushroom products		gombajo.hu

#### 2.4.2 Mushroom Suppliers and Consultants

Table 12 includes the relevant stakeholders involved as auxiliary mushroom production actors. Their roles are indicated in the table. This is not an all-inclusive list, but does detail the known and active members in this regard.

*Table 12. Overview of auxiliary mushroom production value chain agents identified in Hungary*

<b>Mushroom Suppliers and Consultants</b>	<b>Category</b>	<b>Activity</b>	<b>Location, region</b>	<b>Website</b>
<b>Sylvan Hungary</b>	Hungarian branch of the international brand	Spawn production, trade, consultancy	global	<a href="http://www.sylvaninc.com/">http://www.sylvaninc.com/</a>
<b>Gombaforum</b>	n/a	n/a	n/a	<a href="https://www.gombaforum.hu">https://www.gombaforum.hu</a>
<b>Association of Hungarian Mushroom Producers</b>	n/a	Consultancy, awareness raising, lobby	n/a	<a href="https://magote.hu/en/az-egyesegetrol/">https://magote.hu/en/az-egyesegetrol/</a>
<b>Növény-ház 2008 Kft.</b>	n/a	Mushroom house construction company	n/a	<a href="https://www.noveny-haz.hu/">https://www.noveny-haz.hu/</a>
<b>Motor Kft.</b>	n/a	machinery supplier	n/a	<a href="http://www.agrotechno.t-online.hu/">http://www.agrotechno.t-online.hu/</a>

### 2.4.3 Retailers, short food supply chains, restaurants, and caterers

Table 13 includes the relevant stakeholders already involved in the discussion about the project and the MUSHNOMICS module. Their roles are indicated in the table. This is not an all-inclusive list just about the stakeholders already consulted and supporting the project progress.

*Table 13. Overview of retailers, short food supply chains, restaurants, and caterers in Hungary*

Company Name	Category	Activity	Location, Region	Website	Project Innovation Benefits
<b>ERSTE Bank Hungary</b>	bank	finance	Hungary	<a href="https://www.erstebank.hu/hu/ebh-n-yito">https://www.erstebank.hu/hu/ebh-n-yito</a>	innovation financing, good CSR story, coffee-ground collection in the office building
<b>Recobin</b>	waste management	organization of waste management for office buildings, waste logistics organization	Budapest, Hungary	<a href="https://recobin.hu/">https://recobin.hu/</a>	biowaste utilization possibility, mainly for coffee grounds
<b>Heros of Responsible Dining</b>	organization	sustainable restaurant certification, education	Budapest, Hungary	<a href="https://www.gasztrohos.hu/en">https://www.gasztrohos.hu/en</a>	biowaste collection and utilization possibility, mainly for coffee grounds
<b>Bedrock.farm</b>	urban farm	hydroponics urban farming	Budapest, Hungary	<a href="https://www.bedrock.farm/">https://www.bedrock.farm/</a>	utilization of green processing waste (mainly roots), technology integration options, logistic consideration
<b>Hungarian University of Agriculture and Life Sciences</b>	university	teaching, R&D	Hungary (multiple campuses)	<a href="https://archive.uni-mate.hu/en">https://archive.uni-mate.hu/en</a>	research farm of the university will host the first MUSHNOMICS module
<b>Café Molinari</b>	cafe	café shop operation, coffee trade	Budapest, Hungary	<a href="http://molinarikave.hu/">http://molinarikave.hu/</a>	option to collect coffee-ground

### **3 Acknowledgements**

MUSHNOMICS is part of the ERA-NET Cofund ICT-AGRI-FOOD, with funding provided by national funding body in Denmark [Green Development and Demonstration Program under The Ministry of Food, Agriculture and Fisheries of Denmark within the framework of MUSHNOMICS project, journal number: 34009-20-1814), Hungary (National Research, Development and Innovation Office), Ireland (Department of Agriculture, Food and the Marine (DAFM) and Romania (Romanian National Authority for Scientific Research and Innovation Funding) and co-funded by the European Union's Horizon 2020 research and innovation program, Grant Agreement number 862665.