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# CELEBio

## D.2.3

# BIO-ECONOMY STAKEHOLDERS IN CROATIA

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<b>Publishable executive summary in English</b>	This report presents an overview of all actors and actor groups that need to be involved when setting up biomass delivery and utilization chains. The report is presented in 9 chapters, in which actors are distributed to agricultural, forestry, waste and fishery sectors, bio-based industries, actors in knowledge, government and financial institutions. Each sector is briefly described, and actors named, with a short introduction to their activities.
<b>Publishable executive summary in national language</b>	Izvešće o dionicima bioekonomije u Hrvatskoj predstavlja pregled svih dionika i skupina dionika koji moraju biti uključeni prilikom postavljanja lanaca dobave i korištenja biomase. Izvešće je prikazano kroz 9 poglavlja, unutar kojih su dionici raspodijeljeni u sklopu sektora poljoprivrede, šumarstva, otpada i ribarstva, bio-bazirane industrije, dionika u sektoru edukacije, javnih tijela te financijskih institucija. Svaki sektor je kratko opisan te su definirani glavni dionici, uključujući i kratak opis njihovih aktivnosti.

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# 1. INTRODUCTION

## 1.1. OBJECTIVES AND APPROACH

In this report we present an overview of all actors and actor groups that need to be involved when setting up biomass delivery chains. To ensure a complete mapping of these actors several stakeholder exchanges at national stakeholder workshops were held.

The actors presented can be specific persons, companies, and other type of organisations (e.g. farmers organisations. In case of listing companies in certain sectors we listed the top largest and/or most influential ones.

For the actors presented in this report the following information is provided:

1. Company name/person name
2. Company location in town/municipality
3. Company location in region
4. Type of activity (for company)/ type of function (for person)
5. (if company/organisation) specify number of employees
6. Already involved in bio-based activities (Y/N)
7. If yes, describe bio-based activity it is involved in

# 2. ACTORS IN AGRICULTURAL AND AGRO INDUSTRIAL SECTOR<sup>1</sup>

As it was mentioned in the Disclaimer section, this project was time and budget limited. Therefore, it was not possible to make a complete overview of all the players in specific industries that were covered. This would require more significant effort, which will be conducted in future projects, on topic of Croatian bioeconomy (e.g. stakeholders overview for the preparation of National Bioeconomy Strategy).

Therefore, the overview in this chapter provides a general overview of a representative sample of stakeholders and a starting point for future projects. It should be noted that there are many more stakeholders in this industry and sector, and the mentioned stakeholders are not favoured in any way. They are selected only due to limited scope of the project's activities.

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<sup>1</sup> Approach: In this chapter we present an overview of all actors and actor groups that need to be involved when setting up biomass delivery chains. To ensure a complete mapping of these actors several stakeholder exchanges at national stakeholder workshops were held.

The actors presented can be specific persons, companies, and other type of organisations (e.g. farmers organisations. In case of listing companies in certain sectors we listed the top largest and/or most influential ones.

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- Company location in town/municipality
- Company location in region
- Type of activity (for company)/ type of function (for person) / public sector (government)
- (if company/organisation) specify number of employees
- Already involved in bio-based activities (Y/N)
- If yes, describe bio-based activity it is involved in

Moreover, the information gathered in this chapter are validated by experts in the examined fields: Croatian Chamber of Agriculture (CCA) in the agriculture sector, and Croatian Forest Research Institute in the forestry sector.

Furthermore, the stakeholders report is defined within the templates of the project's activities and designed by coordinating project partners. The table is presented as following, with the description of each segment:

## 2.1. ACTORS IN PRIMARY AGRICULTURAL SECTOR

Agricultural production is mainly oriented through family farms. In 2019, the number of family farms was 162,966 and they are cultivating a total area of 869,093.0 hectares (Ministry of Agriculture, 2020). Most manufacturers represent small and medium-sized economies, while smaller but more significant holdings are large companies. Farmers are also grouped into sectoral associations and unions. Since Croatia's accession to the European Union, farmers have also been joining producer organizations. 17 producer organisations (PO), mostly from the dairy sector, have been established so far. Setting up new POs and joining more and more farmers in them, gives them the opportunity to compete on the market and achieve good product prices. Farmers' strength is achieved through joint action so they can compete on the large European market.

Croatia is a land of small farmers and micro-agricultural lands (under 2 hectares) and small agricultural lands (2-20 hectares) make up more than 90% of agricultural land.

The number of employed people in agriculture in 2019 was 37.774. The share of young farmers (up to 41 years) is 12.7%.

According to Ministry of Justice and Public Administration, there are over 2,000 associations related to the agriculture sector in Croatia<sup>2</sup>. Main agricultural organisation is Croatian Chamber of Agriculture (CCA) that represents 75,000 farmers, carrying out their activities within 18 agricultural committees, operating under the CCA. Also, in CCA are also active farm associations and they are: Croatian Central Association of Simmental Cattle Breeders, Croatian Central Association of Holstein Cattle Breeders, Croatian Central Association of Pig Breeders, Croatian Association of Sheep and Goat Breeders, Central Association of Croatian Cold Blood Breeders, Central Horse Breeders Association "Croatian Posavac", Croatian Poultry Breeders' Association, Croatian Beekeepers Association, Central fruit and vegetables organization, Croatian Fruit Community, Community of vegetable growers associations, Croatiastočar, Cromilk, Association of Family farms – Life, Milk Association Drava – Sava, Croatian Young Farmers Association, Association Baby Beef. All the above communities, associations and federations are active members of the CCA.

<sup>2</sup> <https://registri.uprava.hr/#!udruge>

In addition to the CCA, active associations in Croatia are: Croatian Chamber of Economy, Croatian Chamber of Trades and Crafts.

According to statistics from the Central Bureau of Statistics, in 2018, there were 3,253 registered companies and 58,184 workers were employed in the food and beverage sector.

According to Paying Agency for Agriculture, Fisheries and Rural Development (APPRRR) data statistics<sup>3</sup> in 2019 there were 8,240 agricultural holdings in Croatia, with an agricultural area of up to 100 ha; 1,299 holdings with an area of up to 1,500 ha; and 16 holdings with an area of more than 1,500 ha.

The Agricultural Advisory Service has been under the authority of the Ministry of Agriculture since 2019. The main objective and purpose of the Advisory Service is to develop competitive and advanced farms and fisheries entities through information, consultation and education, while respecting the principles of good agricultural practice and preserving rural space by nurturing traditions and customs. The Advisory Service operates through 21 support centres by county, where they have 121 offices throughout Croatia, 300 professionally trained staff and 240 specialists on the field. In addition to this national advisory body, there are about 10 private advisory institutions in Croatia - environmental control bodies.

Croatian Agency for Agriculture and Food carries out programmes that are of strategic interest to the Republic of Croatia and establishes an infrastructure in cooperation with scientific institutions that is of interest to the entire agricultural system of the Republic of Croatia. The Agency should ensure and develop excellence in technological research and experimental development in the fields of agriculture and food safety and thus improve food and bioenergy production, the supporting industry and natural resource management in the national, regional and European context, with special emphasis on the development of sustainable and viable national agriculture. Its activities have been prescribed by the Act on the Croatian Agency for Agriculture and Food and other special regulations (more than 19 different acts, more than 200 different rules, ordinances and instructions), and consists of 8 centres<sup>4</sup>:

- Centre for Seed and Seedlings

<sup>3</sup> <https://www.apprrr.hr/arkod/>

<sup>4</sup> <https://www.hapih.hr/about-us/>

- Centre for Quality Control and Livestock Products
- Centre for Plant Protection
- Centre for Viticulture, Enology and Edible Oils Analysis
- Centre for Soils
- Centre for Pomology and Vegetable Crops
- Centre for Food Safety and
- Centre for Livestock Breeding.

### National and regional CAP information officers

The Croatian Chamber of Agriculture was established by the Croatian Parliament in 2009 in order to prepare farmers for CAP. The CCA functions as an umbrella organization for associations, cooperatives, family farms, businesses and trade in agriculture. The organization is a full member of the COPA-COGECA, the strongest association for European farmers. As a member of these groups it has access to EC Civil dialogue groups (CDG) on forest, CAP, direct payments, and other agricultural sectors. On national level, CCA is member of approximately 30 Working parties in Ministry of Agriculture, including Bioeconomy.

There are also 56 Local Action Groups (LAG) under Croatian Rural Development network. LAGs are the establishments of local partnerships, which have a task of creating and implementing local development strategies, making decisions on the allocation of available funds and management of the funds. A LAG needs to bring public and private sector partners together, seeing to the balanced representation of local interest groups, whose members belong to different socio-economic segments. At the level of decision-making, at least 50% of members must come from the business and civil society sectors<sup>5</sup>. A LAG can be founded ad hoc, or it can build upon existing partnerships.

<sup>5</sup> <https://hmrr.hr/en/leader-approach/what-is-lag/>

## 2.2. ACTORS IN AGRO INDUSTRIES

Name:	Atlantic Grupa
Location:	Croatia
Region:	Central Croatia
Type of activity:	Functional food, beverages and pharmaceuticals
Website	<a href="https://www.atlanticgrupa.com/hr/">https://www.atlanticgrupa.com/hr/</a>
Bio-based activity involved in:	Functional food, beverages and pharmaceuticals

Name:	Bobis
Location:	Croatia
Region:	Split Dalmatia County
Type of activity:	Production of bakery products, cereals
Website	<a href="https://bobis.hr/">https://bobis.hr/</a>

Name:	Cetina (pasta factory)
Location:	Croatia
Region:	Međimurje County
Type of activity:	Production of macaroni, gnocchi, couscous

Name:	Dukat
Location:	Croatia
Region:	Central Croatia
Type of activity:	Production of milk and dairy products
Website	<a href="https://www.dukat.hr/">https://www.dukat.hr/</a>

Name:	Franck
Location:	Croatia
Region:	Central Croatia
Type of activity:	Production of food and beverages, seasoning, coffee and tea
Website	<a href="https://www.atlanticgrupa.com/hr/">https://www.atlanticgrupa.com/hr/</a>

Name:	Gavrilović
Location:	Croatia
Region:	Sisak Moslavina County
Type of activity:	Meat processing
Website	<a href="http://www.gavrilovic.hr/">http://www.gavrilovic.hr/</a>

Name:	Kandit
Location:	Croatia
Region:	Osijek Baranja County
Type of activity:	Confectionery company with a long tradition of manufacturing
Website	<a href="https://www.kandit.hr/hr/naslovna/">https://www.kandit.hr/hr/naslovna/</a>

Name:	KOKA
Location:	Croatia
Region:	Varaždin County
Type of activity:	Koka is the only Croatian poultry industry with an integrated production cycle – from farm flocks for the production of hatching eggs, through the hatchery, the fattening of broilers, the veterinary service, the laboratory and the animal feed factory to the meat industry. Under Vindija Group.
Website:	<a href="http://www.vindija.hr/en-GB/About-us/Member-Firms/Koka.html?Y2lcNjY%3d">http://www.vindija.hr/en-GB/About-us/Member-Firms/Koka.html?Y2lcNjY%3d</a>

Name:	Koestlin
Location:	Croatia
Region:	Bjelovar-Bilogora County
Type of activity:	Production of confectionery products
Website	<a href="https://www.koestlin.hr/en">https://www.koestlin.hr/en</a>

Name:	Kraš
Location:	Croatia
Region:	Central Croatia
Type of activity:	Leading manufacturer of confectionery in south-eastern Europe
Website	<a href="https://www.kras.hr/en/about-us/about-us">https://www.kras.hr/en/about-us/about-us</a>

Name:	Ledo
Location:	Croatia
Region:	Central Croatia
Type of activity:	Largest domestic manufacturer of industrial ice cream and the largest distributor of frozen foods (fish, fruits and vegetables, pastry doughs, ready-made meals)
Website	<a href="https://www.ledo.hr/hr-en/about-us">https://www.ledo.hr/hr-en/about-us</a>

Name:	PIK Vrbovec
Location:	Croatia
Region:	Zagreb County
Type of activity:	Meat industry (red meat and meat products from red meat)
Website	<a href="https://www.pik-vrbovec.hr/about-us-company-info-a82-89?lang=en">https://www.pik-vrbovec.hr/about-us-company-info-a82-89?lang=en</a>

Name:	Podravka
Location:	Croatia
Region:	Koprivnica Križevci County
Type of activity:	Food and pharmaceutical company
Website	<a href="https://www.podravka.com/about/">https://www.podravka.com/about/</a>

Name:	Sladorana Županja
Location:	Croatia
Region:	Vukovar Srijem County
Type of activity:	Processing of sugar beet production and sugar processing, sugar beet, ethyl alcohol, protein powder, and feeding of livestock production with the product "Sladoliq"
Website	<a href="http://www.secerana.hr/">http://www.secerana.hr/</a>

Name:	Tvornica šećera Osijek
Location:	Croatia
Region:	Osijek Baranja County
Type of activity:	Processing of sugar from sugar beet, soil improver from carbocalk, mollasses from sugar beet and raw sugar, sugar beet noodle from dry brikets and pressed noodle
Website	<a href="https://www.atlanticgrupa.com/hr/">https://www.atlanticgrupa.com/hr/</a>

Name:	Vindija
Location:	Croatia
Region:	Varaždin County
Type of activity:	Today, the Vindija Group comprises 14 companies, 8 of which are in Croatia and 6 in the countries of the region. Vindija's range today includes more than 1000 different products in seventeen brands, the most famous of which are 'z bregov, Cekin and Vindon.
Website	<a href="https://www.atlanticgrupa.com/hr/">https://www.atlanticgrupa.com/hr/</a>

Name:	Viro tvornica šećera
Location:	Croatia
Region:	Virovitica Podravina County
Type of activity:	Sugar factory
Website	<a href="http://www.secerana.hr/default.aspx?id=3">http://www.secerana.hr/default.aspx?id=3</a>

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Name:	Zdenka
Location:	Croatia
Region:	Bjelovar Bilogora County
Type of activity:	Cheese production
Website:	<a href="https://www.zdenka.hr/en/stranice/o-nama">https://www.zdenka.hr/en/stranice/o-nama</a>

Name:	Zvečevo
Location:	Croatia
Region:	Požega Slavonia County
Type of activity:	Confectionery manufacturer
Website	<a href="http://www.zvecevo.hr/en/">http://www.zvecevo.hr/en/</a>

## 2.3. OTHER ACTORS RELATED TO AGRICULTURE & AGRO-PROCESSING CHAIN

Name:	Žito ltd.
Location:	Osijek
Region:	Osijek-Baranja County
Type of activity:	Production of cereals, feed for food, energy
Already involved in bio-based activities:	<p>The basis of energy production in the Žito Group is the use of manure from Group farms, silage and other organic residues in biogas plants - 4 biogas plants; Digestate, a by-product of biogas production rich in micro and macro nutrients, is used as organic fertilizer on the Group's arable land. The Vitalka animal feed factory is one of the most modern animal feed factories in the region. The production process is fully automated and computer controlled. Great importance is attached to the control of raw materials and finished products and traceability. The raw material base of production is the crops grown on the surfaces of the Žito Group. The mixing capacity is 20 t/h, while the annual production is 100,000 tonnes of feed for pigs, cattle, poultry, game and fish.</p>

Name:	Belje d.d.
Location:	
Region:	Osijek-Baranja County
Type of activity:	Dairy Factory, meat processing, wine production, corn flour production and tomato cultivation
Already involved in bio-based activities:	Animal feed factories Belje are today the largest producer of animal feed in Croatia, with a total production capacity of 300,000 t. Mitrovac agricultural complex combines a dairy farm, a biogas power plant and a greenhouse for the production of tomatoes, in which 2,800 tons of tomatoes are produced annually on 4.5 hectares. Wine production on 650 ha is base for tourism related activities (wine roads, guided tours, souvenir shop and events).

Name:	PPK Valpovo
Location:	Valpovo
Region:	Osijek-Baranja County
Type of activity:	Production of cereals, industrial plants and other crops
Already involved in bio-based activities:	The Valpovka animal feed factory has a production capacity of 35,000 tonnes of animal feed per year. It is at the top of the domestic animal feed industry, in quality and equipment, with a wide variety of finished products. Within the Valpovka Animal Feed Factory there is a separate premixed plant, which for the needs of the factory as well as for end consumers produces a series of premixes, mineral mixtures and supplementary feeds.

Name:	Osječka pivovara ltd.
Location:	Osijek
Region:	Osijek-Baranja County
Type of activity:	Beer production, research

Name:	Karolina ltd.
Location:	Osijek
Region:	Osijek-Baranja County
Type of activity:	Production (biscuit and waffle factory)
Already involved in bio-based activities:	Nursery production is organized on an area of 14 ha with fruit planting material and ornamental plants. Carolina d.d. owns native nurseries for the production of vegetative and generative rootstocks and parent crops for own production of scions and resale. Annual production of fruit seedlings for the sales season is around 110,000 pieces.

Name:	Osatina grupa d.o.o.
Location:	
Region:	Osijek-Baranja county, Vukovar-Srijem County
Type of activity:	Production, research
Already involved in bio-based activities:	Osatina Group's activities include farming, cattle breeding, pig breeding, animal feed, humus production, vegetable and fruit production and meat processing. Osatina Group currently operates 3 biogas plants with a total capacity of 6 MWe / 6 MWt. After the fermentation process in the biogas plant and with specific processing technology high quality humus is produced.

Name:	Osilovac d.o.o.
Location:	Feričanci
Region:	Osijek-Baranja County
Type of activity:	Wine Production, research
Already involved in bio-based activities:	Wine production on 160 ha with annual production around 900,000 liters is a base for tourism related activities (wine roads, guided tours, school for winegrowers, souvenir shop and events).

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Name:	Pivac Group
Location:	
Region:	Split-Dalmatia County
Type of activity:	Meat processing industry
Already involved in bio-based activities:	Meat processing, distribution and sales. 3 meat processing factories.

Name:	Mini dairy farm Veronika ltd.
Location:	Desinić
Region:	Krapina-Zagorje County
Type of activity:	Production of milk and milk products
Already involved in bio-based activities:	Mini dairy farm Veronica ltd. processes 20,000 liters of milk per day.

## 2.4. CLUSTERS AND ORGANISATIONS

Croatia has 362 farm cooperatives and 17 Producer organisations. Yet, there is still a negative opinion on cooperation, due to historical background. Many farmers are still small, single players and these cooperatives and POs are having approximately 7 members (Broz and Švaljek, 2019). In cooperatives, most of them are not in primary production. Cooperatives are mostly active in Mediterranean part.

Name:	Croatian Chamber of Agriculture
Location:	Croatia
Region:	City of Zagreb
Type of activity:	Consulting and advisory
Website	<a href="https://komora.hr/">https://komora.hr/</a>

# 3. ACTORS IN FORESTRY AND FOREST INDUSTRY

As already mentioned, there is more than 250-years long forestry tradition and organised sustainable forest management in Croatia. At the present, forest management and other forestry activities are regulated by several laws and legal acts. Therefore, there are many stakeholders in the Croatian forestry sector, that can be related to bioeconomy segment. However, due to limitations of the project's scope, this chapter only presents a representative sample of stakeholders, which are in no way favoured before others.

## Forestry companies

### **Public companies**

In the actual management of state-owned forests, a state-owned company Croatian Forests Ltd. (Hrvatske šume d.o.o.), has a key role. The company carries out the following activities: silvicultural activities, forest protection, on-field inventory, production of woody assortments, and selling the produced assortments. The company is obligated by the Law on forests (Official Gazette 68/18, 115/18, 98/19) to make detailed Forest Management Plans (FMP) and to keep a precise bookkeeping of growing stock for every Forest Management Unit (FMU). The average size of FMU is around 3,000 ha. FMP for each FMU has to be renewed every 10 years on the basis of data from the previous FMP and forest measurements with the intensity of up to 10% of the area.

All State-owned forests managed by the Croatian Forests Ltd. are certified according to FSC certification standard. The company has been actively involved in the process of certification since 2000. At the beginning, only respective Forest Administrations had been certificate holders (since 2002), and later the whole area managed by Croatian Forests was subjected to the certification monitoring, on which basis a mutual certificate for the whole

group consisting of 16 members (Forest Administrations) was issued. It can be also referenced by all wood processors down the chain of custody, who obtained the raw material from Croatian Forests Ltd. The use of FSC certificate, FSC logo and COC number is subject to strictly regulated FSC rules and its abuse is forbidden (Croatian Forests, 2008).

Croatian Forests Ltd. is also in charge of developing a General Forest Management Area Plan (FMAP) on the national level every 10 years. The FMAP is made by compiling and summarizing data from existing FMPs for the state-owned forests and data available for private forests. The Ministry of Agriculture gives approval for the FMP as well as forest management plans of private forests.

Besides Croatian Forests Ltd., there is also the Faculty of Forestry, University of Zagreb, who is involved in forest management activities, but only of special purpose forests used for education and training of students.

### **Individual private forest owners (not part of associations of private forest owners)**

Most of All the Croatian wood-buyers are wood processing companies, but there is an unknown number of intermediaries. Private companies for forest utilisation provide services to Croatian Forests Ltd. company based on subcontracting or to private forest owners. Those SMEs (stakeholders) in forestry providing services to state-owned company or private forest owners are considered as licenced Forestry Contractors. There is a significant number of Forestry contractors, and as example of small enterprises there are Trgovački obrt i izvoz drveta iz šume "START" (Otok), TOP DRVO d.o.o. (Apatovec), MALI-logging d.o.o. (Karlovac), Uslužni obrt "KIRO" (Petrovci), and as example of medium enterprises there are "ČANDIĆ" izvoz trupaca iz šume (Gunja), G.T.P. Šoštarić (Jastrebarsko), Ice Eurotransport d.o.o. (Karlovac), MANDA-RAD obrt za šumarske usluge (Brod Moravice) etc.<sup>6</sup> According to comprehensive analysis of forestry contractors and services provided to the company Croatian Forests Ltd. in the period 1998-2002 by Šporčić and Martinić (2004), forestry contractors have carried out around 14% of all tree-felling activities and around 44% of all wood skidding (calculation based on extracted wood volume). According the three

<sup>6</sup> Croatian Chamber of Forestry and Wood Technology Engineers, List of licenced forestry contractors on 2nd Feb 2020

Annual reports of Croatian Forests Ltd. (2017<sup>7</sup>, 2018<sup>8</sup>, 2019<sup>9</sup>), the share of services provided by forestry contractors to the company has significantly increased, compared to results from Šporčić and Martinić (2004). After the establishment of Forestry Extension Service in 2006, provision of forest management services by forestry contractors increased, based on experts' opinion.

### **Forestry organisations**

Establishment of the Croatian Chamber of Forestry and Wood Technology Engineers in 2006 affected forest management of private forests due to obligatory licensing of contractors who are providing services in forestry (usually wood logging) and voluntary licensing of forestry and wood processing engineers (Law on Croatian Chamber of Forestry and Wood Technology Engineers, OG No. 22/2006).

The Association of Forestry Professionals is also a non-governmental body, acting as a professional association of forest engineers and technicians. It provides training to its members and works on promotion of forestry and forest-related science.

Regarding the Croatian Academy of Forestry Sciences, it is a non-governmental body for promotion of forest-related science.

### **Forestry advisory organisations**

Forestry Extension (Advisory) Service as an independent agency existed from 2006 until 2010, when it became a unit within the Croatian Forests Ltd. In 2014 the extension service was moved again out of the Croatian Forests Ltd. company to an independent agency, that was established as a result of merging forestry and agricultural advisory services in one agency. The Advisory Service existed until the end of 2018, after which the Ministry of Agriculture took over the roles and activities of the Advisory Service. The roles of the Ministry regarding forest management of private forests are: advisory services and promotion of knowledge on forests, organisation of education activities for private forest owners,

<sup>7</sup> [https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje\\_izvjesce\\_za\\_2017.pdf](https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje_izvjesce_za_2017.pdf)

<sup>8</sup> [https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje\\_izvjesce\\_za\\_2018.pdf](https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje_izvjesce_za_2018.pdf)

<sup>9</sup> [https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje\\_izvjesce\\_za\\_2019.pdf](https://www.hrsume.hr/images/stories/godisnja-poslovna-izvjesca/godisnje_izvjesce_za_2019.pdf)

preparation of expertise for forest management in private forests, preparation of documents for forest roads and forest fire brakes, keeping records on private forests and monitoring the implementation of forest management plans, establishment of special conditions for forest infrastructure in private forests, marking the trees in private forests via licenced contractors etc. (Law on termination of the Law on Croatian agriculture and forestry advisory service, OG No. 111/18).

### **Land-owner organisations**

The associations of private forest owners are non-governmental organisations (NGO). The first meeting of forest owners was held 2005 in Delnice (Posavec et al., 2011) which was the basis for setting up the private forest sector reform, and where key problems were highlighted. The Croatian Union of Private Forest Owners Associations (CUPFOA) was established in 2008, whose role is representation of private forest owners associations (PFOA) on the national level and lobbying for private forest owners interests. Their main objective is to represent forest owners' interests on national level through collaboration with public institutions and participation in several professional committees which deal with forestry issues. The funding of the CUPFOA is based on membership fee, donations and project acquisition. CUPFOA cooperates with the PFOAs from the Western Balkan region and is a member of the Confederation of European Forest Owners (CEPF). Not all associations of private forest owners are members of the umbrella association.

Basic PFOAs are small NGOs with up to 100 members and usually cover an area of one municipality. PFOAs are weak, because private forest owners do not play an important role in the wood supply chain and they used their forests mostly for firewood, the reason why most forest owners are not more members of these associations according to expert opinion<sup>10</sup>.

The role of PFOAs is to educate the members about sustainable forest management, to participate in the elaboration of forest management plans and to cooperate with local and national government. The main goals of PFOAs are the improvement in forest management; collaboration and exchange of knowledge and experiences; access to information; expert

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<sup>10</sup> Validated by Croatian Forest Research Institute

education; cooperation with public institutions; to enhance financial possibilities and the utilisation of incentives and other funds. PFOAs are usually working on the municipality basis and implement different projects (education, information, management plans, forest roads).

At the moment, 18 associations of PFOs are registered, according to the Register of associations in the Republic of Croatia. Also, there are two umbrella associations, one at the national and one at the regional level.

### **Actors in forest industries**

The main forest industries in Croatia are Wood processing industry and Furniture manufacture which have a significant role in the national economy, what is reflected in the economic contribution (7% equity share in total exchange of the country) and the wider social contribution (1/3 of the total number of employees in wood manufacturing, 0.9% equity share in GDP), which greatly contributes to harmonisation of the total development process within the country.

This industry is traditionally dominant in the rural areas of the country and occupies a significant place in the rural development, and most importantly, in areas of special State's concern that lie mostly in rural areas.

According to the average number of employees per an economic entity, around 95% of the wood processing and furniture production have the small business (small and medium-sized enterprises) characteristics.

The employment trends in wood processing and manufacture of furniture register more than 21,000 workers, in both industrial sectors. One must also consider the number of workers employed in craft, paper production and forestry which is to say that Croatia's wood-based industry currently employs over 40,000 workers.

Decreasing trend of the number of employees in companies operating in wood-processing sector, furniture production and forestry sector has started in Croatia even before beginning of last global economic crisis. In order to increase employment in these sectors and to

balance and regulate mutual relationship, Wood Processing Industry Association of the Chamber of Commerce and Croatian Forests Ltd. made an agreement in 2012.

The Croatian wood processing industry is export-oriented, together with part of furniture manufacture, and in the past few years total exports exceeded imports, owing to the increased export of raw wood and wood products, while the import of furniture still exceeds exports.

The most important export markets are Germany, Italy and France where more than 60% of product value is exported. At the same time, furniture from Italy is the most imported (25%), Slovenian is second (14%) and China (10%), figures valid for 2012.

In Croatia wood-pellets production is increasing since its beginning in mid-of-2000.

## 3.1. ACTORS IN WOOD PELLET PRODUCTION

Name:	Spačva LLC.
Location:	Vinkovci
Region:	Vukovar-Srijem County
Type of activity:	Wood processing, manufacture of furniture, pellets and plates and glued elements
Already involved in bio-based activities:	Installed capacity (ktons): 50,000 Manufactured (tons): 0

Name:	Mundus Viridis Ltd.
Location:	Gradec
Region:	Zagreb county
Type of activity:	Wood processing, manufacturing of solid laminated wood panels, sawn timber, wooden elements, pellets and firewood
Already involved in bio-based activities:	Installed capacity (ktons): 10,000 Manufactured (tons): 0

Name:	Drvenjača LLC.
Location:	Fužine
Region:	Primorje-Gorski kotar county
Type of activity:	production of conifers, mechanical pulp (RMP) and wood pellets.
Already involved in bio-based activities:	Installed capacity (ktons): 15,000 Manufactured (tons): 6,000

Name:	Energy Pellets ltd.
Location:	Delnice
Region:	Primorje-Gorski kotar county
Type of activity:	Production of wood pellets (wooden pellets, pallets and sawn timber)
Already involved in bio-based activities:	Installed capacity (ktons): 70,000 Installed production capacity: 20,000 m <sup>3</sup> pelletized firewood annually

Name:	Finvestcorp d.d.
Location:	Čabar
Region:	Primorje-Gorski kotar county
Type of activity:	Production of wood pellets
Already involved in bio-based activities:	Installed capacity (ktons): 20,000 Manufactured (tons): 10,000

Name:	Šišarka ltd.
Location:	Županja
Region:	Vukovar-Srijem county
Type of activity:	Pellet production
Already involved in bio-based activities:	Installed capacity (ktons): 50,000 Manufactured (tons): 25,000

The newcomers after 2009 are companies: Moderator d.o.o. Udbina and Pin d.o.o. Jasenovac, while Spačva d.d. Vinkovci and Mundus Viridis d.o.o. Gradec have already started production.

## 3.2. CLUSTERS AND ORGANIZATIONS

In Croatia there are various wood-based clusters or associations. These clusters were established with the following objectives: to use domestic wood resource and to process it in Croatia as much as possible; to maximise the share of wood(-based) products of the highest product finalisation stage in the forestry value chain; profit increase of all cluster members; productivity and employment increase in the country; stimulating wood-processing industry and furniture manufacture; increasing the share of final products in the export of wood-based products; providing own products to domestic tourism sector as well as other domestic sectors using wood(-based) products, etc.

Historically observed, The following clusters were established: Cluster TEHNOINTERIJERI (2006) Crapelets cluster (2007), Wood cluster of Northwest Croatia (2007), Wood cluster of Vukovar-Srijem County (2010), Association of wood pellets and woody biomass producers (2010), VIRIDIS cluster (2011), Croatian Wood Cluster (2012), The association of small sawmills Primorsko-Goranska County, Croatian Interiors, Croatian Biomass Association (CROBIOM). Most of all wood clusters and wood & furniture industries are members of Croatia Wood Cluster.

# 4. ACTORS IN THE WASTE SECTOR

Waste management and efficiency of waste management in Croatia is secured by the Government of Republic of Croatia and Ministry of Economy and Sustainable Development (former Ministry of Environment and Energy), through provision of measures for waste management, adoption of laws and strategic documents. The Ministry conducts administrative supervision and inspections of implementation of the Act on Sustainable Waste Management (OG 14/19), and its statutes. The inspections are done by environmental protection inspectors. The main goal of the Ministry in this area is to protect the environment and human health through responsible management of waste.

Since January 2019, the Ministry incorporated the Croatian Agency for Environment and Nature, whose activities are taken over by Institute for Environment and Nature, within the Ministry. The Institute gathers, consolidates and manages data, according to the Act on Sustainable Waste Management, manages the information system for waste management, develops reports on national status of waste and conducts reporting pursuant to EU standards in waste management sector.

The executive body on the national level is the Environmental Protection and Energy Efficiency Fund. The Fund secures additional funds for financing projects, programmes and similar activities in areas of environment protection and improvement. Moreover, it has jurisdiction over establishment of administrative acts for compensation fees and register of payers.

On regional and local levels, the responsibility for waste management and implementation of acts and prerequisites lies on Regional and Local self-government units and their administrations for waste management. Several Regional and/or Local self-government units can enter in an agreement, to conduct common waste management measures.

In municipalities and cities, businesses related to waste management are conducted by different governing bodies (mostly specialized administrative departments). Moreover, there is a great number of utility companies, working in municipalities and cities, on waste management activities (collection, treatment, management, etc.) – state-owned and private. Regarding waste management sector, there were 616 companies dealing with waste and environmental protection in 2017 in Croatia.

Utility companies in private ownership may be included in waste management by conducting the activities of waste transport, intermediation in waste management, waste trading, waste collection, waste recovery, waste disposal, other waste treatment and exportation and importation of waste, conducting waste collection actions, providing the public service of municipal waste collection and laboratory activities.

Since bioeconomy in Croatia is not yet fully developed and its implementation is in process, It is difficult to differentiate the companies working with waste on the ones using bioeconomy principles and the ones that implement circular economy principles.

## 4.1. CLUSTERS AND ORGANIZATIONS IN BY-PRODUCTS CREATING SECTOR

As it was the case in previous chapters, this section presents the representative sample of companies and organisations operating in the waste management sector, that have by-products that can be utilized within the bioeconomy. It is important to mention that there are many other stakeholders in Croatian economy that are operating in this sector, which are related to bioeconomy, but the ones presented here are selected only within the projects scope and are selected due to no favouring of specific stakeholders.

### Wood processing industry

Croatia has a significant number of wood processing industries, which produce a lot of sawdust, woodchips, wood residues, etc., that can be utilized and energy or materially recovered.

Some companies that are listed in the Register of by-products producers are following: A.D. GAJ Ltd.; CALLIGARIS Ltd.; KULA-PROMET Ltd.; DRVODJELAC Ltd.; DRVO SAMARŽIJA Ltd.; POŽGAJ Ltd.; TVIN Ltd.; Vedrana Ltd.; Olovka Ltd.; various woodwork shops and companies, etc.

### Food processing industry

Name:	Dukat d.d.
Location:	Zagreb
Region:	City of Zagreb
Already involved in bio-based activities:	Production of liquid fat residue and cheese residues.

Name:	HIPP CROATIA d.o.o.
Location:	Glina
Region:	Sisak-Moslavina county
Already involved in bio-based activities:	Cereal by-products

Name:	CEDEVITA, Prehrambena industrija, društvo s ograničenom odgovornošću
Location:	Zagreb
Region:	City of Zagreb
Already involved in bio-based activities:	Production residue that can contain: cedevita granules, sugars, vitamins, other compounds.

Name:	VETERINARSKA AMBULANTA ANIMALIA d.o.o.
Location:	Zadar
Region:	Zadar county
Already involved in bio-based activities:	Olive pomace

Name:	AGROLAGUNA d. d.
Location:	Poreč
Region:	Istra county
Already involved in bio-based activities:	Whey

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Name:	PIK VRBOVEC-MESNA INDUSTRIJA, d.d.
Location:	Vrbovec
Region:	Zagreb county
Already involved in bio-based activities:	By-product of animal origin, categories 2 and 3

Name:	Podravka d.d.
Location:	Koprivnica
Region:	Koprivnica-Križevci county
Already involved in bio-based activities:	Residues of vegetables, herbs, brine and process water that is produced exclusively during production and processing of vegetables.
Bio-based activity involved in:	

Name:	Olikom, d.o.o.
Location:	Makarska
Region:	Split-Dalmatia county
Already involved in bio-based activities:	Olive pomace

Name:	BELJE d.d
Location:	Darda
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Manure.

Name:	Gala d.o.o.
Location:	Bjelovar
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	Chicken manure.

Name:	MARINADA d.o.o.
Location:	Slatina
Region:	Virovitica-Podravina county
Already involved in bio-based activities:	Parts of fruits and vegetables.

Name:	VIRO TVORNICA ŠEĆERA d.d.
Location:	Zagreb
Region:	City of Zagreb
Already involved in bio-based activities:	Process residues of sugar beet.

Name:	ŽITO d.o.o. , Osijek Gnoj kokoši nesilica
Location:	Osijek
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Manure from laying poultry.

Name:	ADRIA SNACK COMPANY d.o.o. , Zagreb Ljuska krumpira, Sivi škrob, Obresci krumpira, Sirovi listići krumpira, Bijeli škrob, Prženi čips, Prženi peleti, Kllice krumpira, Talog iz taložnice, Voda s ostacima organskih tvari
Location:	Zagreb
Region:	City of Zagreb
Already involved in bio-based activities:	Potato peelings, grey starch, potato parings, raw potato slips, white starch, fried chips, fried pellets, potato sprouts, sludge from settlement ponds, water with organic matter residues.

Name:	Tvornica šećera Osijek d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Sugar beet process residues, pressed sugar beet pulp.

## **Beverage industry**

Name:	ZAGREBAČKA PIVOVARA d.o.o.
Location:	Zagreb
Region:	City of Zagreb
Already involved in bio-based activities:	Brewer's grains, Kieselguhr (diatomaceous earth).

Name:	HEINEKEN HRVATSKA d.o.o.
Location:	Karlovac
Region:	Karlovac county
Already involved in bio-based activities:	Brewer's grains, brewer's yeast.

Name:	CARLSBERG CROATIA d.o.o.
Location:	Koprivnica
Region:	Koprivnica-Križevci county
Already involved in bio-based activities:	Brewer's grains.

Name:	HAMER d.o.o.
Location:	Čakovec
Region:	Međimurje county
Already involved in bio-based activities:	Apple pulp.

### Paper industry

Name:	DS Smith Belišće Croatia d.o.o.
Location:	Belišće
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Short paper fibers.

### Chemical industry

Name:	PETROKEMIJA, d.d.
Location:	Kutina
Region:	Sisak-Moslavina county
Already involved in bio-based activities:	Phosphogypsum.

## 4.2. CLUSTERS AND ORGANISATIONS CREATING BY-PRODUCTS

This section will point out the companies and organisations operating in the waste management sector, that have been registered in the Register for end-of-waste status.

Name:	UNIVERZAL društvo s ograničenom odgovornošću za proizvodnju, gospodarenje otpadom, trgovinu i hotelijerstvo
Location:	Varaždin
Region:	Varaždin county
Type of activity:	Waste management, sales and hotel industry.
Already involved in bio-based activities:	Solid biofuel production.

Name:	Energija Gradec, društvo s ograničenom odgovornošću za proizvodnju, distribuciju i trgovinu električnom energijom
Location:	Zagreb
Region:	Zagreb county
Type of activity:	Energy production from biogas.
Already involved in bio-based activities:	Anaerobic digestate.

Name:	AEKS društvo s ograničenom odgovornošću za proizvodnju, usluge i trgovinu
Location:	Ivanić Grad
Region:	Zagreb county
Type of activity:	Industrial cleaning.
Already involved in bio-based activities:	AEKS fuel oil production, from waste (incl. biowaste – oils).

Name:	Gradsko komunalno poduzeće PRE-KOM društvo s ograničenom odgovornošću za obavljanje komunalnih djelatnosti
Location:	Prelog
Region:	Međimurje county
Type of activity:	City utility company.
Already involved in bio-based activities:	Compost.

Name:	Gradsko komunalno poduzeće KOMUNALAC, društvo s ograničenom odgovornošću
Location:	Koprivnica
Region:	Koprivnica-Križevci county
Type of activity:	City utility company.
Already involved in bio-based activities:	Compost 1st class.

Name:	Eko-Flor Plus d.o.o. za komunalne usluge i trgovinu
Location:	Oroslavje
Region:	Krapina-Zagorje county
Type of activity:	Private utility company – collection and treatment of waste.
Already involved in bio-based activities:	Compost of 1st, 2nd and 3rd class.

Name:	Gradsko komunalno poduzeće ČAKOM d.o.o.
Location:	Mihovljan
Region:	Međimurje county
Type of activity:	City utility company.
Already involved in bio-based activities:	Compost – organic fertilizer and soil improver.

# 5. ACTORS IN FISHERIES, AQUA-CULTURE AND OTHER SECTORS

As it was the case in previous chapters, this section presents the representative sample of companies and organisations operating in fisheries, aqua-culture and other bioeconomy-related sectors, whose selection was limited by the scope of project's activities. It is important to mention that there are many other stakeholders in Croatian economy that are operating in this sector, which are related to bioeconomy, but the ones presented here are selected only within the projects scope and are selected due to no favouring of specific stakeholders.

## 5.1. ACTORS IN FISHERIES AND AQUACULTURE

Croatian mariculture includes farming of white fish, pelagic (tuna) and molluscs. The most significant fish types in farming are: sea bass (*Dicentrarchus labrax*), sea bream (*Sparus aurata*) and bluefin tuna (*Ostrea edulis*).

Freshwater fish farming in Croatia is implemented in two manners – as farming of warm water fish species (pike, carp) and farming of cold water species (salmon and trout)..

The stakeholders in this sector include various licensed owners of fishing vessels (over 200 in Croatia), and over 200 warm water fish species farms registered in the Register of licensed farming and aquaculture, situated on the Croatian coast (mostly Dubrovnik-Neretva and Istra county).

## Inland water farming

Name:	RIBNJAČARSTVO KONČANICA d.d.
Location:	Končanica
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca and Acipenser ruthenus.

Name:	RIBNJAK 1961. d.o.o.
Location:	Čazma
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Acipenser ruthenus, Perca fluviatilis, Abramis brama, Barbus barbus and Aspius aspius

Name:	POLJODAR TIM d.o.o.
Location:	Daruvar
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	(Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca and Esox lucius

Name:	V.I.R.I.B.U.S. d.o.o.
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Location:	Zagreb and Šibenik
Region:	City of Zagreb and Šibenik-Knin county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Salmothymus obtusirostris, Thymallus thymallus, Hucho hucho, Cyprinus carpio, Ctenopharyngodon idella and Silurus glanis

Name:	RIBNJAČARSTVO POLJANA d.d.
Location:	Lipik and Garešnica
Region:	Požega-Slavonia and Bjelovar-Bilogora county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Carassius carassius, Squalius cephalus, Acipenser ruthenus, Perca fluviatilis, Micropterus salmoides, Ictalurus punctatus, Abramis brama, Ballerus sapa, Lota lota, Barbus barbus, Leuciscus idus, Aspius aspius and Huso huso

Name:	MIAGRO d.o.o.
Location:	Našice
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Carassius carassius, Acipenser ruthenus, Perca fluviatilis, Micropterus salmoides, Abramis brama, Barbus barbus and Scardinius erythrophthalmus

Name:	IHOR PARK d.d.
Location:	Klinča Sela
Region:	Zagreb county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca and Abramis brama

Name:	RIBNJACI KUPA d.o.o.
Location:	Bilje
Region:	Osijek-Baranja county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Carassius carassius, Acipenser ruthenus, Perca fluviatilis, Micropterus salmoides, Abramis brama, Clarias gariepinus and Acipenser baerii

Name:	PP ORAHOVICA d.o.o.
Location:	Donji Miholjac, Zdenci, Đurđenovac, Lipovljani, Stara Gradiška, Okučani, pisarovina, Ivanska
Region:	Osijek-Baranja, Sisak-Moslavina, Brod-Posavina, Bjelovar-Bilogora, Zagreb and Virovitica-Podravina county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Abramis brama, Scardinius erythrophthalmus and Rutilus rutilus

Name:	STARI RIBNJAK d.o.o.
Location:	Orlovac, Brodski Stupnik
Region:	Brod-Posavina county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Abramis brama, Scardinius erythrophthalmus, Perca fluviatilis, Micropterus salmoides and Carassius carassius

Name:	RIBNJAČARSTVO DUBRAVA d.o.o.
Location:	Farkaševac, Dubrava, Čazma,
Region:	Zagreb and Bjelovar-Bilogora county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox Lucius and Tinca tinca

Name:	RIBOGOJILIŠTE BELSKI DOL, vl. Mario Zagorec
Location:	Novi Marof
Region:	Varaždin county
Already involved in bio-based activities:	Oncorhynchus mykiss

Name:	LIKAPROMET d.o.o
Location:	Plaški
Region:	Karlovac county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Salmo trutta lacustris, Thymallus thymallus, Hucho hucho and Sander lucioperca

Name:	RIBNJACI VRABAC, vl. Tomo Vrabac
Location:	Žumberak
Region:	Zagreb county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Salmo trutta lacustris, Thymallus thymallus and Hucho hucho

Name:	LEKO d.o.o.
Location:	Sinac
Region:	Lika-Senj county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Thymallus thymallus, Hucho hucho and Salmo salar

Name:	RIBOGOJILIŠTE HOMER
Location:	Brod na Kupi
Region:	Primorje-Gorski kotar county
Already involved in bio-based activities:	Oncorhynchus mykiss and Salmo trutta

Name:	RIBARSTVO d.d.
Location:	Suvaja
Region:	Zadar county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Salmo trutta lacustris, Thymallus thymallus, Hucho hucho, Cyprinus carpio, Tinca tinca, Acipenser ruthens, Perca fluviatilis, Sander lucioperca and Micropterus salmoides

Name:	ŽIVA PRIRODA - EKO CENTAR d.o.o.
Location:	Velika Gorica
Region:	Zagreb county
Already involved in bio-based activities:	Cyprinus carpio, Tinca tinca, Carassius carassius, Ballerus sapa, Lota lota and Acipenser ruthenus

Name:	RITTERMAN d.o.o.
Location:	Solin
Region:	Split-Dalmatia county
Already involved in bio-based activities:	Oncorhynchus mykiss, Salmo trutta, Salmothymus obtusirostris

Name:	RIBNJAK ŠTEFANJE d.o.o.
Location:	Blatnica
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Acipenser ruthenus, Perca fluviatilis, Abramis brama, Barbus barbus and Aspius aspius

Name:	RIBNJACI d.o.o.
Location:	Mačkovec
Region:	Međimurje county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca, Abramis brama and Micropterus salmoides

Name:	RIBOGOJILIŠTE I KERAMIKA OŽBOLT, vl. Goran Ožbolt
Location:	Čabar
Region:	Primorje-Gorski kotar county
Already involved in bio-based activities:	Oncorhynchus mykiss and Salmo trutta

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Name:	HOLDY j.d.o.o.
Location:	Ogulin
Region:	Karlovac county
Already involved in bio-based activities:	Oncorhynchus mykiss

Name:	IRASO d.o.o.
Location:	Bjelovar
Region:	Bjelovar-Bilogora county
Already involved in bio-based activities:	Sander lucioperca, Sander volgensis, Perca fluviatilis and Micropterus salmoides

Name:	GACKA d.o.o.
Location:	Ličko Lešće
Region:	Lika-Senj county
Already involved in bio-based activities:	Salmo trutta, Oncorhynchus mykiss and Thymallus thymallus

Name:	BERNARDA NOVA d.o.o.
Location:	Nedelišće
Region:	Međimurje county
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis, Hypophthalmichthys molitrix, Silurus glanis, Sander lucioperca, Esox lucius, Tinca tinca and Acipenser ruthenus

Name:	STARA MLINICA d.o.o.
Location:	Grab
Region:	Split-Dalmatia county
Already involved in bio-based activities:	Oncorhynchus mykiss

Name:	PASTRVA-VALLIS AUREA, vl. Tatjana Odvorčić
Location:	Šeovci
Region:	Požega-Slavonia county
Already involved in bio-based activities:	Oncorhynchus mykiss and Salmo trutta

Name:	KRO FISH j.d.o.o.
Location:	Sinj
Region:	Split-Dalmatia county
Already involved in bio-based activities:	Oncorhynchus mykiss

## 5.2. CLUSTERS AND ORGANISATIONS

Name:	Croatian sports fishing alliance
Location:	Zagreb
Region:	Croatia
Type of activity:	Recreational and sports fisheries
Already involved in bio-based activities:	
Bio-based activity involved in:	

Name:	AGRO RIBARSKA-ZADRUGA BRANITELJA
Location:	Tisno
Region:	Šibenik-Knin county
Type of activity:	Farming
Already involved in bio-based activities:	Mytilus galloprovincialis and Ostrea edulis
Bio-based activity involved in:	

Name:	POLJOPRIVREDNA ZADRUGA SLOGA
Location:	Donje Makojišće
Region:	Varaždin county
Type of activity:	Fresh water fish farming
Already involved in bio-based activities:	Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys nobilis and Hypophthalmichthys molitrix
Bio-based activity involved in:	

Name:	FINVEST CORP d.d.
Location:	Čabar
Region:	Primorje-Gorski kotar county
Type of activity:	Fresh water fish farming
Already involved in bio-based activities:	Oncorhynchus mykiss
Bio-based activity involved in:	

Name:	EKO ZADRUGA - TIĆI
Location:	Moravice
Region:	Primorje-Gorski kotar county
Type of activity:	Fresh water fish farming
Already involved in bio-based activities:	Oncorhynchus mykiss
Bio-based activity involved in:	

Name:	AGRO RIBARSKA-ZADRUGA BRANITELJA
Location:	Tisno
Region:	Šibenik-Knin county
Type of activity:	Farming
Already involved in bio-based activities:	Mytilus galloprovincialis and Ostrea edulis
Bio-based activity involved in:	

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Name:	AGRO RIBARSKA-ZADRUGA BRANITELJA
Location:	Tisno
Region:	Šibenik-Knin county
Type of activity:	Farming
Already involved in bio-based activities:	Mytilus galloprovincialis and Ostrea edulis
Bio-based activity involved in:	

Name:	AGRO RIBARSKA-ZADRUGA BRANITELJA
Location:	Tisno
Region:	Šibenik-Knin county
Type of activity:	Farming
Already involved in bio-based activities:	Mytilus galloprovincialis and Ostrea edulis
Bio-based activity involved in:	

Name:	AGRO RIBARSKA-ZADRUGA BRANITELJA
Location:	Tisno
Region:	Šibenik-Knin county
Type of activity:	Farming
Already involved in bio-based activities:	Mytilus galloprovincialis and Ostrea edulis
Bio-based activity involved in:	

# 6. ACTORS IN BIO-BASED INDUSTRIES AND MARKETS

As it was the case in previous chapters, this section presents the representative sample of companies and organisations operating in bio-based industry sector, whose selection was limited by the scope of project's activities. It is important to mention that there are many other stakeholders in Croatian economy that are operating in this sector, which are related to bioeconomy, but the ones presented here are selected only within the projects scope and are selected due to no favouring of specific stakeholders.

## 6.1. BIOPLASTICS

Name:	Bio-Mi d.o.o
Location:	Rijeka
Region:	Primorje-Gorski kotar county
Type of activity:	Development and and the production of bio-based, biodegradable and compostable thermoplastic materials
Already involved in bio-based activities:	First developer of biodegradable and compostable thermoplastics; manufacturing of EN 13432 certified bio-based, biodegradable and compostable thermoplastics (MI family of materials)
Bio-based activity involved in:	Creation of biodegradable blends based on starch, PLA, PHAs, PBS, PBAT, PCL, fillers, fibers, etc.; participation in over 10 EU-funded innovation projects

Name:	EcoCortec d.o.o.
Location:	Beli Manastir
Region:	Osijek-Baranja county
Type of activity:	Development and manufacturing of value-added biodegradable/compostable flexible films
Already involved in bio-based activities:	Development of eco-efficient production of biodegradable films
Bio-based activity involved in:	Various projects in innovation (FMENA – MarineClean, BIOCOMPACT-CE)

Name:	Weltplast d.o.o.
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Producer of wide-range of products, including HDPE, PP pipes and dressed packaging
Already involved in bio-based activities:	A wide range of environmentally-friendly products (EcoWelt brand)
Bio-based activity involved in:	Production of biodegradable and compostable products, installed line for recycling

Name:	Mi-plast d.o.o.
Location:	Rijeka
Region:	Primorje-Gorski kotar county
Type of activity:	Processing of LDPE and HDPE materials, bio-polymers, packaging and production of these materials
Already involved in bio-based activities:	Research and development of biodegradable biopolymer-based materials
Bio-based activity involved in:	Participation in numerous research projects within the EU's R&D and Innovation programs

## 6.2. CHEMICAL AND PETRO-CHEMICAL INDUSTRIES

Name:	Petrokemija d.d.
Location:	Kutina
Region:	Sisak-Moslavina county
Type of activity:	Fertilizer production
Already involved in bio-based activities:	Phosphogypsum production as a by-product

Name:	Saponia d.d.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Production of household products

Name:	Adriatica Dunav d.o.o.
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Location:	Vukovar
Region:	Vukovar-Srijem county
Type of activity:	Fertilizer and nitrogen compounds production

Name:	Messer Croatia Plin d.o.o.
Location:	Zaprešić
Region:	Zagreb county
Type of activity:	Production of industrial and medicinal gases

Name:	Hempel d.o.o.
Location:	Umag
Region:	Istra county
Type of activity:	Production of coating for furniture industry, seafaring and boats
Already involved in bio-based activities:	Development of environment-friendly products with bio-based basis

Name:	Scott Bader d.o.o.
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Production of plastics in primary forms

Name:	Ireks Aroma d.o.o.
Location:	Jastrebarsko
Region:	Zagreb county
Type of activity:	Production of confectionery products, meat preparations and forage.
Already involved in bio-based activities:	Environmental-friendly, and natural raw materials.

Name:	Chromos-Svjetlost d.o.o.
Location:	Lužani
Region:	Brod-Posavina county
Type of activity:	Paint manufacturing

Name:	Labud d.o.o.
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Detergent and cleaning product manufacturer

Name:	Biodizel Vukovar d.o.o.
Location:	Vukovar
Region:	Vukovar-Srijem company
Type of activity:	Production of biofuels
Already involved in bio-based activities:	Production of biodiesel and crude glycerin

## 6.3. ENERGY

### Biomass plants

Name:	MINI HIDROELEKTRANA ČABAR
Location:	Čabar
Region:	Primorje-Gorski kotar county
Type of activity:	Fish farming, energy production (hydro-energy)
Already involved in bio-based activities:	Oncorhynchus mykiss

Name:	HEP Proizvodnja d.o.o.
Location:	Vitunj
Region:	Karlovac county
Type of activity:	Fish farming, energy production (hydro-energy)
Already involved in bio-based activities:	Oncorhynchus mykiss

Name:	LIKA ENERGO EKO d.o.o.
Location:	Udbina
Region:	Lika-Senj county
Type of activity:	Cogeneration plant on biomass

Name:	Univerzal d.o.o.
Location:	Varaždin
Region:	Varaždin county
Type of activity:	Cogeneration plant on biomass

Name:	STRIZIVOJNA HRAST d.o.o.
Location:	Strizivojna
Region:	Osijek-Baranja county
Type of activity:	Energy production from biomass combustion (cogeneration)

Name:	PELET GRUPA d.o.o.
Location:	Bročice
Region:	Sisak-Moslavina county
Type of activity:	Energy production from household pellet from biomass

Name:	PANA ENERGY d.o.o.
Location:	Čakovec
Region:	Međimurje county
Type of activity:	Cogeneration plant on biomass

Name:	SLAVONIJA OIE d.o.o.
Location:	Slavonski Brod
Region:	Brod-Posavina county
Type of activity:	Energy production from biomass combustion (cogeneration)

Name:	BE-TO GLINA d.o.o.
Location:	Glina
Region:	Sisak-Moslavina county
Type of activity:	Biomass plant – thermal power station

Name:	UNI VIRIDAS d.o.o.
Location:	Babina Greda
Region:	Vukovar-Srijem county
Type of activity:	Energy production from biomass combustion (cogeneration)

Name:	SPIN VALIS INTERNACIONAL d.o.o.
Location:	Požega
Region:	Požega-Srijem county
Type of activity:	Energy production from biomass combustion (cogeneration)

Name:	SERVICE & ENGINEERING INDUSTRY d.o.o.
Location:	Bjelovar
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biomass

Name:	ASTEK 15 d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biomass

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Name:	SENSE ESCO BELIŠĆE d.o.o.
Location:	Belišće
Region:	Osijek-Baranja county
Type of activity:	Gasification cogeneration plant on biomass

Name:	SAVA d.o.o.
Location:	Stara Gradiška
Region:	Brod-Posavina county
Type of activity:	Cogeneration plant on biomass

Name:	WHITEFIELD ENERGY d.o.o.
Location:	Bjelopolje
Region:	Lika-Senj county
Type of activity:	Cogeneration plant on biomass

Name:	BIO SNAGA d.o.o.
Location:	Darda
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biomass

Name:	VRBOVSKO EKO ENERGIJA d.o.o.
Location:	Vrbovsko
Region:	Primorje-Gorski kotar county
Type of activity:	Cogeneration plant on biomass

Name:	DRVNI CENTAR GLINA d.o.o.
Location:	Glina
Region:	Sisak-Moslavina county
Type of activity:	Cogeneration plant on biomass

Name:	SOLITUDO d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biomass

Name:	ĐAKOVO HRAST d.o.o.
Location:	Đakovo
Region:	Osijek-Baranja county
Type of activity:	Gasification cogeneration plant on biomass

Name:	HEP proizvodnja d.o.o.
Location:	Osijek and Sisak
Region:	Osijek-Baranja and Sisak-Moslavina county
Type of activity:	Biomass plant – thermal power station

Name:	BIOMASS TO ENERGY BENKOVAC d.o.o.
Location:	Benkovac
Region:	Zadar county
Type of activity:	Cogeneration plant on biomass

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Name:	KIRCEK ENERGY d.o.o.
Location:	Ljubešćica
Region:	Varaždin county
Type of activity:	ORC cogeneration plant on biomass

Name:	Brana d.o.o.
Location:	Virovitica
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biomass

Name:	ENERGIJA VOĆIN d.o.o.
Location:	Voćin
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biomass

Name:	Brana Dar d.o.o.
Location:	Daruvar
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biomass

Name:	ENERGIJA INVEST d.o.o.
Location:	Grubišno Polje
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biomass

Name:	ENERGY 9 d.o.o.
Location:	Slatina
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biomass

Name:	BIO ENERGANA BJELOVAR
Location:	Bjelovar
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biomass

Name:	ENTRAF d.o.o.
Location:	Logorište
Region:	Karlovac county
Type of activity:	Cogeneration plant on biomass

Name:	ENNA Biomasa Vukovar d.o.o.
Location:	Vukovar
Region:	Vukovar-Srijem county
Type of activity:	Cogeneration plant on biomass

Name:	ENERGOSTATIK d.o.o.
Location:	Grubišno Polje
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biomass

Name:	BIOMASS TO ENERGY ŽUPANJA d.o.o.
Location:	Županja
Region:	Vukovar-Srijem county
Type of activity:	Cogeneration plant on biomass

Name:	A&A BIOENERGY VIRO d.o.o.
Location:	Darda
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biomass

### **Biogas plants**

Name:	OSATINA GRUPA d.o.o.
Location:	Ivankovo, Tomašanci, Viškovci
Region:	Vukovar-Srijem and Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	BOVIS d.o.o.
Location:	Viškovci
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	BIO DVOR d.o.o.
Location:	Rosulje
Region:	Sisak-Moslavina county
Type of activity:	Cogeneration plant on biogas

Name:	FARMA MUZNIH KRAVA MALA BRANJEVINA d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	NOVI AGRAR d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	LANDIA d.o.o
Location:	Tordinci
Region:	Vukovar-Srijem county
Type of activity:	Cogeneration plant on biogas

Name:	ENERGIJA GRADEC d.o.o.
Location:	Gradec, Mitrovac, Popovac, Ovčara
Region:	Zagreb, Požega-Slavonia, Vukovar-Srijem county
Type of activity:	Cogeneration plant on biogas

Name:	MOSLAVINA PROIZVODI d.o.o.
Location:	Čazma
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biogas

Name:	BR Bioplin Crnac 1 d.o.o.
Location:	Crnac
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biogas

Name:	OSILOVAC d.o.o.
Location:	Feričanci
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	Obrt OBITELJSKO POLJOPRIVREDNO GOSPODARSTVO VRČEK
Location:	Varaždin
Region:	Varaždin county
Type of activity:	Cogeneration plant on biogas

Name:	BIOPLIN-MAKS d.o.o.
Location:	Rovišće
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biogas

Name:	BIOEL d.o.o.
Location:	Maslenjača
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biogas

Name:	MIAGRO ENERGO d.o.o.
Location:	Kučanci
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	FARMA MUZNIH KRAVA ORLOVNJAK d.o.o.
Location:	Antunovac
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	BIOPLINARA ORGANICA KALNIK 1 d.o.o.
Location:	Sveti Petar Orehovec
Region:	Koprivnica-Križevci county
Type of activity:	Cogeneration plant on biogas

Name:	Trgovačko društvo SLK PROJEKT d.o.o
Location:	Hercegovac
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biogas

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Name:	BIOPLINSKA ELEKTRANA OREHOVEC d.o.o
Location:	Sveti Petar Orehovec
Region:	Koprivnica-Križevci county
Type of activity:	Cogeneration plant on biogas

Name:	BIOINTEGRA d.o.o.
Location:	Slatina
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biogas

Name:	MATVEJ d.o.o.
Location:	Virje
Region:	Koprivnica-Križevci county
Type of activity:	Cogeneration plant on biogas

Name:	DAR PRIRODE d.o.o.
Location:	Vukovar
Region:	Vukovar-Srijem county
Type of activity:	Cogeneration plant on biogas

Name:	AGROPROTEINKA-ENERGIJA d.o.o.
Location:	Sesvete
Region:	Zagreb county
Type of activity:	Cogeneration plant on biogas

Name:	BIOPLIN GUDOVAC d.o.o.
Location:	Gudovac
Region:	Bjelovar-Bilogora county
Type of activity:	Cogeneration plant on biogas

Name:	MICO d.o.o.
Location:	Hrastin
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	Clip Bio Plus d.o.o.
Location:	Črnc Biškupečki
Region:	Varaždin county
Type of activity:	Cogeneration plant on biogas

Name:	BIOENERGIJA KLISA d.o.o.
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	VDM ENERGIJA d.o.o.
Location:	Donji Miholjac, Viljevo
Region:	Osijek-Baranja county
Type of activity:	Cogeneration plant on biogas

Name:	EKO KOTOR d.o.o.
Location:	Kotoriba
Region:	Međimurje county
Type of activity:	Cogeneration plant on biogas

Name:	BIOPLIN PROIZVODNJA d.o.o.
Location:	Slatina
Region:	Virovitica-Podravina county
Type of activity:	Cogeneration plant on biogas

# 7. ACTORS IN KNOWLEDGE AND INNOVATION

As it was the case in previous chapters, this section presents the representative sample of companies and organisations operating in research and innovation sector, whose selection was limited by the scope of project's activities. It is important to mention that there are many other stakeholders in Croatian economy that are operating in this sector and which are included in various R&D and other types of projects (just within H2020 call, there are 56 implemented projects), which are related to bioeconomy, but the ones presented here are selected only within the projects scope and are selected due to no favouring of specific stakeholders.

## 7.1. CAMPUS, INCUBATORS AND TECHNOLOGY PARKS & HUBS

Name:	BIOCentar – inkubacijski centar za bioznanosti
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Bioincubation, biofacility, biotransfer, bioeducation, bionetwork

Name:	Tehnološki park Varaždin
Location:	Varaždin
Region:	Varaždin county
Type of activity:	Incubation centre for innovative start-up companies, establishment of a mechanism for improvement of existing technologically innovative companies, improvement of transfer of knowledge from universities and development centres into the economy, networking of companies, educational institutions, development agencies and innovative individuals, and change of perception towards innovation as a foundation of a new economy.

Name:	Technological innovation centre Rijeka (TIC)
Location:	Rijeka
Region:	Primorje-Gorski kotar county
Type of activity:	Retrofitting, innovating & developing solutions to make existing tertiary buildings "greener"

Name:	ZICER – Zagreb Innovation Centre
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Supporting and advancing entrepreneurial climate as well as society at large. They promote the creation of stimulating entrepreneurial environment and strengthening of entrepreneurial competencies, clarify the best ways to finance entrepreneurial endeavours, and help innovative high-tech companies and teams turn their ideas into actual products.

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Name:	Tehnološki centar Split
Location:	Split
Region:	Split-Dalmatia county
Type of activity:	Centre for business development

Name:	Centar za tehnološki razvoj – Razvojna agencija Brodsko-posavske županije
Location:	Slavonski Brod
Region:	Brod-Posavina county
Type of activity:	Research and development, innovation, start-ups, technology transfer

## 7.2. RESEARCH AND INNOVATION ORGANISATIONS

### Universities

Name:	Faculty of Agriculture, University of Zagreb
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	<a href="https://www.grace-bbi.eu/">https://www.grace-bbi.eu/</a>
Bio-based activity involved in:	The FAZ has also started setting up a Bioengineering Research Centre (ABIC) in the city of Zagreb. Furthermore, there are 28 laboratories among which is a Reference laboratory for milk and dairy products (RL).

Name:	Faculty of Chemical Engineering and Technology, University of Zagreb
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	<p><a href="#">International projects:</a>            HORIZON 2020            COST            CEEPUS            National funding:            Projects of the Croatian Science Foundation            Projects of the European structural and investment funds            Projects of the Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO)</p>

Name:	Faculty of Electrical Engineering and Computing (FER), University of Zagreb,
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research

Name:	Faculty of Food Technology and Biotechnology, University of Zagreb
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	27 laboratories fully equipped. Food Control Centre as an accredited laboratory for the control of the safety and quality of food and general use products in the European Union. Laboratory for Drying Processes and Stability Monitoring of Bioactive Compounds.

Name:	Faculty of Agrobiotechnical Sciences Osijek
Location:	Osijek
Region:	Osijek-Baranja county
Type of activity:	Research
Already involved in bio-based activities:	27 laboratories fully equipped. Food Control Centre as an accredited laboratory for the control of the safety and quality of food and general use products in the European Union. Laboratory for Drying Processes and Stability Monitoring of Bioactive Compounds.

## Research organizations

Name:	Institute Ruđer Bošković
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	The Ruđer Bošković Institute (IRB), together with the Institute of Physics (IF), is a partner of the Polytechnic of Slavonski Brod (VUSB) on the project 'Adaptation of Vegetable Crops to New Agro-Meteorological Conditions in Slavonia' worth almost HRK 3 million. Also, Institute is participating in BIO-ECONomy Research Driven Innovation (BIOECO-R.D.I.) which aims at developing a Regional Innovation System for the Adriatic-Ionian area based on a structured bio-economy sector through the development of Research Driven Innovation (R.D.I.) strategy at regional and transnational level
Bio-based activity involved in:	<a href="https://bioecordi.adrioninterreg.eu/">https://bioecordi.adrioninterreg.eu/</a>

Name:	Croatian Forest Research Institute
Location:	Jastrebarsko
Region:	Zagreb county
Type of activity:	Research
Already involved in bio-based activities:	Structured organic farming using autonomous greenhouse robots (HRZZ), Extraction of bioactive compounds from Mediterranean plants with 'green solvents' using high voltage discharge (HRZZ), Agrivi Smart - Increase Potato Growing Productivity Using Machine Learning Algorithms (EFRR) and Improving the efficiency of manufacturing through research and development of innovative ICT services to increase energy efficiency - ComEnergy (EFRR).

Name:	Energy Institute Hrvoje Požar
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	<p><a href="#">BIOEASTsUP</a>, <a href="#">IEA Bioenergy: Taks 43</a></p> <p>Proof of concept: Degradation of lignocellulose complex during struvite production from digestate for economic and technical efficiency of a biogas plant;</p> <p><a href="#">FarmCircle</a></p>
Bio-based activity involved in:	<p>Energy Institute Hrvoje Požar with its Department for RES, energy efficiency and climate protection established a leadership role when it comes to bioeconomy development in Croatia. There are numerous projects funded from Horizon2020, Interreg Programme, IEA, COST, World Bank, as well as nationally funded projects.</p>

Name:	Institute for Development and International Relations
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	<p><a href="#">VET4BioECONOMY</a></p>

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Name:	Institute of Agriculture and Tourism
Location:	Poreč
Region:	Istria county
Type of activity:	Research
Already involved in bio-based activities:	<a href="#">REDGREEN</a> PLANT, OLEUM, WINETWORK, SPRINT

Name:	Institute of Oceanography and Fisheries
Location:	Split
Region:	Split-Dalmatia county
Type of activity:	Research
Already involved in bio-based activities:	ParaFishControl, BLUEMED

Name:	Croatian Veterinary Institute
Location:	Zagreb
Region:	City of Zagreb
Type of activity:	Research
Already involved in bio-based activities:	MedAID

## 8. GOVERNMENT AND SEMI-GOVERNMENT ORGANISATIONS AND NGO-S

9. Name:	Ministry of Agriculture
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	<p>European agricultural fund for rural development</p> <p>Rural Development Programme of the Republic of Croatia for the Period 2014-2020</p> <p>Operational Programme for Maritime Affairs and Fisheries of the Republic of Croatia for the programming period 2014-2020</p> <p>Bioeconomy Strategy development</p>

Name:	Ministry of Regional Development and EU funds
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	<p>European Structural and Investment Funds (ESI Funds)</p> <p>European Regional Development Fund (ERDF)</p> <p>Cohesion fund</p>

Name:	Ministry of Science and Education
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	European Social Fund (ESF)

Name:	Ministry of Economy and Sustainable Development
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	Various national and international projects

Name:	Ministry of Tourism and Sport
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	Various national and international projects

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Name:	Ministry of the Sea, Transport and Infrastructure
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	Various national and international projects

Name:	Ministry of Physical Planning, Construction and State Assets
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Ministry
Already involved in bio-based activities:	Various national and international projects

Name:	Croatian Chamber of Agriculture
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Chamber (public body)

Name:	Croatian Chamber of Commerce
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Chamber (public body)

Name:	Croatian Employers' Association
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Association (public body)

# 10. FINANCIAL ORGANISATIONS & BANKS

Name:	Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO)
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Public body
Already involved in bio-based activities:	HAMAG-BICRO issues guarantees for bank credits approved by credit institutions and other legal entities approving loans to SMEs and makes direct financial contributions to SMEs in a form of grants. More information about HAMAG-BICRO guarantees and grant schemes can be found on its web site <a href="http://www.hamagbicro.hr">www.hamagbicro.hr</a> .

Name:	Croatian Bank for Reconstruction and Development (HBOR)
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Public body
Already involved in bio-based activities:	Through its specialized programs HBOR provides support to start-ups, exporting companies, new production and companies from different sectors of economy such as industry, tourism, environmental protection and energy efficiency, agriculture, etc. More information about HBOR programs can be found on its web site <a href="http://www.hbor.hr">www.hbor.hr</a> .

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Name:	Croatian Science Foundation
Location:	Zagreb
Region:	Grad Zagreb
Type of activity:	Public body

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