

# **IMPORTANCE AND USAGE OF MICRO LOGISTICS CENTRE IN PROCESS SUPPLY CHAIN MANAGEMENT FOR ORGANIC FOOD**

## **VÝZNAM A VYUŽITÍ MINILOGISTICKÉHO CENTRA V PROCESU SUPPLY CHAIN MANAGEMENT BIO POTRAVIN**

**Ing. et Ing. Marie Zlámalová**

College of logistics p.b.c., Přerov

zlamalovamarie@yahoo.com

### **Abstract**

The description of importance and usage of the micro logistics centre which is built for given location. The Micro logistics centre as a sustainable part in the supply chain management. In this article is described reason for building this kind of warehouse. There are common processes which are situated inside this micro logistics centre. The Micro logistics centre is supplied with the goods from the local or the nearest farmers to provide the most complex food solution. We are going to offer other value added services as a manufacturing for a meat, storing the wine etc. The main idea is the supply chain management of the quality local organic food for efficient price to its customer. We need to focus on the most modern available method and technologies.

### **Abstrakt**

Popis významu a využití minilogistických center, které jsou budovány pro konkrétní lokalitu. Minilogistická centra jako soběstačný prvek v procesu supply chain managementu. V příspěvku budou popsány procesy, které se uskutečňují v takovémto minilogistickém centru, které je závislé na dodávce od farmáře a na požadavcích zákazníka. Budou navrženy další možnosti zpracování, které mohou být umístěny v tomto centru např. zrárna masa. Základní myšlenka je dodání biopotravin zákazníkovi v nejlepší BIO kvalitě za cenu, kterou je ochoten zaplatit. K tomu musí být využity všechny dostupné metody a technologie.

### **Key words**

Sustainability, distribution, organic food, supply chain management, warehouse

### **Klíčová slova**

Udržitelný rozvoj, distribuce, BIO potraviny, dodavatelský řetězec, sklad

## **INTRODUCTION**

Society creates new ideas how to protect environment. All of the developed countries have already known environmentally friendly way. There are new challenges how to do it. This article is written with an idea to uncover and go deeper to the core of sustainability. Here is no doubt about the interest in this area. A lot of people spend them time, money and experiences to work on sustainable culture. They are focusing on new technologies to provide healthy lifestyle with as little effect on environment as possible. At the end of the day it is up to us to decide where we are going to go.

Ways how to protect environment in our lifestyle

- Local food (fair trade markets, fair trade label)

- Organic food
- Less personal traveling for long distances
- Reduce the waste (recycling)
- Etc.

Dangers of our lifestyle:

- Toxins in environment
- Toxins in food

We can choose one of many ways how to decrease our impact on our planet and on our local environment. At the moment we are looking for the complex solution which is easier to use in the reality. Our life attitude could be harmless. For example: One week of our life includes 5 days at work and 2 days at home with our family. For every day we need to eat, travel and use different equipment and devices. In all these processes we consume and create the negative impact on the earth. An important fact is that in the food packaging has a lot of toxic solution as phthalates. That is why organic food is essential. Our food comes from far distances. How can we reduce our well-known food miles apart from other things? Simply to eat the food which comes from the nearest destination. There are a lot of farmers around us who grow the quality food. Nowadays, there is an increase in farmers' fair trade markets.

Organics certification gives us guarantee for less harmful effect on water sources, chemist contentment in soil or in the product itself, etc. The Czech customer can recognise the products with logo under. There is also European logo.



Fig. 1: Organic food label for the Czech Republic, label for the European Union  
Source: <http://biospotrebitel.cz/chci-znat-bio/jak-poznam-bio/znaceni-biopotravin>

*“Consumers have become more aware of the environmental impact of their purchases, along with non-governmental organizations (NGOs), are setting the agenda for transitions to organically grown foods, anti-sweatshop labour codes, and locally produced goods that support independent and small businesses. Because supply chains may account for over 75% of a company's carbon footprint, many organizations are exploring ways to reduce this.” [1]*

## MEASUREMENTS USED FOR SUSTAINABILITY

How can we measure the negative affect of the food which we eat? There are two terms: food miles and the carbon footprint. Food miles refer to the total distance food has travelled before it is sold. The carbon footprint is the amount of carbon produced for the

distance food has travelled before it is sold and produced. The less carbon dioxide emissions is produced the less negative impact on environment is created.

*“A Swedish study looked at the ingredients of a typical Swedish breakfast- apple, bread, butter, cheese, coffee, cream, orange juice, and sugar and determined the food travelled a distance equivalent to the circumference of the earth. That's 24,901 miles.” [2]*

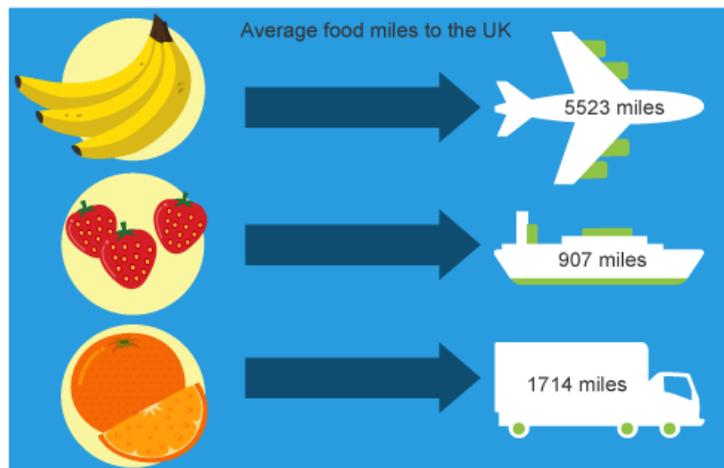


Fig. 2: Average food miles to the UK

Source:[http://www.bbc.co.uk/bitesize/ks3/geography/human\\_processes/changing\\_shopping\\_patterns/revision/5/](http://www.bbc.co.uk/bitesize/ks3/geography/human_processes/changing_shopping_patterns/revision/5/)

## RESEARCH

This article is the part of the dissertation work which is divided into the three sections of the research:

- A. Searching for methods and the structure used in the sustainable food supply
- B. Analysing the best option for the sustainable food supply
- C. Suggest the best available option for the sustainable food supply including the newest technology

**A.** On the market is enough possibilities for environmentally thinking people. There is also legislation for the protection of the idea. There is a lot of companies offering the products and services in this sector.

### Distribution to its customer

The conducted survey was made by the Czech ministry of agriculture in year 2014. It was mentioned that 60% of customers buy their organic products on the marketplace and on the farmers' festival. Other places for shopping are supermarkets, specialized shops, farms, the internet, through "bin consortiums" and food shops.

The ideology of organics products prefer not to us supermarkets but go for less commercial method with the visible non harmful impact on the local environment. There should be positive economic, social and environmental influence on local people. This research focuses on one of 14<sup>th</sup>

regions in the Czech Republic. *“Olomouc region rich in traditions and history the evidence of which are hundreds significant architectural monuments. It is also a region full of colourful nature with cultural, and sports and recreational possibilities all making it a popular destination for visitors. The local economy is primarily driven by traditional agriculture, the manufacturing industry and services all of which provide a range of possibilities for foreign investors who have at their disposal prepared industrial zones as well as favourable state incentives.”* [3]

On 5<sup>th</sup> April 2015 was registered 4462 companies dealing with organic products. This includes:

- Organic agriculturists
- Organic manufacturers
- Companies importing the organic goods
- Companies exporting the organic goods
- Organic producers for fish, honey, mushrooms etc.

For Olomouc region is registered 275 companies dealing with organic products. There is 249 subjects dealing with the organic agriculture. In the whole Czech Republic is 3937 organic agriculture farmers. In the whole Czech Republic is produced organic products on 473076.10 ha. That is more than 10 % of cultivated soil. In Olomouc region is 38700.28 ha used for producing organic products. From these statistics information we can see that to deal with the sustainable food supply of organic goods is the important part of the Czech economy. There is also general increase in the Czech Republic and the European Union in organic food demand.

**B.** The supply chain management to its customers could be done by farmers, marketplaces, farmer festival, specialized shops, internet, “bin consortiums” and food shops.

We are thinking about the new method which includes few of them. We need to achieve the most efficient way to transport the organic food because the barrier to most customer is money. We also don't want to put all the pressure on the farmer- farm produces directly on the farm itself "farm-direct sale". We want farmer to produce not to sell. We definitely think that there is enough space to use the Micro logistics centre.

### The Micro logistics centre

Preferably, we call the place which is the part of supply chain management the Micro logistics centre, but for better understanding we also use the term the Micro warehouse. The Micro logistics centre is used name for the place which is part of the supply chain for the farmers' goods. There are also the value added services as packing, kitting, labelling etc. There is also place for other processes as manufacturing of meat, storing the wine etc. As a short term we can call it the Micro centre.

### **Processes in the Micro warehouse**

- First, the goods are checked in the receiving area.
- The goods are unpacked to make format suitable for warehousing or to be selected for customer order. Most of inventory is the part of Cross-docking system. *“Cross-docking is basically the action of unloading materials from an incoming trailer or rail car and immediately loading these materials in outbound trailers or rail cars thus eliminating the need for warehousing (storage). In reality pure cross-docking is less common; most "cross-docking" operations require large areas where inbound materials are sorted,*

*consolidated, and stored until the outbound shipment is complete and ready to ship.”*  
[4]

- After that, the part of the inventory is placed in the storage.
- The goods will be packed in the units required by the customer.
- The goods has been selected to complete customer orders in the order picking area.
- The orders have been sorted down.
- The goods may be wrapped or labelled according to the customer’s requirements.
- Other value added services may be offered.
- The goods are consolidated and made ready for dispatch.
- Finally, the goods were loaded onto vehicles in the dispatch area.

## **WAREHOUSE MANAGEMENT SYSTEM**

Our customers expect the high quality, local food, good price, environmentally friendly impact, wide range of products, as little packaging as possible and more. There are the possible way how to meet them needs.

### *Goods*

Products store in the micro warehouse should preferable be domestically-produced food. The idea is to support independent and the small business in the given region. However the farmers produce the local food, we also use foreign suppliers.

### *Value added services*

There are also needs for more services to be provided. At the moment in the supply chain management of the Czech market isn’t any the place for process of curing the meat. As we know for the delicious taste of it. For example, the beef steak is necessary leave the meat at least 10 days. Customers are requesting quality meat but we need to find the place to leave the meat for this period. Here is one possibility to leave the meat at the farmer’s side but we do not want to give this responsibility on him. That is why the micro warehouse could wider its services. Another idea is to store wine or fruit and vegetable for minimum period of time before is dispatched.

### *Labelling*

From 1<sup>st</sup> April 2015 there is the regulation for all the European Union to give customers information about the breeding and the killing place of pork, chickens, goat and ship meat. The place of origin for beef, olive oil, fruit and vegetable is already given.

We would like to focus in our research on RFID technology suitable for mentioned information and provide customers more information. On RFID tag could be unloaded endless information. For example:

- The place of origin
- Information about farm
- Information about farmers other products

- The recommendation of customer
- 3D visualisation
- The list of recipes etc.

### *Dispatch*

It depends on amount of shipping goods. There is possible to use one or two vehicles for all the shipments. We can expect to deliver every day.

### *Customers*

Individual customers, restaurants, company canteens, school canteens etc.

### *Procurement and delivery*

Freshness, taste and good quality are characteristics for the organic food. To achieve all these qualities it is necessary to use the local farmer or the nearest as possible. There are going to be also suppliers for the close countries if we want to offer the wide range of products. For example: the rice from Pakistan, cuscus from Italy, the buckwheat from China. We have already known that we are not going to depend only on the Czech food production but we can be still sustainable in the delivering the goods to its customer. There is one possibility how to do it. The raw food as cereals and grains are supplied in the big amount and resold in the smaller quantities as a part of the customer's order. There is new method for this idea implementing at the moment in the Czech Republic. Its name is "Without packaging – Bez obalu". They are going through the trial. They are implementing the Czech legislation about hygienic achievements. If it was successful, it would be part of the micro warehouse.

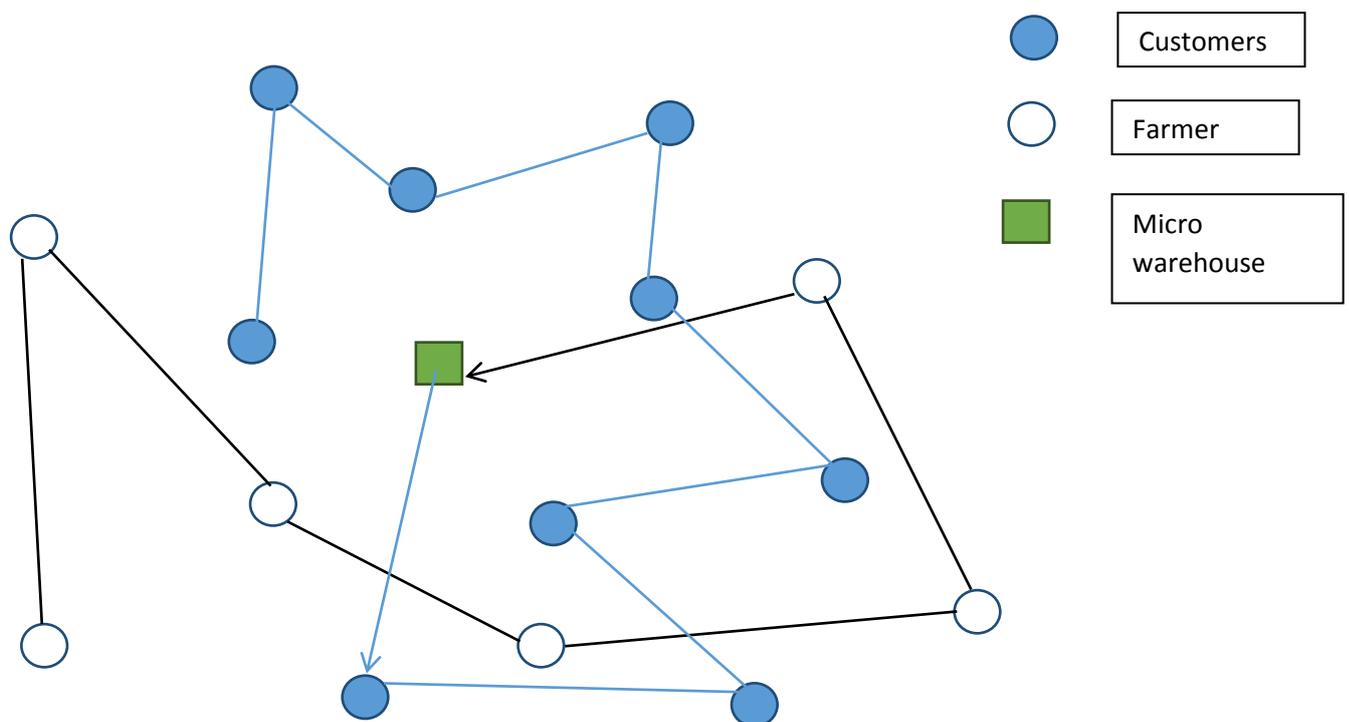


Fig. 3: Procurement and delivery of micro warehouse  
Source: Author

## CONCLUSION

What could be more important in our life than the health, clean environment a quality food? That is why the science is trying to deal with these problem: “How to minimize negative impact during the transport and the manufacturing of food.” That is why people want to spend the money for the organic food. The public and private sector can clearly understand all the necessary needs to push these ideas little bit forward. That is why we work on this global issues.

## LITERATURE

- [1] *Environmentální naučný slovník* [online]. 2015 [cit. 2015-04-12]. Dostupné z:  
[http://en.wikipedia.org/wiki/Supply\\_chain\\_management](http://en.wikipedia.org/wiki/Supply_chain_management)
- [2] *Sustainable agriculture* [online]. 2015 [cit. 2015-04-13]. Dostupné z:  
<https://apps.weber.edu/wsuiimages/sustainability/Operations%20And%20Facilities/Community%20Garden/What%20Are%20Food%20Miles.pdf>
- [3] *Olomoucký kraj* [online]. 2015 [cit. 2015-04-01]. Dostupné z:  
<http://www.kr-olomoucky.cz/en/welcome-to-olomouc-region-official-website-cl-468.html>
- [4] *Warehouse management system* [online]. 2015 [cit. 2015-04-15]. Dostupné z:  
[http://www.inventoryops.com/warehouse\\_management\\_systems.htm](http://www.inventoryops.com/warehouse_management_systems.htm)
- [5] *Ministerstvo zemědělství ČR* [online]. 2015 [cit. 2015-04-05]. Dostupné z:  
[http://eagri.cz/public/web/mze/tiskovy-servis/tiskove-zpravy/x2014\\_vyzkum-ukazal-ze-biopotraviny-nakupuje.html](http://eagri.cz/public/web/mze/tiskovy-servis/tiskove-zpravy/x2014_vyzkum-ukazal-ze-biopotraviny-nakupuje.html)
- [6] *Ministerstvo zemědělství ČR* [online]. 2015 [cit. 2015-04-05]. Dostupné z:  
<http://eagri.cz/public/app/eagriapp/EKO/Prehled/Default.aspx?stamp=1428220870260>

Reviewers:

prof. Ing. Vladimír Strakoš, DrSc., VŠLG Přerov,  
prof. Ing. Ctirad Schejbal, DrSc. dr. h. c., VŠLG

Přerov.