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Green Logistics

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In the modern world the concept of logistics is interpreted as science of management and optimization of material flows, service flows, information and financial flows in a particular micro -, meso - or macro-economic system to achieve its goals. It does not stand still and constantly requires development, as our world is also developing: new technologies, new problems are appearing constantly. Every day the planet's ecology suffers from human activities. The logistics sector is involved in the increase in the level of carbon dioxide. Its share in the emission of this gas is about 15%.

Large enterprises understand the scale of the problem and try to fight against it. Green logistics appeared to solve problems with the environment. Green logistics can be defined as activities aimed at identifying and measuring the negative impact on the environment in the process of bringing goods to the customers, as well as research that are carried out to find ways to reduce this negative impact [1].

«Environmental logistics (ecologistics)» is a synonym for the term «Green logistics». The emergence of this kind of logistics was due to many factors, the most significant of which are:

- construction of logistics infrastructure facilities, that is accompanied by massive deforestation, damage to the topsoil and groundwater ecosystems;

– the use of outdated methods of organizing production processes contributes to the pollution of air, water and soil with harmful waste;

– the use of vehicles that do not meet modern requirements has a noise and vibration effect [2].

The founding principle of Environmental Logistics is to promote the benefits of reuse and recycling whenever possible and to provide for cost efficient and environmentally responsible alternatives for the management of hazardous wastes.

Some global companies that intend to become «green» and socially responsible face a number of difficulties on their way, because environmental logistics in some countries is just in the early stages of its development. These difficulties are:

– high level of costs;

– low level of market supply;

– lack of experience in applying the principles of «green» logistics in some countries of the world;

– a significant shortage of experts in this field.

In that way, we can say that "green" logistics is quite unprofitable, since several times it takes more time and costs than ordinary logistics. But in this situation companies have to choose: either a fast and high-quality logistics service or the same logistics service with slightly higher costs, but not harmful to the environment.

Nevertheless, in the modern world, most companies choose «green» logistics. If at the enterprise the production and packaging waste is minimized, and the ideas of recycling are applied, which will remove the share of costs from consumers of finished products, then such an enterprise can be attributed to those who effectively use their resources.

Therefore, five factors affecting the level of environmental sustainability in logistics can be distinguished.

1. *Natural resources*. Each year humans use 30% more natural resources than the planet can replenish. This leads to deforestation, degraded soils, polluted air and water. To be sustainable more emphasis is being laid on using natural resources less and more efficient, and shifting focus to more renewable resources where possible.

2. *Energy consumption* can be defined as the net fuel-energy that is needed to provide the heat and power requirements for a production process. The inputs of these processes include natural gas, fuel oil, steam and electricity.

3. *Water consumption*. This can be the evaporation and misting losses from cooling water, water vapor vented to the atmosphere, water lost through waste treatment or disposal, and other water losses.

4. *(Greenhouse) gas emissions*. Emissions can be divided in two parts: toxic emissions and pollutant emissions. Toxic emissions come from chemicals that are listed by governmental institutions and should be reported to state authorities. Pollutant emissions in some way influence the environment, but are not toxic by definition. They lead to air acidification, water eutrophication, ozone depletion, acidification of fresh water, and salinity in freshwater.

5. *Waste generation* can be defined as the amount of materials not converted to the desirable product.

Logistics buildings such as distribution centers and transportation facilities also have a number of aspects that affect the environment:

1. Internal transport and emissions;
2. Energy consumption of facilities;
3. Emissions of transport units to or from facilities;
4. Congestion around facilities.

Rationalization of the packaging process also plays a significant role in the development of green logistics. Usually packaging represents 23% of all waste weight and 37% of all

waste volume. The use of recyclable or biodegradable material for packaging is a way to decrease the strains on the environment. The aim should also be on using fewer packaging materials as well. Sustainable packaging can reduce the carbon footprint of the whole supply chain and the elimination of packaging can lead to an overall cost reduction [3].

It can be concluded that green logistics is one of the main sources of not only environmental care, but also cost minimization and extracting additional profits from the processing of materials for their secondary use. Based on the current environmental situation in the world we can state that there is a need to find more environmentally friendly ways of transporting, storing and packaging goods. The application of green logistics is necessary, because the social responsibility of business is extremely important.

Finally, green logistics and environmental sustainability in the supply chain will become even more important in the future than they are already nowadays and they should be a focus of every company around the world.

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