

## CHEMICAL LEASING AS A NEW BUSINESS MODEL CONTRIBUTING TO SUSTAINABLE INDUSTRIAL DEVELOPMENT

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**Abstract:** The intensive use of natural resources and the increased amount of waste that influence negatively on the water and air pollution, gives us the concern to think more globally about new approaches and methods of work that will lead us to constant development of the concepts ensuring sustainable development. For this purpose, UNIDO developed a new business model for chemical management that is focused on providing services instead of selling substances. The aim of the Chemical Leasing concept as a business model is not only to change the traditional trade of chemicals and give value to the service that the chemicals do, but also to develop partnership between producers and consumers of different chemicals globally. Chemical leasing reduces the consumption of chemicals and optimizes their usage. It provides environmental, safety and economy improvements for all parties included in the concept. It is a challenge for small and medium sized enterprises to improve their image by participating in this innovative venture in developing countries and economy in transition. This paper presents the fundamentals of the chemical leasing concept and analysis its contribution to the sustainable industrial development.

**Key words:** chemical leasing; cleaner production; sustainable development

## ХЕМИСКИ ЛИЗИНГ КАКО НОВ БИЗНИС-МОДЕЛ КОЈ ПРИДОНЕСУВА ЗА ОДРЖЛИВ ИНДУСТРИСКИ РАЗВОЈ

**Апстракт:** Интензивната употреба на природните ресурси и зголемената количина на отпад кој негативно влијае на водата и воздухот, нè наведува пошироко да размислуваме за нови пристапи и методи на работа кои ќе нè водат кон константен развој на концепти кои овозможуваат одржлив развој. За таа цел, УНИДО (UNIDO) разви нов бизнис-модел за хемиски менаџмент кој се фокусира на нудењето услуги наместо продажба на супстанции. Целта на концептот хемиски лизинг како бизнис-модел е не само да го промени традиционалното тргување со хемикалии и да им даде вредност на услугите кои хемикалиите ги даваат, туку и да развие партнерство помеѓу производителите и консументите на различните хемикалии на глобално ниво. Хемискиот лизинг ја намалува потрошувачката на хемикалиите и ја оптимизира нивната употреба. Тој обезбедува еколошки, безбедносни и економски подобрувања за сите страни вклучени во концептот. Тоа е предизвик за малите и средни претпријатија да го подобрат својот имиџ преку учеството во овој иновативен потфат во земјите во развој и економиите во транзиција. Овој труд ги претставува основите на концептот хемиски лизинг и дава анализа на неговиот придонес за одржливиот индустриски развој.

**Клучни зборови:** хемиски лизинг; почисто производство; одржлив развој

### INTRODUCTION

Population growth affects directly on the economic growth and the environment. The essential resources for survival of human are food and water. Therefore, with the predictions of increasing the population growth until 2030 the consumption of food is expected to increase by 30% and water

demand by 50%. These predictions will create problem for farmers, because they will have to produce more food with fewer available resources. But with imposing this problem to the food manufacturers globally, it has connections with some key objectives for sustainable development of society such as poverty reduction, better access to healthy food, better management and utilization of

water resources, increased use of renewable energy, climate protection, ecosystems and biodiversity. Hence, if undertake measures to protect the environment and pay attention to the exploitation of natural resources in order to achieve the need of the population it will not be needed additional care and creating fear among producers and consumers. For this purpose the United Nations Industrial Development Organization – UNIDO, focused on activities that achieve three priorities: poverty reduction through productive activities, trade capacity-building and energy and environment which seeks to set new global challenges level in order to strengthen the economy and increase productivity in a sustainable way. Through UNIDO Cleaner Production and Chemical Leasing program, connects these three objectives and promote through models for sustainable industrial development and management of chemicals in developing countries and countries with economies in transition.

#### CHEMICAL LEASING CONCEPT

Chemicals and industry waste play an important role in society and the economy and affect negative to the human health and environment. Most chemicals are harmful to human health and the environment, as well as most of the waste is a threat to us and our environment. For this purpose UNEP and its partners like UNIDO focuses to achieve the goals of the World Summit for Sustainable Development (WSSD), which is related to the chemicals, that till 2020 the production and use of chemicals will be on such way that will causes minimal impact on human health and the environment. Programs that help with the chemical and waste management throughout the entire life cycle give the focus on waste and substances that are dangerous and have the potential to disrupt the balance of the environment. One program of this type is Chemical Leasing, new concept that develops modern models of working and thinking where instead of the principle of selling products it offers a principle of providing services, or modify the ratio of sale and the result is a win-win for the economy and the environment. The complete definition for Chemical Leasing that is used by UNIDO is:

– Chemical Leasing is a service-oriented business model that shifts the focus from increasing the sales volume of chemicals towards a value-added approach.

– The producer mainly sells the functions performed by the chemical, and functional units are the main basis for payment (Functions performed by a chemical might include: number of pieces cleaned; amount of area coated, etc.).

– Within Chemical Leasing business models, the responsibility of the producer and service provider is extended and may include the management of the entire life cycle.

– Chemical Leasing strives for a win-win situation. It aims to increase the efficient use of chemicals while reducing the risks of chemicals and protecting human health. It improves the economic and environmental performance of participating companies and enhances their access to new markets.

– Key elements of successful Chemical Leasing business models are proper benefit sharing, high quality standards and mutual trust between participating companies (source: [www.unido.org](http://www.unido.org)).

The traditional way of trade with chemicals is based on the saying "The more you sell, the more you earn". The profit is certainly greater when you sell the chemicals for a higher price, but due to the high competitiveness of the market price is not always the right solution. This trade is focused on selling higher volume of chemical. And this way of trading leads to increased discharges of chemicals to the environment, and a risk of reducing the natural resources. Therefore by applying Chemical Leasing, the impact is on the work of the supplier of the chemical in order to change the old type of work or change the way of trade where the main focus is on the quantity of sold chemical.

With the inclusion in the Chemical Leasing method of work, supplier has the task of optimizing the use of chemicals in order to reduce their use which reduces the environment pollution. In the traditional way of trading, the responsibility of the manufacturer of the chemical ends the day he sold the chemical, while with the Chemical Leasing business model he has responsibility throughout the entire life cycle including the postponement of landfill. With the chemical use a number of activities are performed such as cleaning, painting, lubrication, adhesion and therefore the chemical leasing model is adequate for use in most industrial areas. When using chemical leasing, the manufacturer does not just do chemical model but also the know-how on reducing the use and how to optimize the conditions of use of the chemical which gives contribution systems for sustainable management of chemicals.

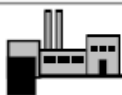

The Chemical Leasing is a business model that is oriented on the service that conducts the chemical, so when it comes to payment, the customer pays for the service that the chemical performs, not for the substance itself. On this way, the user avoids buying more chemicals than the necessary need to perform the production. The new payment method switches the traditional "Higher sales, higher earnings" to "Less is more."

The producer and user of chemicals are contributing to the environment and the country's economy by reducing emission through added value. By applying the chemical leasing the use of chemicals is reduced, leading to a reduction in waste, pollution of water, air and soil, thereby reducing the impact of industry on the environment. The reduced amount of chemicals that is required for use and the increased amount of chemicals that are obtained by restoring the old are lowering the costs to the manufacturer of the chemical. This profit is considered as a value-added chemical and this value is shared between the manufacturer and the user with both sides gaining economic advantage of the new business model.

To clarify the profit from the method of payment for both sides and the difference in price when applying the old and the new model of Chemical Leasing an example will be used as follows: manufacturer of metal parts which require cleaning before they are shipped. In presentation of

the two models, 2 million metal pieces that need to be cleaned will be taken in consider. By applying the traditional way, for the supplier to make an annual net profit of 10.000\$, after deducting the fixed and variable costs, it is necessary to sell 100 tons of cleaning chemical of which will earn 100,000\$. While, by implementing chemical leasing, supplier and customer first optimize their cleaning process, and make the use of the chemical to be only for the specifically defined cleaning process, and after the optimization the need of chemical is 60 tons for performance of the same activity for the same amount of 2 million pieces. Because the service is cleaning metal parts, by agreement between the two sides, the unit of payment is in \$ per cleaned metal part. The difference between the traditional method and the chemical leasing for the supplier is 40% less requires for chemical. This means that the added leasing value of 0,04\$ per cleaned metal part will bring to the producer income of 80.000\$. And the variable costs for production of 60 tons of chemicals is 48.000\$. After the calculations of costs the producer will have earnings of 22.000\$. With the Chemical Leasing business model the producer will have extra income of 12.000\$ which in the Chemical Leasing is known as added value. The chemical leasing concept will bring to the user 20% less costs for doing the same amount of production.

**User needs cleaning of 2 million tubes**

 <i>chemical producer</i> <b>Traditional business model</b>		 <i>chemical producer</i> <b>Chemical Leasing model</b>	
100 t solvents sold	= 100,000 \$ turnover	Added value from process optimization Only 60 t solvents needed Leasing rate 0.04\$ per tube	
100 t production	= 80,000 \$ var. costs	Leasing income	= 80,000 \$ turnover
	= 10,000 \$ fix costs	60 t production	= 48,000 \$ var. costs
<b>Result</b>	<b>10,000 \$ net profit</b>		= 10,000 \$ fix costs
		<b>Result</b>	<b>22,000 \$ net profit</b>

**Fig. 1.** Added value 12.000 \$ net profit  
Source: Jakl, Schwager, Chemical Leasing goes global

This example presented the basic of Chemical Leasing concept, but for different partners and types of industry the models may be different. The main roll in this business has the supplier of the

chemical and it is important to have the know-how technology for efficient use of the substance. And the main partner of the supplier is the user of the chemical, but as an additional member of this

business can also be the manufacturer of the equipment in which the chemical is used. Very often the manufacturer has additional information on know-how and contributes to increased efficiency and optimization of the process. Also, if companies that are in charge for recycling of the chemicals may contribute to increase the efficiency can be accepted as partners. The enrolment of many parties in this business makes difficulties in

the communication and negotiation for signing the contract. As a result of this, this concept is opened for associates with experience in chemical leasing and one of them must act as a mediator to lead partners through the implementation of Chemical Leasing. The mediator may be a consultant which has experience with the work of industries such as the Cleaner Production Centers of UNIDO.

<b>Industry</b>	<i>Chemical suppliers</i>	Strengthen the relations to their clients providing them an added value in the form of technology know-how and service.
	<i>Chemical users</i>	Can concentrate on their core business, while benefiting from the service and know-how provided by their suppliers.
	<i>Equipment suppliers</i>	Enhance the process efficiency providing know-how on the best available technologies for the chemical's application. Through ChL equipment suppliers also gain access to new markets.
	<i>Recycling/disposal companies</i>	Provide important know-how on recycling and disposal technologies useful to increase the chemical's recovery rate.
<b>National governments</b>		Can use ChL as a policy tool to improve risk management practices and extend producer responsibility.
<b>Quality assurance institutes</b>		Provide confidence in companies offering ChL services through an independent quality assurance.
<b>Consultancies</b>		Act as mediators between the different partners.
<b>UNIDO</b>		Establishes an international multi-stakeholder working group. The National Cleaner Production Centres of UNIDO serve as a world wide network for the promotion of ChL.

**Fig. 2.** Role and benefits of different partners,  
Source: [www.chemicalleasing.com](http://www.chemicalleasing.com)

One thing is certain and that is that the economic benefit in combination with environmental for all parties involved in chemical leasing refers to the reduced use of chemicals and other additional resources such as electricity, water and other inputs in the production process. As a result of reduced resource inputs, the amount of waste, pollution of air, water, soil are also reduced and comes to lower harmful environmental impact from the industrial processes. Chemical leasing is certainly an advantage for the manufacturer of the chemical from the moment they sign a contract with the industry or to strengthen the relationship with old partners. The consumer's advantage of this model is that

they can concentrate more on their business and improve the chemical management. Both sides certainly gain a positive reputation in society for a new innovative approach to work.

The Chemical Leasing concept, so far, has been implemented in Egypt, Mexico, Russia, Sri Lanka, Serbia, Colombia, Brazil, Croatia, Mexico, Nicaragua, Ukraine and Uganda. From this year Republic of Macedonia is involved in the implementation of the business model Chemical Leasing through the Cleaner Production Centre of UNIDO in Skopje. The target industries for implementing this model are: wood processing and furniture industry, leather processing industry, agriculture and

food industry, chemical industry, textile and clothing.

reduce the intake of materials, energy intensity and pollution, which will reduce the impact on the environment and simultaneously to improve productivity and competitiveness among industries.

### CONCLUSION

The Cleaner Production and Chemical Leasing programs imply continuous application of strategies to protect the environment from manufacturing processes, products and services in order to increase efficiency and reduce risk to the community and the environment. Through the implementation of the new way of work with the Chemical Leasing business model, industries can

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