

Chemical Leasing

A NOVEL and SMART business model for industry and environment

Petra Schwager

Abstract

Developed by UNIDO, 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 (number of pieces cleaned; amount of area coated, etc.). The producer also provides his know how on how to reduce the consumption of chemicals and optimize their usage. Chemical leasing 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.

AUTHOR

Petra Schwager is Industrial Development Officer, Cleaner and Sustainable Production Unit, Environmental Management Branch at UNIDO - Cleaner Production Officer, Coordinator of Global Chemical Leasing Programme. She has experience in building-up and managing National Cleaner Production Centres and programmes in more than 15 developing and transition countries; fostering public-private cooperation; developing and promoting innovative approaches to sustainable chemicals management. She is currently involved in resource efficient and cleaner production, chemical leasing, waste management, innovative business models and holistic approaches to resource efficiency in industry.



The Challenge

Despite growing environmental concerns, traditional business models still use chemicals in an unsustainable manner, which in turn unnecessarily generates more hazardous waste. Worse: financial incentives actually encourage suppliers to sell more chemicals, even if these are used inefficiently.

This is an increasing global challenge, particularly for small and medium enterprises (SMEs) in developing countries and economies in transition, since many do not have the capacity or the capability to manage their waste in an environmentally-sound manner.

Sustainable business models for chemical consumption must necessarily include intensive interactions between all stakeholders, and a close cooperation that pools on the combined knowledge and experiences of all users/suppliers.

As such, sustainable business models for chemical consumption must necessarily include intensive interactions between all stakeholders, and a close cooperation that pools on the combined knowledge and experiences of all users/suppliers. Still how do you devise a solid business platform that promotes a triple win, i.e. which makes sense for your business, which is good for your partner's business and which is good for the environment?

The Solution: the ChL model

In 2004, United Nations Industrial Development Organization (UNIDO) developed its Chemical Leasing (ChL) business model which is a paradigm shift towards a SMART

(sustainable management, monetary benefits, additional health and safety, resource efficiency and technology transfer and innovation) management of chemicals.

Indeed, ChL is a very innovative business model as it shifts the focus from increasing the sales volume of chemicals to a value-added approach: under a ChL agreement, the supplier of chemicals now sells the functions performed by the chemicals, with functional units (e.g. number of pieces cleaned, amount of area coated, etc.) becoming the main unit for payment.

Further, the producer also provides his know-how on how to reduce the consumption of chemicals and how to optimize the usage conditions.

Example: detergents for metal

A producer of metal parts needs solvents; in a ChL situation, the chemical supplier sells the functions performed by the solvent- such as the cleaned metal parts - instead of being paid for the amount of solvents provided. To increase his profit margins, the supplier then trains

Table 1: Sectors/processes where ChL business model has been already applied		
Industry sectors/processes	Chemicals	Basis of Payment for the ChL contract
Manufacture of electronic equipment	Powder coating	Egypt: USD/m ² of powder coated area
Car manufacture, food processing equipment	Hydrocarbon solvents for cleaning	Egypt: USD/Vehicle produced
Various industries/steel treatment	Galvanizing	Mexico: USD/Ampere-hour
Beverage production	Lubricants for packaging conveyers	Serbia: USD/number of working hours of the conveyor
Waste water and drinking water treatment	Water treatment chemicals	Russia: USD/m ³ of purified water
Accommodation (hotel) and service sector	Cleaning chemicals	Brazil: the ChL fee is a combination of three elements: kg of laundry; meals served and m ² carpet area (floor and rooms)
Beverage and agro-processing	Glue	Serbia: USD/number of bonded boxes
Petrochemical industry	Catalysts and water treatment chemicals	Colombia: USD/Kbbl of oil with a specified quantity
Printing Industry	Ink, printing chemicals	Sri-Lanka: USD/number of printed copies of the newspaper
Agriculture	Pesticides	Sri-Lanka: USD/ potatoes harvested per season (yield)

In 2004, United Nations Industrial Development Organization developed its Chemical Leasing business model that shifts the focus from increasing the sales volume of chemicals to a value-added approach: under a ChL agreement, the supplier of chemicals now sells the functions performed by the chemicals, with functional units becoming the main unit for payment. Further, the producer also provides his know-how on how to reduce the consumption of chemicals and how to optimize the usage conditions.

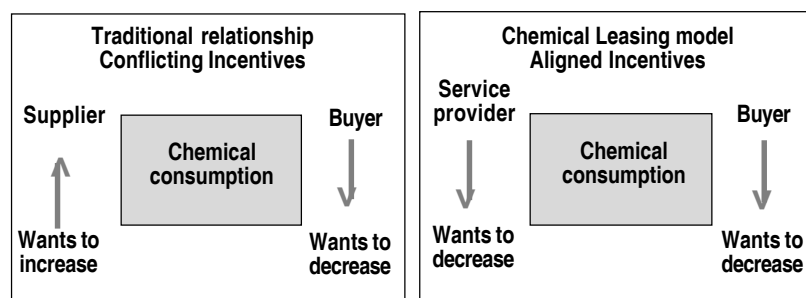


Fig 1: ChL business model aligns incentives for a win-win situation

the user's employees to optimize the usage of the solvent, thus reducing the amount of solvent used. In this way, by decoupling the payment from the consumption of chemicals, ChL aligns incentives and brings about a win-win situation for the user, the supplier of chemicals, and the environment.

As chemical products provide a broad variety of services (such as cleaning, coating, colouring and degreasing), the ChL model

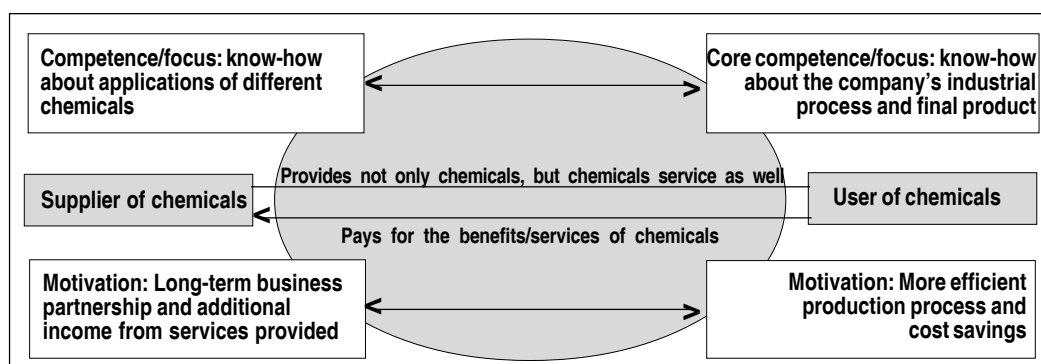


Fig 2: ChL partnership model

can be applied to a multitude of industrial sectors, in both small and large companies. Experience has proven that the best results are achieved when the ChL model is applied to processes that are not part of user's core know-how. Examples of sectors/processes, where the ChL business model has already been successfully applied are listed in Table 1.

ChL leads to a more efficient and economic use of chemicals as well as to lower water, raw material and energy consumption, thereby significantly reducing the environmental impact of the production process. By sharing the added value created through the more economic use of chemicals, both the supplier and the user gain an economic advantage.

The benefits of partnering

ChL leads to a more efficient and economic use of chemicals as well as to lower water, raw material and energy consumption, thereby significantly reducing the environmental impact of the production process. By sharing the added value created through the more economic use of chemicals, both the supplier and the user gain an economic advantage. In addition, ChL enables companies to be better positioned to respond to the latest changes in international chemical policies and also enhances their access to new markets. Furthermore, unlike outsourcing, the ChL model involves knowledge transfer from the supplier to the user while fostering long-term collaboration and innovation.

ChL applied to Sri Lanka's agricultural sector

Since 2011, UNIDO's Sri Lankan National Cleaner Production Centre (NCPC) works with the user 'Nanayakkara Farm' and the supplier 'Kandurata Agr' towards developing and subsequently implementing a ChL

project focusing on potato cultivation. While chemicals are important, they may cause environmental problems and health hazards. ChL can help users reduce costs and risks of cultivation and therefore contribute to higher sustainability and safety of operations.

Following UNIDO's assistance, the Inte-

grated Pest Management approach was adopted, and a new cooperation mechanism between users and suppliers was developed: to validate the new business model, one part of the field was managed using the ChL approach while the other part of the field was managed conventionally. Half a year after the start of the experiment, the ChL-managed field used over 40% less chemicals (over 30% if fertilizers are included), yielded 2.22kg of potatoes per square meters (as opposed to 1.97kg/m² for the conventionally-managed field) thereby adding value of over US \$ 150 per hectare (for this cooperation, the new unit of payment agreed upon is the yield of potatoes harvested per season). The partners have already agreed to extend the contract for the next cultivation phase and apply the model to a larger area.

A user of the ChL model said, "The ChL model has helped us increase our food security and provided evident benefits for us and our partners. It has made us stronger. We are happy and proud of the first results".

The successful partnership was recognized at the 2012 Global Chemical Leasing Awards Frankfurt in June 2012 with a bronze medal for the project. The Sri Lankan NCPC



Fig 3: Potato harvest in Sri Lanka



Fig 4: Awarding cases of excellence during the 2012 Global Chemical Leasing Awards



Fig 5: Sri Lankan case received a Bronze

UNIDO promotes ChL through its worldwide network of National Cleaner Production Centres. The Centres help companies prepare ChL contracts and provide them with UNIDO's ChL methodologies and tools.

is already investigating new potential ChL applications in the plantation sector (e.g. tea, coconut and rubber).

UNIDO's mission

UNIDO promotes ChL through its worldwide network of National Cleaner Production Centres. The Centres help companies prepare ChL contracts and provide them with UNIDO's ChL methodologies and tools. UNIDO also ensures that partnerships are based on mutual trust and that the benefits are equally shared among partners. The Organization further ascertains that ChL models are effectively customized and adapted for implementation in developing and transition economies.

The first pilot projects were initiated in 2005 in various sectors in Egypt, Mexico and Russia, followed in 2008 by Colombia, Serbia and Sri Lanka. Additional ChL activities have since started in Brazil, Croatia, Nicaragua, Russia and Ukraine.

In 2009, to further enhance the worldwide ChL visibility, UNIDO developed the Global Chemical Leasing Awards with the support of the Austrian and the German Government. The first Award ceremony took place in Prague in March 2010 (within the framework of the international ChemCon conference) while the second ceremony took place in June 2012 during Frankfurt's ACHEMA 2012 Congress.

Currently, and since its inception, the ChL concept has been presented to over 1,000 companies all over the world; more than 350 ChL experts have been trained and over 40 projects have been successfully implemented. Right now, a growing number of businesses from diverse industrial sectors are looking to switch to the ChL business model.

To facilitate the implementation of the ChL concept at industry level, UNIDO developed a number of tools and instruments (including the book *Chemical Leasing Goes Global*, a training video, Chemical Leasing Global Awards, case studies, a toolkit, sustainability criteria, training package for companies, etc.) and a related website (www.chemicalleasing.com).

ChL: an innovative policy tool

ChL matches four large environmental policy issues namely: climate change; freshwater; environmental pollu-

tion and health; and waste resource management. More generally, ChL follows the trend of developing new approaches that help industry to reduce their environmental impact.

With regards to climate policy, ChL seeks to increase the efficiency of energy consuming processes; consequently, ChL also suits the policy trend of reducing greenhouse gas emissions. With regards to increased energy efficiency, ChL can also lead to an increase in the efficiency of water use, which again is important for regions where freshwater resources are scarce. The reduction in air and water pollution that is further promoted by ChL is also in line with the trends in the environmental policy field of environmental pollution and health. With regards to waste resource management, ChL brings forward material and resource efficiency, given that it aims at reducing chemical consumption.

During the last few years, ChL has been increasingly recognized at the highest political level: in its resolution 2011/2056 (INI) on an effective raw materials strategy for Europe, the European Parliament explicitly mentioned ChL and recommended an active support by the European Commission (Chapter 10 of the resolution). Furthermore, ChL is also being promoted as an element of na-

tional sustainable development. For example, the concept has been integrated in a number of national strategy documents/events in Serbia, including the country note prepared for the Rio+20 Conference.

Conclusion

Chemicals used for industrial processes play a beneficial and important role but can also have an adverse impact on the environment and humans. SMART business models like Chemical Leasing are UNIDO's response to the unsustainable management of chemicals in industry as well as to the lack of cooperation among suppliers and users.

ChL provides practical solutions to enhance the industrial efficiency while at the same time reducing unnecessary hazardous chemicals consumption and protecting human health/the environment. The concept is very much in line with UNIDO's green industry approach that aims at decoupling resource use and pollution from industrial development and promoting the growth of productive sectors.

For further details contact: Ms Petra Schwager, Environmental Management Branch, UNIDO, p.schwager@unido.org

