D 2.4| Report on the market driven business model developed in SMARTSET

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1.3. List of abbreviations

This table provides an overview on all abbreviations used in this document.

Abbreviation	Full name | Explanation
CO_2	Carbon dioxide
KPI	Key performance indicator
PA	Public Authorities
UCC	Urban Consolidation Centre
UFT	Urban Freight Terminal
UDC	Urban Distribution Centre

Table 1: Abbreviations used in this document

2. ABOUT SMARTSET

Transports of goods, both on long distances and within cities contribute to a substantial part of the total emissions generated from the transport sector, as well as congestion. Up to 20% of traffic, 30% of street occupation and 50% of greenhouse-gas emissions are generated by freight.

Yet freight and distribution schemes are often structured in traditional ways, based on vertical solutions with individual solutions. These systems lead to sub-optimisation of freight transports, with low load factors and an unjustified amount of tonne-kilometres generated by the vehicles used. The need for more efficient solutions that leads to less transport kilometres and a more sustainable economic model is obvious. The latter is foreseen to be the key factor of a long-term success in implementing a working model for urban freight transport and thus supply all involved stakeholders with the correct incentives to change their distribution networks.

The SMARTSET project will develop and show how freight transport in European cities and regions can be made more energy-efficient and sustainable by a better use of freight terminals. To reach this overall goal, the project will provide examples of good practice that can support cities, regions and countries to contribute to the European Union „20-20-20“ targets[1] for reduction in carbon dioxide emissions and improvement in energy-efficiency.

SMARTSET targets	Reduction by 2016	Reduction by 2020
Reduction of CO_2 emissions in tonnes	9,063 tonnes per year	31,346 tonnes per year
Reduction of energy consumption in tonnes	3,096 tonnes per year	10,303 tonnes per year
Reduction of energy consumption in GWh	36 GWh per year	120 GWh per year

Table 2: SMARTSET targets during project duration (by 2016) and beyond (by 2020)

SMARTSET is a project, co-funded by the Intelligent Energy Europe Programme of the European Union and is composed of 14 partners, coming from Austria, Germany, Italy, Sweden and the United Kingdom. It will run from 01.05.2013 until 30.04.2016.

[1] The climate and energy package is a set of binding legislation which aims to ensure the European Union meets its ambitious climate and energy targets for 2020. These targets, known as the "20-20-20" targets, set three key objectives for 2020:

- A 20% reduction in EU greenhouse gas emissions from 1990 levels
- Raising the share of EU energy consumption produced from renewable resources to 20%
- A 20% improvement in the EU's energy efficiency

3. INTRODUCTION

The present Deliverable has the aim to analyse the main initiatives in SMARTSET in order to achieve a classification of business models applied in SMARTSET focusing on the interests of involved stakeholders. The final objective is to define a common approach to the definition of a market driven business model.

Chapter 4 presents a description of the business models of city logistics schemes in the leader cities.

Chapter 5 will merge the findings coming from leader sites in a model for defining the common "SMARTSET" business model and its possible declinations along a common rationale.

Chapter 6 will derive conclusive remarks aiming to turn the findings of SMARTSET into a set of principles, valid for UFT-based city logistics initiatives, aimed at shaping them on the basis of a market driven business model, with the intention to steer the provision of the distribution service successfully towards full self-sustainability.

4. BUSINESS MODELS IN SMARTSET

Throughout the activities performed in SMARTSET and the investigations that have accompanied them, a number of different theoretical approaches to the definition of business models and to the descriptions and classifications of the initiatives have been met and applied.
The classification of business models may retain different objectives, depending on different focuses of the description:
Focus on the *marketing mix* of the city logistics schemes. This is the case, for example, of the CANVAS model, which has been used throughout the SMARTSET project to introduce the framework pilot and contribute shaping their action plans.
Focus on the *governance of the start-up phase* of schemes. This approach is aimed at describing the main ways through which the stakeholders agree on the supply of assets (incl. regulatory power) for starting up the initiative.
In Deliverable D2.1 the investigation on possible business models focused[2] on the main operational aspects of the city-logistics schemes and the relations among players.
For the purposes of this report, that aims at highlighting the *fil rouge* among business models applied within the SMARTSET framework that represents the basis to successfully replicate or scale up best practices, the focus will be on the question: **how can market driven UFT-based schemes be successful**?

This question underlines the relevance of an appropriate definition of "market driven scheme".
A market driven phenomenon is one responsive to the forces of demand and supply, as influenced by self-interested players (buyers and sellers) who exchange goods and services in the market.
So the influence on the effectiveness of city logistics schemes ultimately has to derive from the **interests** of **players** demanding and supplying services.
The present analysis is therefore looking to classify initiatives and define their business models from the point of view of *interests **(objectives)** of the players (stakeholders)* involved in the scheme.

The following sections will describe business models in leader cities via the mapping matrix below.

STAKEHOLDERS →	**(Type of stakeholders)**
OBJECTIVES →	(Definition of objective)
ROLE IN THE SCHEME: **Initiation/Coordination**	(cells will be checked if the role applies to the stakeholder)
Provision of terminal	…
Provision of vehicles	…
Provision of IT	…
Provision of personnel to run	…

[2] See D2.1, par 4.2.

operations	
Definition of regulations	…
Financial support	…
Payment of fees	…

Table 3: Matrix to map the business models of UFT-based city logistics schemes.

The aim of the commented matrixes will be to investigate the common aspects that contribute to the feasibility of a successful UFT-based city logistics scheme.

4.1. GOTHENBURG

The Gothenburg initiative is based on a freight terminal located just near the city centre in Gullbergsvass, in a facility owned by an in-house company of the municipality.
In 2014, when the logistics operator Paketlogistik took over the responsibility as operator of *Stadsleveransen,* a new PDA based ITS-system was introduced. A new vehicle (Alkè), able to tow up to three trailers, was put into service in 2014. The cost for the vehicle was integrated in the total operations cost, which the Municipality has co-financed.
The project started with small scale operations managed by a security company in a small facility in the actual inner city area, and then in 2014 the logistics operator Paketlogistik took over the responsibility as operator.
The current operations are financed and economically sustained by three main stakeholders: two major transport companies and the municipality. Furthermore, the advertising revenues contribute to the sustainability of the operations. The city centre real estate association co-financed the pilot and it is not involved in current operations. During the start-up and ramp-up phases the grant was fixed in order to fully cover the costs, then the subsidising scheme envisaged a grant decrease in accordance with the increase in the project self sustainability. The current grant amounts to some 27% of the operating costs and the goal is to decrease this grant to zero when the project will be completely self sustainable. Apart from the grant, the Municipality pays for the renting of the UFT, that is owned by an in-house company, and the cost of vehicles leasing, all integrated in the total operations cost.

STAKEHOLDERS →	**Public Bodies**	**City Centre Real Estate Association**	**Logistic Operator**	**Users of the service**	**Other customers**
OBJECTIVES →	Quality of life in the city; Competitiveness	Attractiveness of the city centre	Market expansion and profitability	Optimise their freight distribution activities	Advertise their business
ROLE IN THE SCHEME: Initiation/Coordinatio	✓				

n					
Provision of terminal	✓	(✓)			
Provision of vehicles	(✓)				
Provision of IT	✓				
Provision of personnel to run operations			✓		
Definition of regulations	✓				
Financial support	✓	✓			
Payment of fees				✓	✓

Table 4: Gothenburg city logistics: stakeholders, objectives, roles

NB Vehicles are leased and the Municipality bears the costs of leasing. Real Estate owners supported the initiative during the pilot phase.

It is not only the payment of fees (by the users of the distribution service and of advertising customers) that reflects the exchanges of value between players. In fact, it is not only the distribution service and advertisements that generate value out of the city logistics scheme. As the matrix shows, other players have objectives that the initiative helps achieving: there is further value, in the contribution to the sustainability, competitiveness and estate value of the city centre, which public bodies and real estate association are willing to provide financial support in exchange thereof. EC-funded projects can be exploited in order to lay the ground for a durable and effective Freight Network. The concertation process must be focused on different, even levels of discussions.

4.2. NEWCASTLE

Newcastle University is developing a sustainable campus which balances open liveable spaces free of intrusion and the need to supply goods and services to the campus. The peculiarity of the Newcastle University is that the main campus is not an integral part of the city but is is quite completely separated from the main city, although it is located at its heart.

The project envisages the development of a coherent Campus Delivery Service Plan including the implementation of a delivery scheme based on the consolidation concept and on the use of an UCC located outside the campus and the city. The scope of the project, as just said, is at first limited to the main university campus but the plans, when interest of the shopkeepers located in the inner city would rise, are to expand it outside the campus to the city centre. The vehicle for the scheme, a 7.5t Smith Electric Newton truck, has been purchased by Newcastle University and granted to Clipper Logistics for the operations. For the pilot operation Clipper's existing Wynyard warehouse was used, so that the project could benefit from incurring only in marginal costs, rather than outright costs that would have incurred in the case a new UCC located closer to Newcastle would have been setup. During the first two years, operations, provided by the logistics operator Clipper Logistics, were publicly subsidized. Since the third year, they are provided on the basis of a contract with the University of Newcastle, which determines operational conditions and finances it.

Precise conditions of operating the scheme were negotiated between Newcastle University and Clipper Logistics, including the vehicle operations, the use of the consolidation / warehousing centre, human resources involved, the use of Clipper's and University's IT systems, inbound delivery specification and labelling.
Considering the adopted scheme and the structure of the project, the customer of the project is therefore the Newcastle University itself. The buyers within the Campus cooperate with the University providing purchasing data that help plan the service.

STAKEHOLDERS →	Public Administration	Newcastle University	Logistic Operator	Users of the service
OBJECTIVES →	Quality of life in the city	Liveability of the Campus; Image of the University	Market expansion and profitability	Get an efficient distribution service
ROLE IN THE SCHEME: Initiation/Coordination		✓		(✓)
Provision of terminal			✓	
Provision of vehicles		✓		
Provision of IT		✓	✓	
Provision of personnel to run operations		✓	✓	
Definition of regulations	✓			
Financial support	✓			
Payment of fees		✓		

Table 5: Newcastle city logistics: stakeholders, objectives, roles

The business model in Newcastle is therefore conceived as internal procurement solution of the University, replacing a multitude of customers of the service with the University as unique subject, which represents/collects the interests of multiple users located in the same area and is willing to pay for the city logistics service to be performed in order to achieve its objective to improve the quality of life within the Campus and to qualify the image of the University for the general public.
This situation can occur is in contexts similar to a University, such as a City Administration district, a Hospital (and such subjects are actually already the target for scaling up the service in Newcastle, as they are also in close proximity to the University).

4.3. PADUA

The Cityporto project was implemented in 2004 on the basis of a framework agreement between the local major stakeholders, including the Padova municipality, the Padova province, the chamber of commerce, the multiutility company APS Holding and the freight village operator Interporto Padova, and thanks to a shared operational and industrial plan, incentivizing regulation and a public grant.

The initiative consists in a consolidation centre located just outside the city and a last mile delivery service to the city centre by mean of bi-fuel vehicles.
Interporto Padova provided the experience in the logistic sector and the warehouse where is located the Urban Freight Terminal. The Public Stakeholders provided funding during the first 4 years for a total amount of € 360.000, further than the first 4 vehicles of the eco-friendly fleet provided by the local public transport company in free use to the UFT during the first 4 years (after, the vehicles were bought by Interporto Padova).
The project within Smartset envisages the enlargement of the range of goods delivered by Cityporto taking into consideration the time-sensible goods, such as perishable and express parcels, the extension of delivery services to non-urban areas and the adoption of a new tracking and tracing system
A new IT equipment and IT system suitable to support express service have been developed by Cityporto with internal resources and with the support of external providers. The new Cityporto Management System is composed of three parts: the software application in the palm cell used by the driver, IT equipment installed on the vehicles for WI-FI communication with the palm cell that downloads the cargo list and then sends the deliveries to be registered, and a website for tracking of deliveries.
The freight terminal (both the land and the facilities) is owned by Interporto Padova and operated by the dedicated business unit Cityporto. The location of the terminal inside Interporto Padova, where most of the logistics operator that are potential customer of Cityporto have their warehouses too, is a critical success factor of the initiative since it avoids long and expensive intermediate reloading.
The customers are mainly logistics operator having their warehouse inside the freight village Interporto Padova too.
The local administration of Padua developed an incentive system that favours the Cityporto's vehicles, such as allowing a 24-hour access to the city centre, the use of the bus lanes and the provision of reserved parking zone.
The last revision of the regulation concerning the access of vehicles to the LTZ states the possibility to enter the LTZ only during certain time windows and only paying a permission. Special conditions are applied to the vehicles of Cityporto: they are allowed to enter the LTZ without time restrictions 24h/day and they are also allowed to use reserved lanes for buses and taxis.

STAKEHOLDERS →	**Public Stakeholders**	**Freight Village operator (owned by PA)**	**Forwarders and transport operators**	**Users of the service**
OBJECTIVES →	Quality of life in the city; Competitiveness	Market expansion and profitability; Added value for the territory	Optimise their distribution activities	Get an efficient distribution service
ROLE IN THE SCHEME: Initiation/Coordination	✓	✓		
Provision of terminal		✓		

Provision of vehicles		(✓)	
Provision of IT		✓	
Provision of personnel to run operations		✓	
Definition of regulations	✓		
Financial support	✓		
Payment of fees			✓

Table 6: Padua city logistics: stakeholders, objectives, roles

In the case of Padua as well as in that of Gothenburg and Newcastle the public funding was issued only at early stages of the service. The main peculiarity is the existence of a freight village operator, owned by public stakeholders, that therefore shares the overall objectives of the public administration while seeking profitability, and is capable to provide not only the terminal but also the contacts with customers whose business is suitable for the various services of the city logistics scheme. The manager of Cityporto is therefore neutral with regards to the market environment it operates in, and this is a remarkably facilitating element in order to attract the other operators.

5. MODELING OF OUTCOMES IN LEADER AND FOLLOWER CITIES

The experiences in follower cities (Rome, Sundsvall, Berlin, Graz and Forlì) have been very different from each other. In the case of three of the sites, the actual objective of SMARSET activities was a feasibility study rather than a pilot test (Graz, Forlì, Berlin). In Rome there has been a thorough work on regulations, aiming at preparing the framework in which an UFT-based micro-distribution service in the city centre will be able to operate; in Sundsvall a number of different focuses was sought revolving around the possibility to employ cleaner freight transport solutions both in the long range and in the local range.
Despite this variety, a common trait that can contribute to define their approach to deploying UFT-based city logistics schemes can be found looking at the following table.

	Who are the final users of the service?	**Who gets the most added value from the service?**	**Who supports the startup?** (either financially or providing major assets)	**Who manages the service?**	**Who pays for the service?**
Gothenburg	Shopkeepers in the centre	Real Estate and Public Administration	Real Estate and Public Administration	A private logistics operator	Forwarders/transport operators
Newcastle	Buyers within the Campus	University	Public Bodies	A private logistics operator	University
Padua	Shopkeepers in the centre	Public Administration	Public Administration	A publicly-owned logistics operator	Forwarders/transport operators
Follower cities	Shopkeepers in the centre	Public Administration	Public Administration	A private logistics operator	Forwarders/transport operators

Table 7: SMARTSET definition of business models of UFT-based city logistics schemes

The common feature of the different business models synthesized above is twofold:

1) Either via startup support or via the payment of fees, **the schemes are able to extract value from the "winners"**, i.e. the players that get the most added value from the service. In the city logistics field, these are often not the customers nor the users, since forwarders and transport operators have usually already optimised their distribution service even before the start of city logistics initiatives. Whether the customers (mostly transport companies) are "winners" or not may depend of how much they have to pay for using the UFT services, their gains in environmental profile etc.
2) The common nature of the main "winners" is that they are the **players who control decision making processes, or have big interests, in the concerned area** (the Municipality, other Public Bodies such as Chambers of Commerce, the Real Estate Association, the University).

The two ways to extract value outlined in point (1) (startup support or payment of fees) are exemplified in the initiatives in Gothenburg and in Newcastle. The following figures show the evolution of the shares of incomes for the two city logistics providers.

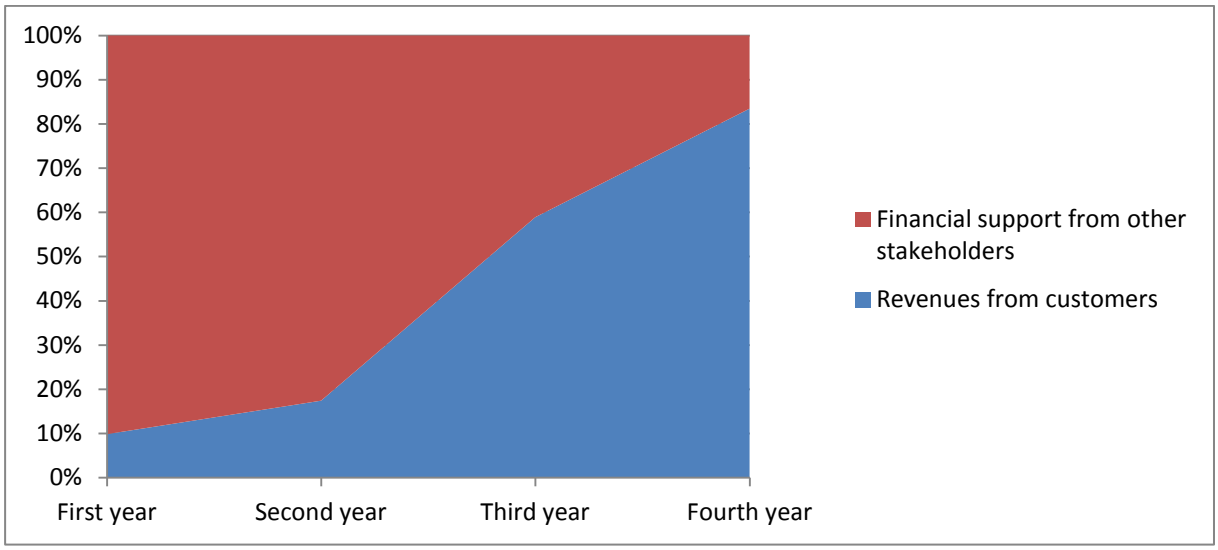

Figure 1: Evolution of incomes of the city logistics provider in Gothenburg

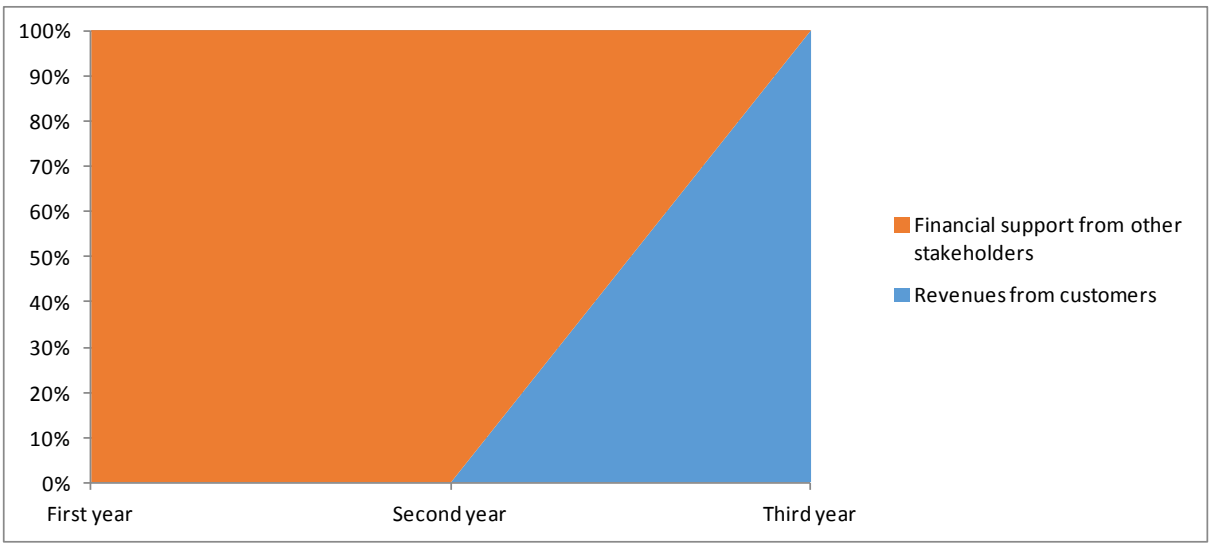

Figure 2: Evolution of incomes of the city logistics provider in Newcastle

The difference is that the winner in Gothenburg is a set of public stakeholders (including Real Estate Association) who do not become the customer, but transfer part of the added value coming to them from the scheme to the provider of the scheme itself via forms of startup support.
The winner in Newcastle is instead a player who becomes the customer (the University), thus transferring the added value via the payment of the service.
The chart below further illustrates the two cases in general.

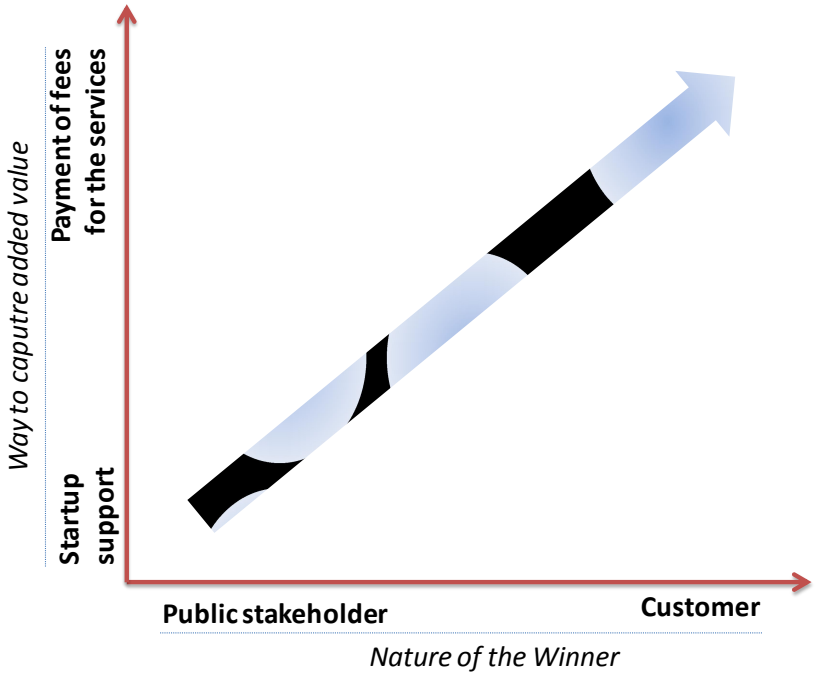

Figure 3: Winners and how to capture their added value

6. CONCLUSIONS: THE SMARTSET APPROACH FOR A MARKET DRIVEN BUSINESS MODEL

The main findings deriving from the analysis of the SMARTSET initiatives are the following:

- UFT-based city logistics schemes cannot be successful if the Winners of the initiatives do not transfer part of their added value to the providers of the service.
- Winners are usually the players who have big interests in the concerned area.
- The closer the Winner is to being a player capable to use the service as an internal procurement management, the easier it is to turn the support from subsidies to fees.

Obviously, there is no unique recipe for a successful city logistics scheme, since the local contexts are varied and the number of variables is huge. Regulations, capacity of networking, location of the terminal, are only some of the critical factors that can be pointed out for each area. However, looking at the findings listed above, some general principles can be outlined for a SMARTSET approach to defining a successful market driven business model.

1) **Find the potential winner** (one or more)	Scan all stakeholders (public and private) in the city that have relevant decision making power in the concerned area (PA is one of these players by default), and investigate their main strategic objectives and interest. If the scheme can contribute to those, those players are possible winners and there is value to be captured and transferred to the providers of the city logistics service.
2) **Consider their nature**	Some players can act as a market player by default and pay fees in exchange for the added value. Others (the PA) can provide assets to support the startup, besides being the initiator of the scheme and providing appropriate regulations. In this respect, the continuity of policies is fundamental. Logistics operators and suppliers will not be willing to invest in technology, management processes and contractually binding agreements if the area has a history of not ensuring regulatory stability (e.g. a logistics provider that can potentially operate the scheme will not bear a middle/long-term investment in electric vehicles if there is no certainty of regulations and incentives).
3) **Aim to turning financial support into revenues from fees**	Rather than resorting to generic financial support (subsidies) from public stakeholders, a "*beneficiary pays*" principle to foster an efficient allocation of resource should be sought and applied. For example, if the objective of the PA is the reduction of pollution, the financial support should be contractually linked to the achievement

of corresponding targets, carefully defined and monitored by means of scientifically sound indicators.

These strategic measures should be aimed at enabling the provision of the UFT-based distribution service in the start-up phase, triggering the momentum of its operations, and carry the service into a phase where economies of scale are activated, operations can be optimized and full self-sustainability achieved.