

From Energy Sourcing to Energy Management

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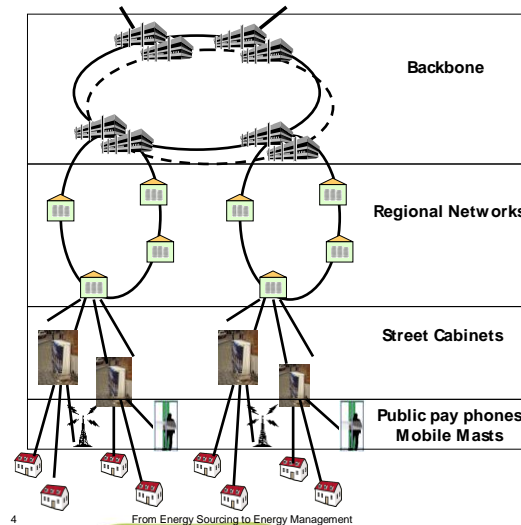
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Abstract. This workshop describes how one of the largest energy users in the Netherlands tackled the problem of the exploding energy commodity prices coupled with a forecast reflecting a tripled consumption between 2007 and 2012. By forming a specialized “Energy Management Group” KPN was able to successfully implement 3 different phases essential to efficient energy management and savings: “Getting a grip on cost”, “Getting a Grip on Consumption”, and “Sustainability”. The team’s cross-functional efforts resulted in synergy and achievements in the areas of energy-sourcing, volume-forecasting, government lobbying, and sustainability for the entire company.

Background. KPN has over 12,000 different network sites which are connected to the electricity network (Figure1). In 2004, all of these points were treated as household consumers, while only 500 actually had official mailing addresses. This initiative started in early 2005 when KPN had done its first central sourcing, migrating from 45 suppliers to just 1. Challenges with invoicing, transportation costs, and energy taxes were revealed, and Marga Blom and her Category-team for Facility management and Supply Chain Solutions needed to develop a way not only to deal with the difficulties in a market slowly changing from monopoly to oligopoly, but to also deal with the increasing demand for power in the current setting of a world energy crisis.

Figure 1

The KPN mobile and fixed network



35.000 sites in total
2005: 12.000 sites connected to electricity network
2007-2012: 20.000 additional sites (street cabinets) to be connected to the electricity network
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Getting a Grip on Cost. Phase 1 consisted of cost reduction by professionalizing the strategic sourcing processes, and reducing overhead cost. Marga and her team based the sourcing strategy on market analysis and company risk profile. Traditionally energy initiatives at KPN had a large emphasis on traditional procurement, but Marga and her team now focused on “non negotiable” overhead costs, like taxes and energy transport (44% of the total cost). After investigating the Energy Tax law, Marga and her team realised that KPN might be able to use a special exception in the law: If a site is part of one network, they should qualify as one entity. Lobbying with the Ministry resulted in using this exception for Telecom and reduced energy taxes by 90% (Figure 2). In the Netherlands, energy-transport is a monopoly and in 2008 there was a change in the Dutch law concerning energy transportation and the implementation of “smart-meters”. The challenge for the team in this phase was to lobby the Dutch Ministry and recognize Telecom as an exception in the new law, similar to the exception in the energy-tax law. Without this lobby, yearly cost would have been increased ~€1M. The lobby with the Dutch Ministry will result in ~€2M cost reduction in 2009 and allows for special arrangements to implement the smart-meters in “uninhabited” sites such as small technical buildings and mobile sites where there is no physical address or personnel present.

Figure 2

Reducing overhead cost

Energy Taxes :

- ◆ Regressive stepped scale
- ◆ From per site (12.000) to to 1 entity
(Exception in Dutch tax-law:
If site is part of one "network" like Railway or
Public Water Works all the sites in this network
can be regarded as one site)
- ◆ Claim 2001-2006: 35 million Euro
- ◆ Structural reduction 90%
taxes from 7 M€ to 0,7M€ equals
from 17% to 1% of total electricity cost

Transport:

- ◆ Exception in electricity law (1/1/2009) to
bundle transportations cost

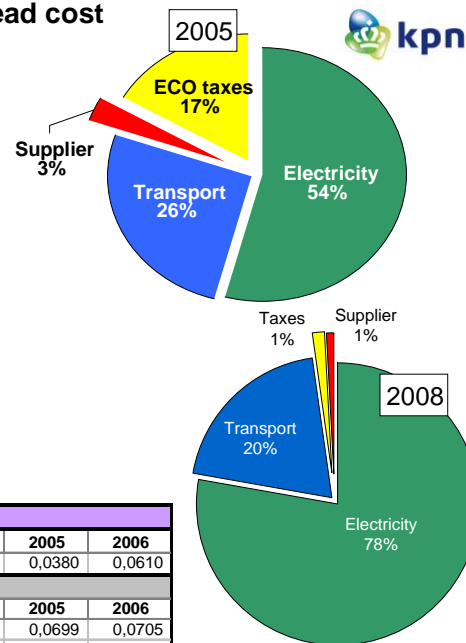
Profile:

- ◆ Small scale profile to special telecom-
profile in 2009

Tariff Commodity						
Euro/kWh	2001	2002	2003	2004	2005	2006
				0,0300	0,0380	0,0610
Tariff Energy taxes						
Euro/kWh	2001	2002	2003	2004	2005	2006
<=10.000	0,0583	0,0601	0,0639	0,0654	0,0699	0,0705
>10.000 - <= 50.000	0,0194	0,0200	0,0207	0,0212	0,0263	0,0343
> 50.000 - <= 10 mln	0,0059	0,0061	0,0063	0,0065	0,0086	0,0094
> 10 mln	-	-	-	0,0005	0,0005	0,0005

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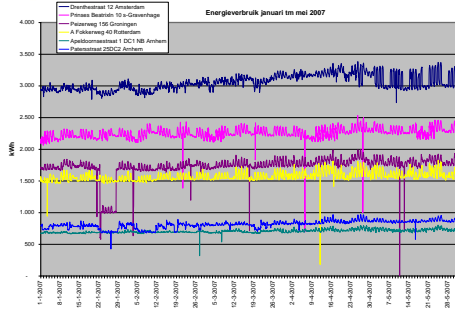
With energy sourcing professionalized, Marga realized that energy efficiency, consumption, and sustainability also needed to be addressed. The knowledge in these areas was scattered within the organization. In order to deal with the exploding commodity prices and consumption to triple between 2007 and 2012, improved energy management was essential.

The first step in addressing these issues was the formation of a specialized cross-functional team, the Energy Management Group (EMG). The EMG-team was responsible for creating synergy, initiating policy and advice on all energy-related subjects including sourcing, sustainability, savings, lobbying, and last but not least driving sustainable energy consumption throughout the entire chain value chain.

Getting a Grip on Consumption. One of the first major deliverables for the EMG focused on efficiently obtaining structural measuring information for 500 of the largest 12000 connection points. This gave the possibility to continue with phase 2: "getting grip on our consumption". With these measurements KPN was gathering all of the required information to determine from all energy usage: What exactly is the energy used for? Where is it being used? And why we are using it. KPN energy forecasts are based on yearly volumes, and they are able to determine their energy consumption per hour and quarterly hour. In 2009, this will allow the EMG group to adjust their volumes on long-term buying in addition to providing cost advantages in their daily and short-term sourcing. Furthermore, this consumption data allowed the EMG to benchmark similar network connection point sites. (Figure 3) It also became possible to review the results of innovation and energy-saving projects giving way to phase 3.

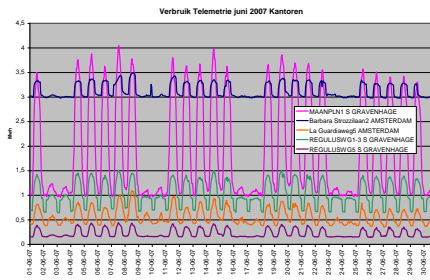
Figure 3

Analyzing consumption



Information per site:

- ◆ Different trends between office buildings and technical buildings
- ◆ Differences between comparable sites
- ◆ Effect of (un)planned power interruptions



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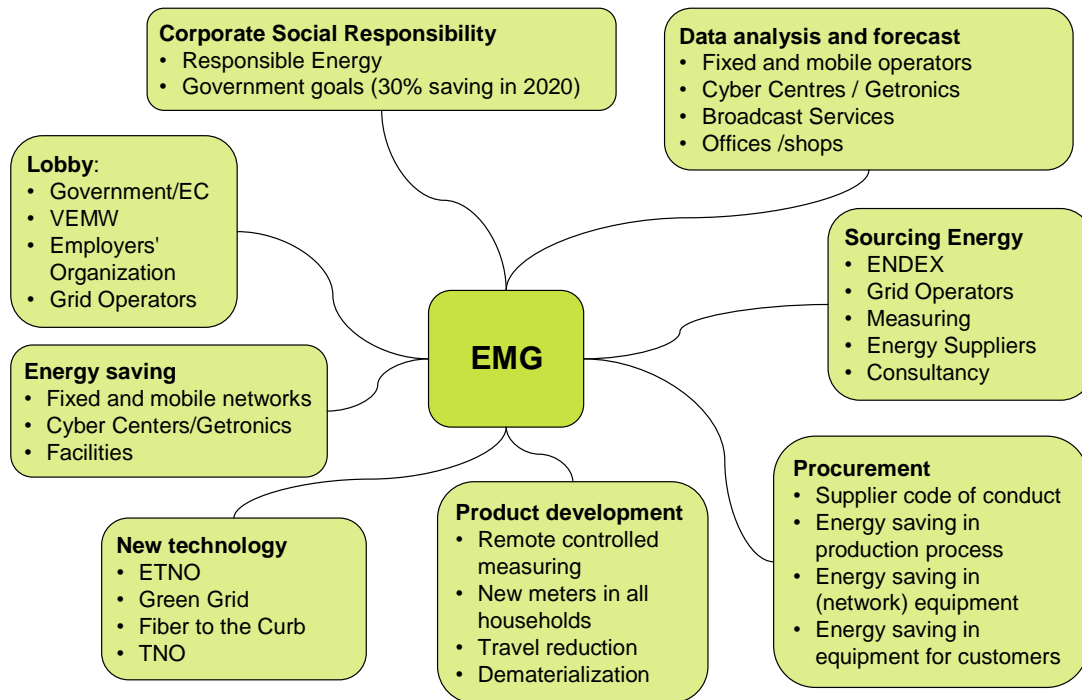
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The EMG was quickly established as the “spider in the web” building synergy in the whole organization. (Figure 4) In 2007 a structural 7M€ tax-savings was realized. By 2008 KPN had definite knowledge on overall consumption, and could concretely forecast future consumption. KPN also had successes on a wide overview of innovative energy saving projects, resulting in 7% energy reduction and a reduction of 11.7% in CO2 emissions in 2007.

Figure 4

Aspects Energy Management



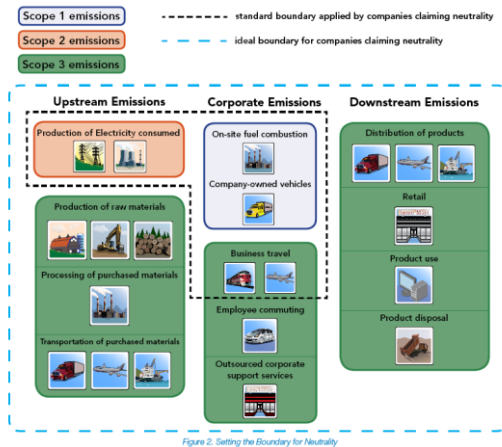
Sustaining the Initiative. Sustainability in 2008 consisted of implementing energy efficiency in the total chain. This was done with both an internal as well as external focus. In 2008 this resulted in almost 40GWh structural energy reduction. Energy became one of the spearheads of the CSR-program resulting in KPN-Board approving the energy-efficiency program until 2020 in line with EU-goals.

The EMG-team had become a department, and the main focus for 2009 is not only internal energy management, but also energy efficiency across all supply chains. ICT is responsible for 2% of global CO₂ emissions, equal to the same CO₂ emission created by the aviation sector. Luckily ICT/Telecom entities have the ability to reduce CO₂ emissions of other industries (health care, transport, education, government, trade, security). Thus KPN is busy shifting from a stove pipe organization to a collaborative organization in cooperation with suppliers, NGO's, as well as companies in different industries. This will result in improved energy use, consumption, and sustainability on an industry and sector wide basis (figure 5).

Figure 5



Energy efficiency in chain



Upstream:

- ◆ Motivate suppliers to produce energy-efficient
- ◆ Source energy-efficient equipment
- ◆ Code of conduct for suppliers

We won't solve our problems with the same kind of thinking that we used when we created them!

Albert Einstein

Downstream:

- ◆ Energy-efficient equipment for customers
- ◆ Services reducing energy-efficiency in the chain
 - ◆ Teleworking / Teleconferencing
 - ◆ E-mail / e-commerce
 - ◆ Software as a service
 - ◆ From housing to hosting
 - ◆ Virtualization
 - ◆ Dematerialization
- ◆ Investigations with other sectors eg
 - ◆ Building
 - ◆ Energy
 - ◆ Health care
 - ◆ Leisure
 - ◆ Transport

Conclusion:

This initiative has completely changed how energy consumption, usage, and sustainability are viewed at KPN and was an innovative method on how to handle the energy oligopoly in Europe and also how to manage consumption. The first great successes in reducing energy taxes were used to prove that special cross-functional and cross-category emphasis on all aspects leads the way to success. The energy management group became a spider in the web and in 2009 the EMG is not only creating synergy within our own organization and our suppliers, but is now also focused on creating synergy among the entire value chain leading the way to additional innovative energy solutions.