



STEDIN AND ALLIANDER HAVE DEVELOPED A FAIR AND CIRCULAR SMART METER

JULY 2019

In the years ahead, all old electricity and gas meters in Dutch households will be replaced by digital meters. Stedin and Alliander challenged the market to develop a meter that is not only 'smart', but above all 'fair'.



Bron: <https://www.fairsmartmeter.com>

Facts and figures

Organisations: Energy grid operators Stedin en Alliander

Product: The smart digital energy meter for both electricity (E) and gas (G)

Scope: 5 to 6 million smart E&G meters

Period: 2016 to 2020

Contact persons: Dirk Bijl de Vroe (Stedin), Elif Feenstra-Cengiz (Alliander)

The Fair Meter project

The Dutch energy grid operators are offering all their customers to replace the old electricity and/or gas meters by smart meters. These meters are digital and can, for instance, be read remotely. Clients can easily monitor their own energy consumption and feed-in of surplus electricity, as the meter has a port for the connection of, for example, an energy consumption manager.

Inspired by the Dutch Fairphone initiative – the world's first ethical modular smart phone with a fair production chain – grid operators Stedin and Alliander have issued a European call for tenders for smart meters that challenged the market to develop a 'fair meter'.

The requirements specified that the meter should have the lowest possible energy consumption, minimal raw material impact and transparent production conditions throughout the value chain.

To achieve this, Alliander and Stedin have joined forces in the so-called Fair Meter Initiative. In 2013, they formed a joint project group consisting of intrinsically motivated representatives from the CSR, Procurement, Logistics and technical departments. The principles of this initiative have also been subscribed by parties from the meter production chain.

The Fair Meter project team was part of the project organisation for the large-scale introduction of the digital meter. Besides members from the two grid operators, Waag Society was involved from the beginning as knowledge partner. At a later stage, the external consultancy firms Cooper8 and Metabolic were also added to the team. Cooper8 acted as knowledge partner for circular procurement and was part of the project team prior to and during the procurement process.

Metabolic provided expertise on the more technical sustainability aspects of the product and the complex value chain involved. More information can be found at www.fairsmartmeter.com.

Sustainable policies in the Dutch infrastructure sector

Stedin and Alliander have made a joint commitment to various sustainability covenants. For instance, both grid operators have signed the Green Deal Circular Procurement. In addition they each have their own sustainability policies and corresponding objectives.

Stedin has embraced 'One Planet Thinking' and used this to formulate various related objectives. For example, Stedin aims to operate on a fully climate-neutral basis by 2030. In addition, the company wants to bring their material consumption within the limits of our planet's resources and fully understand their raw material flows by 2020. Alliander has the ambition to become climate neutral by 2023 and they want to achieve circular procurement for 40% of its primary grid components by 2020. Given the large number of meters to be replaced, the Fair Meter Initiative contributes significantly to these objectives.

The smart meter is a product that contains a lot of electronics. It consequently has a complex value chain with many materials from countless suppliers and thousands of subcontractors. In part, they make use of critical scarce metals (which are not only scarce, but also essential to our economy), which also originate from parts of the world where labour conditions often leave much to be desired. The Fair Meter project team has given concrete expression to the Fair theme for these issues by defining focus areas that formed the basis for the subsequent call for tenders. The focus areas are:

- Energy consumption and emissions during production and use of the meter;
- Circularity of the meter (material selection and design);
- Transparency with regard to raw materials and the use of conflict materials;
- Transparency with regard to working conditions;
- Transparency with regard to software and data (privacy);
- Eliminating the use of harmful materials (in accordance with applicable legislation, such as RoHS and REACH (Dutch text)).

The focus areas were further developed into the so-called 'Fair performance ladder' (see figure 1). In addition, the project team and Metabolic produced a breakdown of the meter at material level. This once more confirmed the complexity and diffuseness of the value chains for each of the more than 200 different materials used in the meter. In total, the production chain includes over three thousand companies.



	ELEMENT	DESCRIPTION	AMBITION
1	Process		
A	Energy & Emissions	Chain emissions and energy consumption for the entire chain	Fully CO ₂ neutral and zero-energy meter chain, with minimal CO ₂ compensation
B	Resources & Raw materials	Responsible use of (renewable) raw materials, minimising waste flows, value chain as a circular process	Completely circular meter
C	Fair materials	Use of conflict-free metals and raw materials	The meter is produced without using conflict-free metals and raw materials
D	Labour	Responsible working conditions for employees in the entire chain	All chain partners provide responsible working conditions for their employees
E	Transparency	Concerns the value chain and Fair performance of each component	The status quo for each component (on transparency in the entire chain and Fair performance) is made clear by the party in question at all times
2	Product		
A	Energy consumption	Concerns the energy consumption of the meter in the course of the expected life cycle	The Fair Meter uses zero energy
B	Resources / Raw materials	Concerns the use of hazardous substances in the meter	No hazardous substances are being used in the meter
C	Software & Data	Understanding of the software, the functionality and the usage	All extra services the meter offers are optional

Figure 1: The Fair performance ladder

Together with Metabolic, the team also developed a *Resource Identification Tool model*. The tool elaborates each step of the Fair performance ladder, and includes information on what is currently known and possible regarding these aspects.



The call for tenders

Preparation

'Is this a joke?' was a common reaction from the meter suppliers, when the Fair principles were explained during a first market consultation with the grid operators, and it was revealed that this would be a substantial component of the Fair project and the call for tenders. This reaction made clear there was a challenge ahead, on the one hand to persuade the market to share the ambitions of the Fair Meter Initiative, and on the other hand to come up with the right specifications for the meter. To maximise their chances of success, the project team organised several follow-up meetings with the meter suppliers to get the Fair philosophy across.

Selection

The call for tenders (restricted, dual sourcing) applied functional specifications where possible, in particular to clearly specify the meter. In addition, the BVP methodology (Best Value Procurement) was applied where appropriate, for example with regard to the Fair aspect of the tender, using the Fair performance ladder and the Resource Identification Tool as guidelines for this process.

All public documents used in the procurement process to clarify the Fair principles are available at www.fairsmartmeter.com.

The following elements of the Fair Meter project were used as starting point for the call for tenders:

- In the award model, Fair counts for 15%, with circularity as one of the main topics.
- The Fair elements have been described in detail in the Fair performance ladder, which is used to score the bids.
- The tenderers commit to carry out a one-year pilot if they are awarded the contract.
- Where possible, the findings of the pilots will be implemented in the regular production of the smart meter.

Awarding the contract

In June 2015 the contract was awarded to the Swiss firm Landis+Gyr and the Floniskra consortium, consisting of the Slovene firm Iskraemeco and the Danish firm Flonidan.

Clarification

The contract was awarded based on commitments and ambitions. During the clarification stage, the Fair Meter project team and the two suppliers have converted all commitments into concrete agreements and KPIs, and included them in the contracts. To clearly detail the agreements for each Fair aspect and use them to manage the process, the Fair performance ladder was used as reference, together with the information the Resource Identification Tool.

The pilot topics were also agreed and developed at this stage. This was based on the bottlenecks with regard to materials and processes identified in the Resource Identification Tool. These bottlenecks were presented to the suppliers as possible pilot topics. The pilot was a best effort obligation where the suppliers were allowed to select the topics most relevant to them.

It was also agreed that Landis+Gyr would focus on circular product design, while Floniskra would focus on transparency in the production chain during the pilot. Finally, the project team and the suppliers agreed on a roadmap for continued improvement of the Fair performance in the period following the one-year pilot.

After contracting, the agreements were carried out as follows:

- The Fair project team has bi-weekly meetings with each of the suppliers, mainly about the progress of the pilots. An internal project leader was appointed for the purpose.
- In addition, the Fair Meter project team has made several work visits to factories and production sites of the meter suppliers.
- It was necessary to keep repeating 'the story' to the suppliers in order to strengthen their ownership of the Fair topics, irrespective of contractual obligations. This was useful, for example, when the Fair topics came under pressure, partly due to production issues.

The main results

A few years after procurement and implementation of the agreements, the following results can be identified:



Figure 2: Fair Meter project summary by Landis+Gyr

- The design of the meter supplied by Landis+Gyr has changed considerably. The meter contains 10% less metal and 21% less plastics. The meter is regarded as the new standard for the sector (see figure 2).
- Seven undesirable materials – some of them with a high impact on the environment – have been removed from the meter.
- There is now more transparency in the value chain.
- The Fair topic has attracted a lot of international attention within the sector. Both grid operators and suppliers have frequently discussed this topic at conferences and in various trade journals.
- Suppliers that were sceptic at first have integrated this topic in their company philosophy and feel that it contributes to being an attractive employer.

Success factors of the Fair Meter procurement process

Looking back on the procurement process and the implementation so far, some good results have been achieved. A number of success factors stand out:

- Show vision and initiative. In the first phase you must vigorously develop a convincing story. A small group of people developed the idea into a plan and generated support and ambition at management level. These are important conditions to be able to progress from an idea to implementation.
- Mobilise a professional and motivated team on the side of the contracting party.
- Make use of external expertise.
- Courage and leadership at the highest levels. A number of people in the steering group have pushed the Fair topic throughout the process and have acted as ambassadors.
- Opt for a comprehensive approach by thoroughly examining issues beforehand, consulting the market and developing solutions.
- Regularly promote the Fair philosophy at conferences and events.
- Make time, capacity and money available to invest in the topic before, during and especially after procurement.
- Suppliers that are actually willing to move on from words to deeds. Without the specific expertise and project managers from both Landis+Gyr and Floniskra, nothing would have been achieved.

Setbacks and lessons learned

Some important lessons were learned during the project that should be taken into account for similar projects in the future:

- Communicate better and more frequently with the market in the preparation stage, and schedule work visits to get a better idea of what is possible.
- Involve the legal department at an earlier stage to ensure a smooth BVP process and functional specification of Fair aspects.
- Select project members on the basis of important competences, such as the ability to bring parties together, to choose an innovative approach and to show courage and confidence, particularly if they join at a later stage.
- Do not regard the Fair topics as a separate aspect, but instead make it an integral part of your procurement by integrating these topics and the project team in the regular meetings from the start. This also applies to the contract phase, when other important aspects such as delivery time or production may potentially come under pressure.
- It remains difficult and time-consuming to inspire and activate other parties, such as industry associations (ESMIG) and contracting parties from the energy sector.
- Achieving more transparency remains a complicated and ambitious objective. Not all subcontractors are equally transparent and the chain is very dynamic, i.e. subcontractors often change. Determining the data and transfer of information requires a lot of attention as well.
- Try to get a better understanding of the effective internal support for this topic within the organisation of the supplier.
- (Informally) sharing knowledge and experience with similar change projects might have benefited the assessment of the procurement approach.

Tips

- For a (circular) procurement project that is based on functional specifications, you must start with vision and ambition. In this case, experience showed that this may lead to positive surprises that cannot be specified or enforced beforehand.
- Ensure you have support at all levels within your organisation. Focus on telling 'the why', not only before and during procurement, but also after contracting.
- Share your ambitions with the market as soon as possible. This may help to create support with potential suppliers and increases the chance of success.
- Formulate functional specifications in such a way that suppliers can use their strengths to distinguish themselves.
- Describe your comprehensive vision with regard to sustainability for this specific project.
- Include the supplier's sustainability vision in your selection process. Collaborating with a supplier that is intrinsically motivated is much more productive than working with a supplier that only wants to win the account but has no intrinsic motivation with regard to sustainability.
- Create room for the supplier to choose how he wants to turn this vision into practice. One supplier may excel at sustainability aspect X and the other at sustainability aspect Y, and sometimes suppliers can do more than you think, and sometimes less.
- After awarding the contract, sit down with the supplier and use the clarification stage to convert their commitments into detailed contractual arrangements. This ensures uniform interpretation and prevents empty promises.

