



Community flex BZO 2020

Sector Initiative

CO2 Community flex BZO initiative
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History

Version	Date	Author	Description
0.1	29-09-2015	Frits Wuts	Initial version
1.0	15-09-2016	Frits Wuts	Processed review comments M. van der Laan.
1.1	17-09-2016	Frits Wuts	Changed document title
2.0	16-04-2018	M. van Eesteren	Translate document in English
2.1	23-04-2018	M. van Eesteren	Record project progress over 2017
3.0	19-07-2019	M. van Eesteren	Record project progress over 2018
3.1	05-08-2020	P. Pershad	Record project progress over 2019
4.0	20-08-2020	P. Lamers	Final version over 2019
4.1	15-07-2021	P. Lamers	Update 2020
5.0	19-07-2021	P. Lamers	Final version over 2020

1. Introduction

Sustainable energy cannot longer be ignored. Daily we drive along wind mills and notice solar panels on roofs. Not everybody is aware a new dynamic in our energy supply arises. When it's less windy or sunny, electricity plants have to run faster, to ensure there's enough power. The other way around is if the sun is coming from behind the clouds and solar panels start producing electricity. At that time, electricity plants have to slow down their production.

Wouldn't it be great if the supply and demand of (green) energy could be better matched and shared?

Here comes the important factor flexibility in play. This is the possibility to adapt the demand and supply to the circumstances with the help of machines and installations.

This document will give a description of a sector initiative which ICT has picked up as initiator. The setup document is now for companies instead of houses like the Power Matching City initiative.

2. Participation in social initiatives

To reduce energy and CO₂ emissions in our branch and environment, we participate in various initiatives.

Besides hours, there is a budget for these social initiatives. On a yearly basis ICT Group investigates and inventories the social initiatives for CO₂ reduction in which comparable companies participate.

This inventory is discussed on a yearly basis with the ICT Group management. In the next paragraphs the project “Community flex BZO” is discussed in which ICT participates as initiator.

2.1. Project aim

The project aim of the project “Community flex BZO is as following. Demonstrate that collectively and mutually availability of flexibility in processes and installations by companies in the same geographical area, can result in a better matching of supply and demand and result an incentive for various chain partners (producer, power grid manager and user).

Sub-targets:

- Contribute to the support efforts to realize a CO₂ neutral industrial area.
- Increase the mutual solidarity between companies on the industrial area, resulting in an increase of the attraction for the area as location.
- Create the possibility for companies to create and lance new energy services.
- Create energy awareness as part of the operational excellence within companies.

Most targets were achieved successfully in 2019. However, we also gained some insights on setting the targets more focused on the goal of the projects.

Term: 2 year, start 1 January 2016. This project is expected to be completed on March 31st, 2020.

2.2. Philosophy

Starting point is, that with the increasing demand of decentral generated flexibility value is created for the involved chain partners. For a power grid manager flexibility means the power grid is not unnecessary charged and doesn't need to investments in strengthening the power grid.

For energy companies flexibility means that, based on flexible time frames, sharper tariffs and purchase contracts can be offered. In this, volume is important. In this project, experience will be gained in this regard.

For the participating companies on this industrial area flexibility is interesting, as (connection) costs can be avoided and the possibility arises for other types of purchase contracts.

In this chain, companies will help each other to get this flexibility as much as possible, which forms the community.

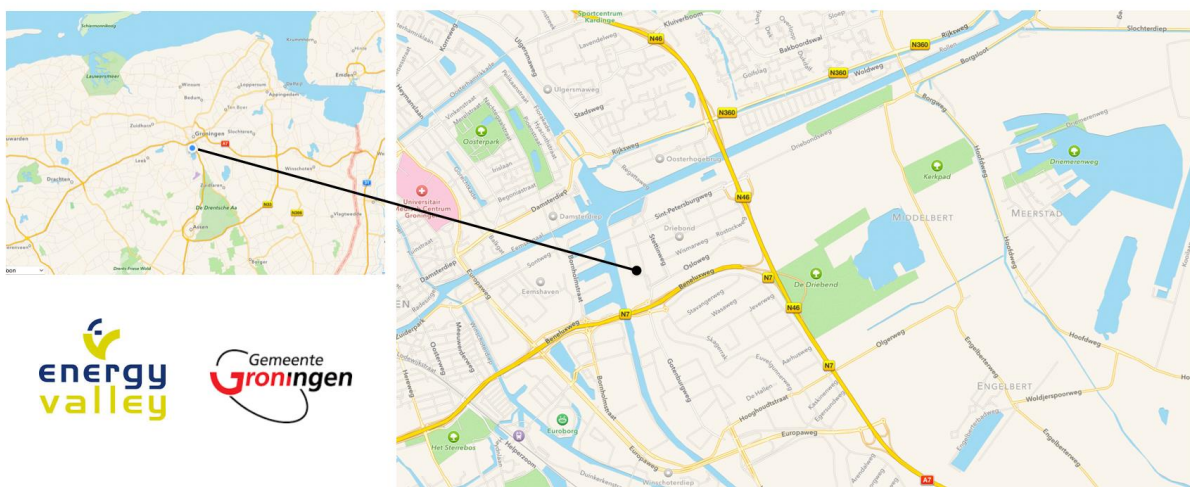
By offering – from the perspective of a company – the present and available flexibility to other participating companies in the vicinity (read: ‘Bedrijventerrein Zuid-Oost’) and to move the use of energy, with this project it is investigated which advantages and/or effects this offers in the energy chain. With respect to this, the power grid manager, energy company and his customers (the companies) are the primarily focus subject of research.

2.3. Questions

- └ What are the opportunities for flexibility?
- └ Are companies willing to make this flexibility available?
- └ If this answer is no, why not? What interests play a role and how far will they go to prefer other interests.
- └ What is the value of the flexibility (for industrial area Zuid-Oost)?
- └ Which advantages / effects has the offer of flexibility in the energy chain for the participants and their services and products?

2.4. Location

Energy Valley region > province Groningen > Municipal Groningen > Industrial Area Zuid-Oost Groningen (BZO).



3. Project

The idea is that a number of companies with flexibility, their processes and installations will be monitored. Flexibility is determined, among other things, by the present cooling- and freezing systems, batteries (electricity transport), heat pumps and/or the time-shifting activations of installations. These companies are spread on the industrial area and are behind the same 'trafostation'.

In an ICT environment the physical network is constructed. On installations of the participating companies, sensors and measurement instruments are placed which are used to read the energy consumption data. The energy consumption data is matched on a real-time basis with the available sustainable energy and aligned with the power grid capacity.

Considering the whole process – in consultation with each other – it is investigated which scenario's in the process or installations can be controlled differently, so that the balance in the power grid is improved. In this, it is investigated how companies can align their energy profile so that the desired balance in the power grid is reached. In this project the initiators (Enexis, VBZO, Energy Valley, Municipal Groningen and ICT Group) want to explore to which extent companies can cooperate with each other.

How we select the companies:

- ┌ All companies located in this industrial area can join.
- ┌ The member of the VBZO are receiving an inquiry with questions with respect to their energy consumption and flexibility.
- ┌ Based on this inquiry, 20 companies are selected with a flexibility potential -which is ranked as well- and are willing to participate.
- ┌ These 20 companies are intensively scanned on their energy consumption to get a better insight in the flexibility possibilities.
- ┌ To reduce the costs 5 companies will join in the live experiment. These companies will show the willingness that – on selected moments that from a flexibility point of view will create the most value – their processes and installations will be controlled.

To strengthen the character of the community project, the idea is that the remaining companies are actively involved in the project parallel to the live experiment. This by a continuous information supply about the progress and results of the projects. Furthermore, we consider organizing an energy scan for the remaining group of 15 companies which have a good flexibility potential.

We take into account that the willingness of the companies is an important factor to ultimately select the companies for the live experiment.

3.1. Involved participants

The key participants in BZO Community Flex are (<https://www.bzocommunityflex.nl/>):

- └ Stichting New Energy Coalition (previously: Stichting Energy Valley (SEV))
- └ Enexis Netbeheer B.V.
- └ Eneco Zakelijk B.V.
- └ ENGIE Services Nederland B.V.
- └ Jules Energy B.V. (and PetaWatts B.V.)
- └ Gemeente Groningen
- └ Technische Universiteit Eindhoven (TU/e)
- └ Bedrijvenvereniging Zuidoost (previously: Vereniging Bedrijvenpark Zuid Oost or VBZO)
- └ ICT Group N.V.

The project partners of ICT in this project are:

- └ Makro
- └ UMCG/Lifelines
- └ Bidfood,
- └ Noorderpoort college,
- └ Gemeente Groningen,
- └ Victron Energy
- └ Bossers & Cnossen

3.2. Planning August / September 2015-2019

Item	Who
Define technological parameters	SEV, Enexis, ICT
Provisional budget	SEV, Enexis, Groningen, VBZO, ICT
Feedback intermediate position	SEV
Define work packages, issues	ICT, Enexis, Main Energy
Budget and cost allocation	SEV, Enexis, Groningen, VBZO, ICT
Writing subsidy request	SEV, all
Cooperation agreement	All
Start project (1 January 2016)	All

3.3. Project phases (global)

Q4-2015:	Arrange project
Q1+Q2 - 2016:	Inquiries, company energy scans
Q2+Q3 - 2016:	Arrange steering (connections, IT, algorithms)
Q4 2016:	Start measurement campaign
Q3 2017:	End measurement campaign, analysis

Q4 2017: Finishing analysis, reporting and completion of analyse, reporting, sharing/spreading information.
 2018: The energy monitoring started
 2019 – end of project: Control phase

3.4. Budget (global)

There is global budget from ICT Group N.V. of EUR 400,000.

3.5. Scoping choices

Aspect	Choice	Motivation
Only flexibility related to electricity consumption or also gas or heating?	Only electricity	No heating network in the area, primary energy consumption is electricity, E-flex is developed the furthest.
Local area or broader area	Hell BZO	Larger target group, more diversity in companies. Disadvantage: They are not in the same region of the power grid.
Actual steering or only investigating	Actual steering	Only then participants will experience how this component will fit in their company processes.
Actual calculations or only showing the values	Showing the values	Actual calculations require that participants will have to close a new energy contract. This could increase the barrier to participate.
Measure the impact on the physical power grid	Only virtual	Using the physical power grid means that all participants must be located in a certain area and the group must have a certain size to significantly influence that part of the power grid. This will increase the barrier for participants. By participating in the virtual power grid, the power grid owner is able to sufficiently conclude which value the flexibility offers the power grid so related investments do not have to be made.

Aspect	Choice	Motivation
Include energy efficiency of the companies in the investigation?	No	During the energy scan, the reduction measured will be communicated. An additional reduction target will blur the main project target.
Include energy self-sufficiency?	No	Also this will blur the main target of the project, although participants will get more insight in their energy consumption. This could form a basis on which participants together will think about their energy supply.
Length of the physical experiment.	1 year	To take all seasonal effects into account.

3.6. Communication

Most important communication will go via the ZO-bright community <http://zobright.nl/> (offline), which is made especially for this project, but will ultimately have a broader scope. Other communication is limited. The project was mentioned in the local newspaper, referring to <https://www.bzocommunityflex.nl/project.html>.

4. Progress project

4.1. Progress project in 2017

The start of the BZO community project is delayed. This is due to the fact that the project partner 'Eneco' has decided to step out the project in August 2017. The reason Eneco has abandoned the project is due to market developments that do not sufficiently recognize the value of flexibility in the small and medium entities segment. This has not contributed to the commitment.

Another project partner has tried to find a new partner who would be able to replace Eneco. With both ENGIE Energie Nederland B.V. and ENGIE Global Energy Market B.V. intensive meetings took place however, afterwards both parties have decided not to join the project.

Based on the above developments, project partners concluded that the large energy companies consider the flex potential of the industrial area would not be sufficient (from a financial point of view). That is why the project partners decided to search for a new smaller energy company which would be able to replace 'Eneco'. Therefore, meetings with Jules Energy are setup. If Jules Energy or another smaller energy company will not join the project, a new situation will exist in which an important aim, assign financial value to energy flexibility is (too) difficult to reach.

4.2. Progress project in 2018

The progress of the project during 2018 is good. Building of the software is almost ready, and the measurement of the energy data has already started. The portfolio steered in this project contains electric vehicles, electric forklift trucks and a freezer room and use the flexibility within the local energy network to support the balance of the national energy network. In an energy system with the generation of sustainable energy, balancing capacity is necessary to keep a stable energy network. Currently, this stabilization is mainly performed with fossil power plants. As more balanced capacity is available from fossil power plants, the need to use traditional power plants is decreasing.

In the meantime, interim reports are published by both Technical University Eindhoven and ICT Automatisering Nederland B.V. Also, the flexibility of heat pumps of two education buildings is measured in the meantime.



The energy measurement campaign is currently ongoing until the end of this year. After the measurement campaign the end report will be made.

Wasaweg Energieneutraal

On June 21st 2018, a kick-off was being held for project “Wasaweg Energieneutraal”. Marking the official start of the large-scale energy innovation project. Wasaweg is part of Industrial Area Zuid-Oost Groningen (BZO). Thirty companies located on Wasaweg will participate in this project.

See also: <https://ict.eu/2018/wasaweg-energieneutraal-massaal-slim-energie-uitwisselen/> (Dutch only).

4.3. Progress project in 2019

The full energy monitoring of the operational part took place in 2018. In 2019 the energy data was checked and controlled. Some of that was seasonal and some of it was done throughout the year. By controlling seasonal data, it was possible to measure and quantify the effect of controlling the data. A report will be written including the results.

4.4. Progress project in 2020

In 2020 the project came to an end the results and conclusions were summarized in report “Project ‘BZO Community-flex’ (dutch) in December 2020.

See: <https://ict.eu/wp-content/uploads/2020/12/Populaire-samenvatting-rapportage-BZO-Community-flex.pdf>

Also a video recording was produced which is available on YouTube:



This video is spoken in Dutch

See <https://www.youtube.com/watch?v=YczYncXRWeA>

Appendix A: CO₂-reduction target

Although reducing CO₂ emission is not the primary target of this initiative, we will try to obtain an indication what the possibilities are as soon as this initiative is in execution. Further information will be added as soon as this known.

A.1 Reduction targets

One of the targets of this industrial area is to be CO₂ neutral.

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