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measures in the European renovation market
(NeZeR)**

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Action Plan for the City of Amersfoort

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PREFACE

This City Action Plan describes the organization, implementation and execution of the process for Near Zero Energy Building renovations in Amersfoort. In the previous years, the targets were more on the level of Moderate and Deep Renovations. The last two year, we focus mainly on Near Zero Energy Building renovation.

However, this is not a blueprint. Every city and every country has his own dynamics, opportunities and (legal) preconditions. The process described in this plan is one way to do it. It can help to get ideas about what is needed to start up and which stakeholders can have a considerable contribution. But we would like to emphasize the importance of following your own dynamics. Where is a drive already at hand? How can you make smart combinations? Who has an interest in joining the project? How can you make other parties more interested? Which funds are available? Ask yourself these questions and feel free to set up the project in a way you think is the best.

1 BACKGROUND

1.1 The development of Amersfoort

Amersfoort is a city of more than 750 years old, located in the center of the Netherlands. It started as a small settlement on the banks of the river the Eem. In 1259 it became an official city with its own administration. The city was protected against invaders by a stone wall. Parts of this wall are still present in de city center. The historical view in the center and neighborhood Bergkwartier are protected by law. This leads to limitations to refurbishment of buildings and the use of solar panels in these areas. Also monumental buildings know special regulations for maintenance and refurbishment.

In 1980 the national government announced Amersfoort as growth city. This included at least 15.000 new houses. As a result the neighborhoods Kattenbroek and Nieuwland were built. Kattenbroek is characteristic because of its special architecture. Nieuwland is a sustainable neighborhood with 1 MW solar panels on the roofs of houses, schools and other public buildings.

Nowadays Amersfoort has a population of 160.000 inhabitants.

Looking to the present, Amersfoort is known as a lively city, with a strong social-economic position. The population is relatively young and well educated. Because of the natural surroundings and the safety it is convenient to live in.

1.2 Characteristics of dwellings and households

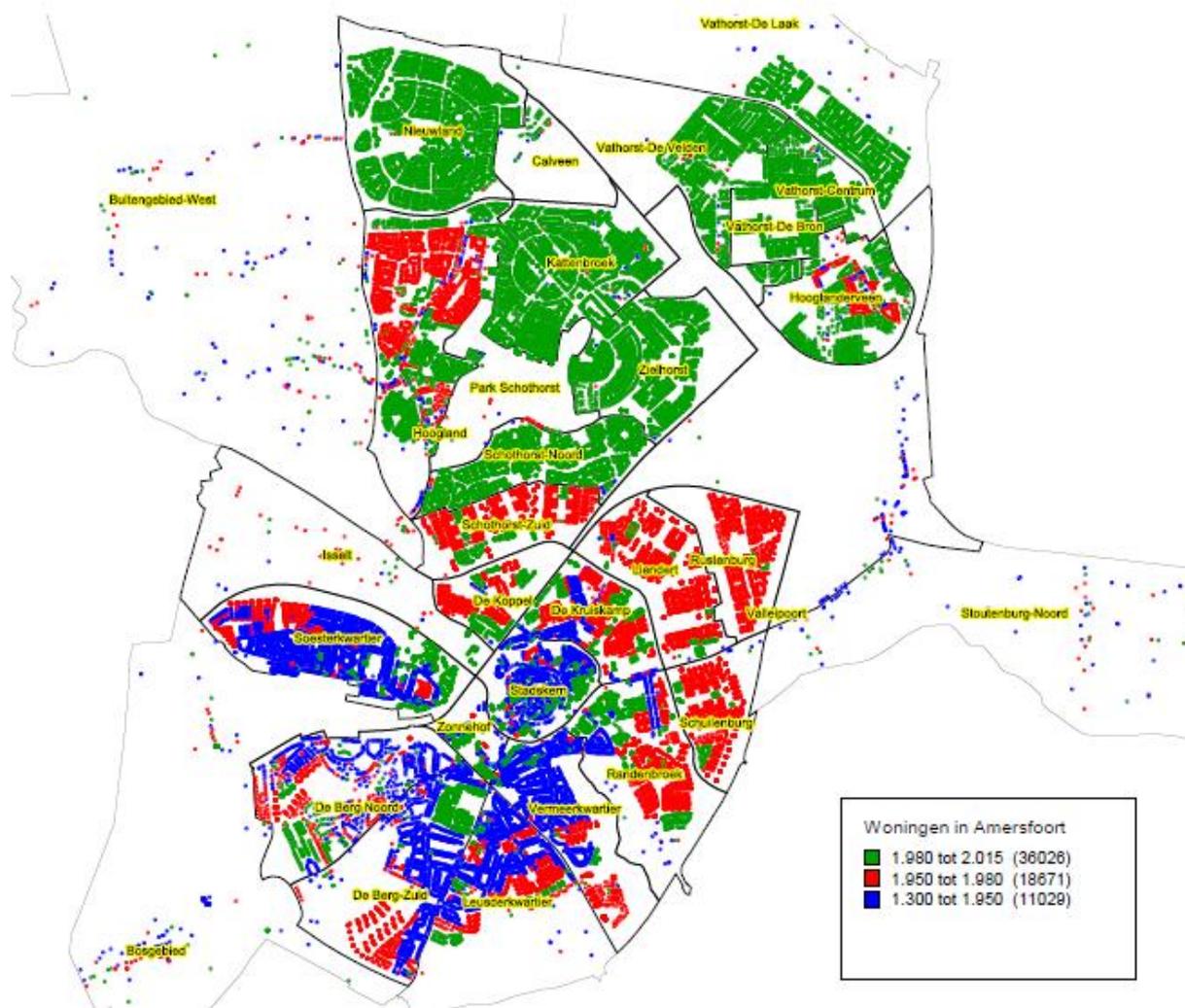
The table below shows the percentage of dwellings built over the years

Table 1: Year of built of dwellings in Amersfoort

Year of built	Percentage of total dwellings
<1945	16
1945-1960	9
1960-1980	19
1980-2000	37
2000- now	19

During the last ten years the total amount of households increased from 56.000 in 2005 to almost 65.000 in 2015. 58% of these households live in private owned houses, 31% in social rental houses and 11 % live in other rental houses.

66% of the households live in one-family houses and 34% in multifamily buildings. Almost two third of all households exist of 1 or 2 person.



1.3 Energy performance

The average energy label of domestic houses in Amersfoort is D. In the city center the average label is D. In some older neighborhoods the label is F or G.

Appendix 1 shows the average energy label per neighborhood or district. We calculated the energy labels on basis of year of built and typology of the dwellings.

Data of the energy network companies gives us information about the energy consumption of households and businesses per postal code zone. This data is provided by the website

'Energie in Beeld'. Appendix 2 shows a print out of this website. This data helps us to make a selection of buildings and neighborhoods to focus on in the energy saving campaign.

The energy consumption of the houses built between 1950 and 1980 is relatively high. These houses were built with poor insulation and a low energy performance. With near zero energy renovation we focus mainly on these houses. In total around 18.000 houses.

1.4 Energy saving approach

The municipality has an ambition to be a sustainable city. And we are not alone in this ambition. Also inhabitants, social housing companies, businesses and other organizations in our city join us. Sometimes they even have higher ambitions than we have. All these parties work together for a sustainable future of Amersfoort. One of our main topics in our sustainability program is the reduction of CO₂-emission. The aim is to have zero CO₂-emission in 2030. To reach this target it is most important to reduce the energy use in the built environment. More than half of the CO₂-emission is related to houses and other buildings.

An investigation in 2012 showed a high willingness of the inhabitants of Amersfoort to take measures for energy saving in their homes. Almost 70% of is prepared to invest in insulation measures or solar panels. Financial shortcomings are an important reason why they have not done it yet. Financial arrangement as loans or subsidies will increase the number of people taking action. Most people are also positive about a joint action with the neighborhood. When neighbors are taking action for energetic refurbishment it will be easier for others to join. For this Amersfoort decided to introduce the 'street ambassadors'. They give information on energy saving measures to the people living in the same street or neighborhood.

In 2010 the municipality started the campaign 'Energy saving in your neighborhood'. This campaign focused on improvement of the energy label with two steps or at least label B. In 2014 we raised increased the ambition to 'energy neutral'.

Table 1: Energy labels per neighborhood

WUJKNAAM	WUJKCODE	WUJK_ACRO	A+	A	B	C	D	E	F	G	totaal aantal woningen	EI,gem	Label
Stadskern	1	STD	-	82	420	954	62	478	28	700	2.724	2,00	D
Zonnehof	2	ZON	-	206	94	199	-	89	17	44	649	1,52	C
Soesterkwartier	3	SOE	-	226	433	278	9	416	99	3.377	4.838	2,62	F
Isselt	4	ISS	-	1	3	4	4	10	7	4	33	2,14	E
Bosgebied	5	BOS	-	-	4	63	1	5	12	44	129	2,15	E
De Koppel	6	KOP	-	81	333	62	1	311	19	397	1.204	2,11	D
De Kruiskamp	7	KRU	-	494	172	123	30	836	65	879	2.599	2,18	E
Schothorst Zuid	8	SHZ	-	-	284	333	110	1.444	5	1	2.177	1,97	D
Schothorst Noord	9	SHN	-	-	141	1.286	1.777	1	4	8	3.217	1,60	D
Liendert	10	LIE	-	-	175	59	2	2.803	29	229	3.297	2,28	E
Rustenburg	11	RUS	-	-	-	521	801	-	-	-	1.322	1,61	D
Stoutenburg Noord	12	STO	-	3	8	1	4	7	9	53	85	2,67	F
Schuilenburg	13	SLB	-	22	86	59	20	1.738	17	3	1.945	2,20	E
Randenbroek	14	RAN	-	8	270	600	266	1.425	205	596	3.370	2,18	E
Vermeerkwartier	15	VER	-	1	131	426	25	515	402	1.071	2.571	2,51	E
Leusderkwartier	16	LEU	-	-	121	262	21	473	367	1.262	2.506	2,63	F
De Berg Zuid	17	BGZ	-	9	11	596	197	507	478	937	2.735	2,43	E
De Berg Noord	18	BGN	-	2	177	105	31	204	427	363	1.309	2,42	E
Hoogland	19	HOO	-	49	472	1.106	824	1.183	134	283	4.051	1,85	D
Zielhorst	20	ZIE	-	2	161	1.436	1.697	2	1	1	3.300	1,58	C
Kattenbroek	21	KAT	-	1	1.541	2.052	949	-	2	12	4.557	1,40	C
Calveen	22	CAL	-	1	33	2	-	-	2	6	44	1,56	C
Park Schothorst	23	PKS	-	-	7	1	-	4	12	4	28	2,30	E
Nieuwland	24	NIE	-	126	2.349	3.056	4	-	1	1	5.537	1,26	C
Valleipoort	25	VAL	-	-	1	-	-	5	21	48	75	2,87	G
Hooglanderveen	26	HGV	-	602	161	161	78	141	62	86	1.291	1,43	C
Buitengeb. West	27	WES	-	6	20	9	12	9	27	82	165	2,53	E
Vathorst-De Velden	28	VVE	-	741	551	863	2	-	4	5	2.166	1,16	B
Vathorst-Centrum	29	VCE	-	376	345	405	1	-	-	6	1.133	1,16	B
Vathorst-De Bron	30	VBR	-	146	-	-	-	-	-	-	146	0,90	A
Vathorst-De Laak	31	VLA	-	1.359	126	282	-	-	2	21	1.790	1,02	A
Totaal			-	4.544	8.630	15.304	6.928	12.606	2.458	10.523	60.993	1,90	D

2 CONDITIONS

2.1 Introduction

The decision to focus on energy saving in the existing building stock is mainly based on environmental policies. We know that an almost 40% of the CO₂-emissions is related to households. In the energy saving campaign we included private owned houses as well as (social) rental houses. In 2008 we made the first agreements with the social housing companies. The target was to decrease the CO₂-emission of the existing housing stock with 2% yearly. In 2010 we started with an energy saving campaign for private house owners. The first target was to renovate 600 houses in 2 years with a minimum of an improvement of the energy label with 2 classes. This can be compared with a deep renovation. In 2012 this target increased to 2000 houses. In 2013 the municipality wanted to increase the ambition for renovation of houses to a level of zero energy.

2.2 Ownership

Of the 65.000 households in Amersfoort, 58% live in private owned houses, 31% in social rental houses and 11 % in other rental houses. The social rental houses are owned by the housing companies De Alliantie (13.000 dwellings), Portaal Eemland (5.500 dwellings) and Omnia Wonen (800 dwellings). The other rental houses are owned by real estate investors and others. The social housing companies play an important role in the process of energy efficient renovations. The municipality is not in charges of these housing companies but makes performance agreements with them on subjects as availability and sustainability. The tenants are the third party in these performance agreements.

66% of the households live in one-family houses and 34% in multifamily buildings. Almost two third of all households exist of 1 or 2 person.

Approximately 15% of the households are part of an association of owners. This equals with around 10.000 households.

The different types of ownership request a different approach. For this we started with two strategies.

1. Covenant with the housing companies on targets for sustainability (includes 20.000 dwellings)
2. Campaign Energy Saving in your neighborhood (around 37.000 private dwellings)

The second one resulted in a partnership with a consortium of building and installation companies, a bank and a university. This consortium has a broad scope. They developed a special approach for different target groups such as associations of owners

One of the requirements for the consortium was to create a one stop shop.

2.3 Regulations

National regulations

Private house owners do not have a legal incentive to make their homes more energy efficient. But if they sell their house they need to have an energy certificate. Until now this certificate has not much impact on the value of houses for sale. However, there is a trend that buyers are more aware of the energy performance.

When performing a refurbishment the regulations of the national Building Code is applicable. The house owner of the building company has to apply for an environmental permit from the municipality. The building permit is part of it.

Aedes is the national branch organization of housing companies. Aedes has agreed on an average energy label B in 2021. The housing companies in Amersfoort have renovation programs based on this strategy. The municipality made covenant agreements to increase the ambition on sustainability. The new Housing Law gives the municipality more power to ask more transparency of the housing companies. This makes it a bit easier to make better agreements.

The national organization Platform31 introduced the concept of Nul-op-de-Meter renovation (NOM) (zero on the meter). The concept is based on a business model in which the diminishing of energy costs in the future is used for as an investment for the refurbishment.

In the Stroomversnelling housing companies are searching for business cases to renovate to NOM with the same budget as for the label B program.

The law on Flora and fauna is a national regulation to protect endangered species. In the caves of buildings bats and swifts are nestling. With energy efficient renovations these nestling places disappear. Therefore it is forbidden to carry out these renovations without making an inventory of these nestling spaces. This however is often too expensive for a private house owner. The building companies don't want to take the risk of a penalty. Including new nestling spaces in the renovation concepts can be a solution.

Regulations on city level

In 2013 the municipality signed a letter of intent with stakeholders to fix the ambition for zero energy renovation. The housing companies Alliantie, Portaal and Omnia Wonen signed as well as consortium 033Energie. This consortium of building companies is active in the energy saving of private owned houses. They agreed on 2000 zero energy refurbished houses in 2020. Also nine schoolboards signed the intention to renovation at least one school building to energy zero.

Alliantie, Portaal and Omnia Wonen joined the local 'Hoogspringers' program to investigate the possibilities for their real estate property.

Building permit

To issue a building permit the municipality checks if the refurbishment fits within the regulations of the zoning plan and the code regarding external appearance of buildings. For a single NOM renovation this is often not the case. If the municipality wants to facilitate NOM-renovations the regulations have to be changed or exemptions of the regulations have to be made possible. Different interests of several fields within the organization of the municipality play a role in this process. It is important to involve your colleagues of these fields in an early stage of the project. They need time to make it their own and act in a collaborating way.

2.4 Financial conditions

The municipality set up a revolving fund of €290.000 to give loans to private house owners for energy saving measurements. The loan was meant for owners with a low income and no saving money at hand. This loan has a much lower interest than loans from a commercial bank. The idea is that the amount of money saved by a lower energy bill equals the monthly payment for the loan. In this way the monthly costs remain the same.

In the beginning of the project subsidy was available from the national and provincial government. After three years this subsidy was discontinued.

3 TARGET GROUP

The focus on making houses less energy consuming was initiated by our climate change policy. In 2008 the municipality decided to set the target on zero CO₂-emissions for 2030. But we also wanted to keep the energy costs affordable for all residents. People with a low income often live in houses with a poor energy performance and therefore a high energy bill. But also people with a higher income can get in trouble when energy prices increase. Our end of line target group can actually be defined as 'all residents of Amersfoort.' But how can we reach them?

Another additional benefit of energy efficient renovation on a large scale is the economic benefit. It will bring more employment for building and installation companies.

3.1. Social Housing Companies

The three social housing companies in Amersfoort own in total 20.000 dwellings. The housing companies are responsible for the maintenance and renovation of their buildings. The energy costs are paid by the tenants. If the housing companies invest in energy efficient renovations they will (slightly) increase the rent. The housing company needs the approval of 70% of the tenants living in the block before they can start with a renovation. For the municipality the housing company is the main target group. We annually agree on a certain performance of the housing companies. But also the tenants are participating in the performance agreements.

3.2 Other rental houses

Rental houses other than those of the housing companies amount 7.000 dwellings. This is a difficult target group to approach because it exists of a lot of different individuals, companies and other institutions. We do not have a specific approach for this target group.

3.3 Private owners

The total amount of dwellings owned by private owners is 36.000. This is the biggest target group. The consortium 033Energy is inviting this target group with a special marketing strategy. The Centre of Sustainable Renovation is playing an important role in this approach. In this Centre house owners can get customized advice. In the previous years 033Energy also organized meetings with residents in their neighborhood.

3.4 Building companies and other organisations involved

For the municipality the building companies and other organizations involved in the energy efficient renovations are a target group. In 2010 we invited regional building and installation companies, energy suppliers and a local bank to set up the energy saving campaign in Amersfoort. Later on some energy advisers and the local university joined. They created the consortium 033Energy. The first years the municipality invested a substantial amount of money in the campaign. After two years the consortium was able to run the campaign independent of financial support of the municipality.

3.5 Associations of owners

Associations of owners can exist of only private owners or mixed with assets of social housing companies. These associations are an interesting target group because they can have impact. However, the decision making is often a long process. In the general meeting more than 70% of the members has to agree.

3.6 Monumental houses

Around 500 houses in the center are built before 1900. A certain amount of them has the status of monument. This means that there are special regulations for renovations measures. It needs a customized renovation plan which is often more expensive than a 'normal' renovation. We advise owners and builders to develop the renovation plan in consultation with the person within the municipality who is dealing with these regulations. Although this is a small target group, we find it important to include them because they often have very high energy consumption and willing to improve it.

Target groups	Range (amount of dwellings)	Influence of municipality	Impact
Social housing companies	20.000	high	high
Building and installation companies, energy company and others	65.000 (whole city)	medium	high
Private owners	36.000	low	High
- monumental houses	<500		Low
Tenants	27.000	low	medium
Associations of owners	10.000	low	high

4 OBJECTIVES

The overall target of the municipality is to achieve a city with zero CO₂-emission in 2030. This is a very high ambition which can only be reached if all inhabitants and organizations participate and take responsibility. The municipality has hardly any legal force to achieve this. The focus is therefor on stimulation and collaboration. The built environment is the main topic in the zero CO₂ ambition. In the communication the municipality emphasizes the importance of energy saving measurements for houses and other buildings. With specific stakeholders we set up covenants and letter of intents. These stakeholders are motivated to contribute to the ambitions for a CO₂-neutral city. The targets are set up in good agreement. In the following paragraphs the objective for social and private houses are described. In the last paragraph the level of ambition is elaborated. The lessons learned in this process are highlighted in the blue blocks.

4.1 Social housing companies

In 2008 we set up a project group with advisors of the social housing companies and the municipality and a consulting company. We discussed the targets on sustainability for the building stock of the housing companies. The municipality wanted the housing companies to dedicate themselves on a CO₂-reduction of 4% on a yearly basis. However, the housing companies considered this as not achievable. Per year they renovate approximately 300 dwelling to label B. With a label B renovation a CO₂-reduction of 40 to 60% per renovation project can be reached (deep renovations). For the total stock the CO₂-reduction will be around 2%. A higher ambition did not fit within the financial capacity of the housing companies. This was also agreed on in the city council and the board. The target of 2% CO₂-reduction per year was embedded in a covenant for 4 years, 2008-2012. Both housing companies and municipality appreciated the agreement.

Decide on achievable targets in good agreement with stakeholders

We monitor the CO₂-reduction every year and communicate this to tenants, city council and other stakeholders. The first four years the achieved reduction was even higher than the target level. This was partly due to the selling of some of the older dwellings. For the period 20012-2018 we decided to keep the target the same, but to exclude the selling effect.

Give a clear definition of the boundaries of the target

In 2013 we signed a letter of intent with the housing companies to renovate 1000 dwellings to NOM (zero-at-the-meter) before the year 2020. NOM can be compared with a near zero energy renovation. A good business case was one of the major conditions. During the process two of the three housing companies decided that the concept was not suitable for their housing stock because the energy performance of most of the stock was already good (label C or higher). One of the housing companies did a lot of research with support of the national Hoogspringers program. They prepared a pilot with 10 dwellings but after extended

calculations, decided that the investment for NOM was too high compared to label A. So although the ambition of NOM was not reached, the energy renovation level became higher than they used to do (label B).

4.2 Private houses

In 2010 we had no idea of an achievable target for private owned houses. Results of campaigns in other municipalities showed an effectiveness of 1 of 2 %. This means that only 1 or 2% of the approached house owners was really implementing energy saving measures. We decided to set the target on 600 dwellings within the whole city. This is 4% of target group (dwellings with energy label D or lower). After 5 years this target is exceeded by far. In total 3000 dwellings are renovated with two label steps or to label B.

In 2013 we signed a letter of intent with the building companies of 033Energy to renovate 1000 private houses to Zero-at-the-Meter (NOM) before 2020.

4.3 Level of ambition

Until 2012 the energy performance level by renovation was set on label B. In 2012 we started a community of practice with 20 house owners to investigate the possibility of renovation to zero energy. We were surprised by the enthusiasm of the house owners. At the same time the national project Stroomversnelling started with 6 housing companies and 4 big building companies to investigate the business case for NOM by setting a target on 10.000 NOM renovations. The costs are still too high for regular implementation. But by renovating more houses and industrialization the costs can be reduced.

For us in Amersfoort there is a reason to increase our ambition to zero energy renovations. We signed a letter of intent with the housing companies and 033Energy. They agreed on 2000 Zero-at-the-meter houses in 2020.

The major target for the years between 2020 to 2030 is to make all renovation zero-at-the-meter.

You can increase your ambition even if the business case is still in an experimental phase

5 STRATEGY

Time schedule									
Stakeholder	Target	2008	2010	2012	2014	2016	2017	2020	2030
Social housing companies	Target yearly 2% CO2-reduction in total stock	First covenant		Second covenant, also target for 1000 zero at the meter renovations before 2020		Targets for energy neutral renovation in yearly Performance Agreements		1000 zero at the meter renovations	All renovations zero at the meter
Building and installation companies	To advise customers on sustainable measurements To offer zero-energy renovation concepts.		Training	Building up a consortium	Centre of Sustainable Renovation, Consult for private house owners	Renovation concepts available for 6 most common housing types Roll out marketing strategy	Renovation concepts for most housing types available. 250 zero at the meter renovations	1000 zero at the meter renovations	All renovations zero at the meter
Tenants	Awareness. Information. Being able to make good decisions			Involved in covenant. Representatives as signing partners		Full partner in Performance Agreements	All tenants	All tenants want to live in a zero at the meter home	
Private house owners	Zero energy houses			Community of Practice of 20 house owners		5 house owners made near zero renovation			