2nd Performance Report of Elected Dutch Municipalities of BNG Bank Sustainability Bond of November 2018

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Executive summary

November 26, 2018, BNG Bank launched its fifth Sustainability Bond, a new EUR 750 million | 0.5%, 7-year benchmark. The Framework document for the BNG Bank Sustainability Bond 2018 was provided to BNG Bank by Telos -Tilburg University- on 4 October 2018, describing the selection process of best-in-class Dutch municipalities eligible for the bond. The same selection of sustainable best-in-class municipalities was used to issue another sustainability bond in 2019. This resulted in an AUD 400 million | 1.9% sustainability bond which is also due November 2025.

An important quality indicator of the bond is the 'Use of proceeds reporting (UPR)'. BNG Bank intends to include in the UPR a yearly impact report, during the period 2019–2025, based on updated data for the sustainability scores of all Dutch municipalities. The update will give insight in the changes in sustainability scores of the group of 117 Elected Municipalities compared to the total group of 355 municipalities of the Netherlands. BNG Bank asked Telos -Tilburg University- to provide the yearly impact reports for this bond, based on its yearly National Monitor Sustainable Municipalities. This performance report is the second impact report of the 2018 Sustainability Bonds, covering the years 2018-2020.

The Elected Municipalities continued to outperform the total group of municipalities with 2.24 percentage points (53.49 vs 51.25), as listed in table 1. Both groups of municipalities show an improvement of the overall score with 1.17-1.20 percentage points. Largest improvements occurred this year for the economic capital (2.33/2.61 percentage points), while those for the ecological and socio-cultural capital were relatively small (0.50/0.59 and 0.68/0.39 percentage points).

Table 1. Sustainability scores of 117 elected municipalities and of the total group of 355 Dutch municipalities in 2020 compared to 2018

Sustainability capital	Elected 2018	Total 2018	Elected 2020	Total 2020	Elected: Difference 2018-2020	Total: Difference 2018-2020
Total	52.32	50.05	53.49	51.25	1.17	1.20
Socio-cultural	52.37	49.68	52.87	50.27	0.50	0.59
Ecological	52.94	51.11	53.63	51.50	0.68	0.39
Economic	51.64	49.36	53.97	51.97	2.33	2.61

The analysis shows that more then 90% of Elected Municipalities realized past year a the same or an improved total sustainability score. Little less than half of the Elected Municipalities reduced or stabilized their CO2-emissions. A closer look at the CO2 reductions shows that the group of Elected Municipalities did not realize a reduction in CO2 emissions over de last year. The CO2 emissions of the elected group increased with 1.08%, while the other municipalities realized a reduction of 2.88% from 2017-2018.

Scores of municipalities are rather dynamic from year to year, although major differences and advantages among municipalities are of a structural nature. In the reporting period Elected Municipalities Woudenberg, Oldenzaal, Apeldoorn and Voerendaal were able to improve their total sustainability score most, with 2.6 to 3.8 percentage points. The largest reduction in sustainability score among Elected Municipalities was detected in Koggenland, Amsterdam, Waterland and Leiden, with -1.1 to -1.4 percentage points.

The performance of several sustainable development goals improved substantially (Goals 1, 4, 6, 7, 8, 9, 10, 12 and 16), but other showed a small fallback (Goals 3, 11, and 15). The performance of the group of elected municipalities deviates for some goals from the total group of municipalities. The elected municipalities still outperform the total group in 13 out of the 14 measured goals, but the differences become smaller for some goals. Only for goal 13 (Climate action) the total group performs better than the elected group, as was the case in 2018 and 2019. The total group shows a higher improvement on goals 4 (Quality education), 8 (Decent work and economic growth) and 10 (Reduced inequalities) than the elected municipalities.

Table of Contents

1 Introduction

At the request of BNG Bank, Telos -Tilburg University, has provided on 4 October 2018 a Framework document to BNG Bank[1] that describes the sustainability criteria and selection process of best-in-class Dutch municipalities eligible for a BNG Bank Sustainability Bond 2018. Telos developed this framework based on its National Monitor of Sustainable Municipalities 2018, from which the 5th edition was presented in October 2018. The National Monitor of Sustainable Municipalities was produced for the first time in 2014 on behalf of the Dutch Ministry for Infrastructure and Environment.

November 26, 2018, BNG Bank launched its fifth Sustainability Bond, a new EUR 750 million, 7-year benchmark[2]. Additionally, a second AUD 400 million, 7-year bond was issued based on the same selection of sustainable municipalities in 2018. Both bonds are due November 26th 2025.

An important quality indicator of these bonds is the 'Use of proceeds reporting (UPR)'. BNG Bank intends to include in the UPR a yearly impact report, during the period 2019 – 2025, based on updated data for the sustainability scores of all the 355 Dutch municipalities. The update will give insight in the changes in sustainability scores of the group of 117 Elected Municipalities. Besides this impact report, other aspects are relevant for UPR, such as types of investment projects, governance aspects in relation to the sustainability performance of municipalities, etc. These other aspects are not included in this assessment by Telos, because such data are not yet available in sufficient detail.

BNG Bank has asked Telos to provide the yearly updating of the database over the years 2019-2025 and report on the annual changes in scores of the Elected Municipalities. This is the second report on the 2018 bonds, covering the period 2018-2020. It describes how the performance is assessed, the general outcome of the comparison over the years 2018-2020, including the impact on CO2-emissions. Additionally, this reports gives insights in the development of the elected municipalities on the UN Sustainable Development Goals (SDGs).

[1] https://www.bngbank.com/Documents/Investors/Sustainability%20Framework%202018.pdf

[2] https://www.bngbank.com/funding/sustainability-bond

2 Description of activities

2.1 Update of database

The main activity to be able to produce an impact report for 2020 on the municipalities elected for the BNG Bank sustainable municipalities bond of 2018 was to update the database for the sustainability assessment of Dutch municipalities used in the National Monitor Sustainable Municipalities 2018. The monitor is basically designed on the basis of the UN and EU concept of sustainable development, which implies that three dimensions of development are considered of equal importance: economic, socio-cultural and ecological. Each of these three 'capitals' are subdivided into themes, called 'stocks', which are operationalized by measuring 'indicators'. Indicator values are assessed against sustainability goals, as described in more detail in the National Monitor report. These sustainability goals have been designed independently from the later agreed UN Sustainable Development Goals (SDGs) or Global Goals in 2015. A detailed analysis of the comparability and differences by Telos, as described in the National Monitor of 2017[3], has shown that these goals have a wide similarity.

The United Nations SDGs include a set of 17 Global Goals that cover, more categorized from a policy than from a scientific point of view, urgent tasks to be addressed by national governments, local authorities and private actors. A detailed analysis of the differences and overlaps between the triple P approach, used in this framework, and the 17 Goals of the SDGs shows that a large part of the indicators are the same but for some goals clear differences occur. Goal 14 on seas and oceans is for example not included because this is not relevant for municipalities. Governance issues, as implemented by partnerships, have explicitly not yet been included in the triple P approach, amongst others because of the different nature of this domain and because comparable data are difficult to collect. The basic structure of the triple P model will be kept as leading in this impact report, as it better represents a structure that can be founded and explored scientifically. Like in the 2018 framework report, the relevant indicators will also be used to assess the progress on the SDGs for the municipalities.

The updating activities include:

1. Motivation of new sustainability stocks, indicators and goals for indicators to meet new scientific insights and practical developments.
2. Generating most recent data for the indicators used in the National Monitor Sustainable Municipalities from open public sources or by acquiring them.

[3] Bastiaan Zoeteman, John Dagevos, Rens Mulder, Corné Wentink, Naomi Hoven, Christien Visser, 2017, Nationale Monitor Duurzame Gemeenten 2017, Document number 17.170, Telos, Tilburg University, 29 September; http://www.telos.nl/publicaties/publicatiesrapporten/default.aspx#folder=894859

3. Harmonization with national monitoring activities by third parties on theme specific issues such as climate, mobility, health, etc.
4. Adjustment to the outcome of municipality rearrangements, which are continuously resulting in larger municipalities and a lower total number of municipalities.

The National Monitor Sustainable Municipalities 2018 discerned 14 city types. These 14 types have been used for the Framework of the BNG Bank Sustainability Bond of 2018 and are the basis for the performance report at hand.

2.2 Assessment of performance of Elected Sustainable Municipalities

Based on the updated Database, sustainability performance of 117 Elected Municipalities in 2018 will be evaluated and discussed. The group of Elected Municipalities, described in the Framework of the BNG Bank Sustainability Bond of October 2018, has been selected by identifying the 15 best scoring municipalities for each of 14 types of cities, such as 'agricultural', 'old industrial', 'shrinking', etc. municipalities. The 125 Elected Municipalities have been selected out of the total number of 380 municipalities in the Netherlands in 2018. Since 2018, the number of municipalities is decreasing due to rearrangements among the municipalities. In 2020 there are only 355 municipalities. This influenced the selection of 125 municipalities for the bond of 2018 as well. The municipalities of Nuth, Schinnen, Haren, Winsum, Molenwaard, Ferwerderadiel, Geldermalsen, and Zuidhorn are no longer independent entities. They are therefore no longer taken in consideration in this performance report. That means that the group of elected municipalities now consists of 117 municipalities.

Furthermore, the number of indicators was partially expanded due to new possibilities but also reduced due to lack of continued data collection, resulting in 140 indicators now, compared to 126 in 2018. Such changes had to be included in the comparison between 2020 and 2018. Where needed new data for 2018 were separately collected and calculated. The reader is referred to the Framework report for the 2020[4] BNG Bank Sustainability bond, for the details of the amendments made in the calculation of the sustainability scores and how comparability between the years 2018 and 2020 was ascertained.

This assessment includes:

1. A comparison of sustainability scores of Elected Municipalities with the total group of Dutch municipalities for 2018 and 2020.
2. A comparison of sustainability scores for Elected Municipalities between 2018 and 2020, including:
    a. overall scores
    b. capital scores, and a selection of:

[4] Mulder, R., Paenen, S., Bijster, F., & Dagevos, J. (2020). BNG Bank sustainability bond for Dutch best-in-class municipalities. document nr 205275, October, Het PON & Telos, www.telos.nl

    c. stock scores and where useful
    d. indicator scores.
3. A list of Elected Municipalities, which show the largest improvement or reduction in overall score and in CO2 emissions.
4. An overview of the development on the Sustainable Development Goals (SDGs) of the elected municipalities between 2018 and 2020.

In the next chapters, the outcome of these activities is presented. Finally, the overall changes observed for reporting period 2018-2020 will be discussed.

3 Outcome of updating exercise and comparison of 2018 and 2020

3.1 National Monitor Sustainable Municipalities 2020

In November 2020, Telos has completed its National Monitor Sustainable Municipalities 2020. The major outcome is shown in table 3.1:

Table 3.1 Sustainability performance of the total group of Dutch municipalities in 2018-2020

Sustainability capital	2018	2019	2020
Total	50.05	50.83	51.25
Socio-cultural	49.68	50.13	50.27
Ecological	51.11	51.28	51.50
Economic	49.36	51.08	51.97

In the period 2018-2020, the average overall sustainability score improved from 50.05 till 51.25 percentage points. This was due to improvements in all three capitals. The ecological capital improved only marginally the past year from 51.11 to 51.50. The socio-cultural capital also improved marginally from 49.68 to 50.27 percentage. And economic capital increased most from 49.36 till 51.97.

3.2 General characteristics of Elected Municipalities for the BNG Bank Sustainability Bond 2018

The group of Elected Municipalities represents the sum of highest scoring municipalities in each of the 14 types of municipalities considered. They are therefore not a representative sample of the total group of Dutch municipalities. This is illustrated in table 3.2, using municipality size as criterion.

Table 3.2 Distribution of municipality sizes in the Netherlands and in the group of Elected

Municipality size (number of inhabitants)	Total number of municipalities in the Netherlands	Total number of municipalities in elected group
Less than 50,000	267 (75.2%)	85 (72.6%)
50,000-100,000	56 (15.8%)	16 (13.7%)
More than 100,000	32 (9.0%)	16 (13.7%)

As table 3.2 shows, the size distribution of the elected group of municipalities differs from the average distribution in the country. The small and midsize municipalities are underrepresented and the large municipalities are overrepresented in de elected group. In case the outcome for the elected group is compared with the total group of municipalities this has to be taken into account.

3.3 General performance of Elected Municipalities compared to total group of Dutch Municipalities

BNG Bank has chosen to allocate the proceeds of the Sustainability Bond to the best performing municipalities in their class as instrument for several reasons. These include:

- Highlighting the importance of sustainable development to municipalities,
- Enabling investors that want to see their capital used for investments in municipalities that have experience in improving sustainability, and
- Increasing awareness of successful strategies used in high scoring municipalities, etc.

It would be welcome, against this background, if the comparison between performance of the group of Elected Municipalities and the total group of Dutch municipalities would show that the Elected Municipalities outperform the others over the years. Yet, it may not be as simple as that. Best performing municipalities may not have as much opportunities left for further improvement as low performing municipalities, which can more easily improve their performance.

Table 3.3 gives a summary of the overall differences between 2018 and 2020 for the total group of Dutch municipalities and the group of Elected Municipalities. It shows that general trends, an improvement of the overall score with 1.17-1.20 percentage points, are similar in both groups.

Table 3.3 Sustainability performance of Elected Municipalities and of the total group of Dutch municipalities in 2018 compared to 2020 (percentage points)

Sustainability capital	Elected 2018	Total 2018	Elected 2020	Total 2020	Elected: Difference 2018-2020	Total: Difference 2018-2020
Total	52.32	50.05	53.49	51.25	1.17	1.20
Socio-cultural	52.37	49.68	52.87	50.27	0.50	0.59
Ecological	52.94	51.11	53.63	51.50	0.68	0.39
Economic	51.64	49.36	53.97	51.97	2.33	2.61

The Elected Municipalities continued to outperform the total group of municipalities with 2.2 percentage points (53.49 vs 51.25), as listed in table 1.

Largest improvements occurred this year for the economic capital (2.33/2.61 percentage points), while those for the ecological and socio-cultural capital were relatively small (0.50/0.59 and 0.68/0.39 percentage points).

In the next paragraph, the more detailed stock scores are considered.

3.4 Changes in stock scores of Elected and the total group of municipalities

A closer look at the level of stocks, see table 3.4, shows that differences between the years show a similar pattern in both groups of municipalities.

Table 3.4 Differences in sustainability scores (percentage points) of stocks between 2018 and 2020 for the group of elected Municipalities and all Dutch municipalities

Sustainability stock	Difference 2018-2020 of 117 Elected Municipalities	Difference 2018-2020 of all 355 municipalities
Socio-cultural		
Arts & culture	0.05	-0.08
Economic participation	3.08	3.61
Education	-2.28	-1.75
Health	-1.84	-1.66
Housing	2.18	2.92
Lifestyle & health	0.00	0.00
Political Participation	1.94	1.63
Residential environment	-0.66	-0.22
Safety	2.07	1.10
Social participation	0.46	0.41
Ecological		
Air	0.05	0.03
Annoyance and external safety	-0.15	-0.33
Energy	3.59	3.48
Nature & landscape	0.00	0.00
Soil	-1.64	-2.43
Resources & waste	2.27	1.52
Water	0.64	0.44
Economic		
Competitiveness	4.17	4.56
Infrastructure & mobility	2.17	2.00
Knowledge	1.80	2.14

Labor	4.44	4.90
Spatial location conditions	-0.91	-0.55

Socio-cultural stocks

Among socio-cultural stocks, differences between both groups of municipalities were small. Most striking is the improvement in 'safety', 'living' and 'economic participation' in the both groups of municipalities. The decline in both groups in 'residential environment', 'education', and 'health' is not what can be expected in a thriving society.

Ecological stocks

Also here, the group of Elected Municipalities shows a similar pattern as the total group of municipalities, with large improvements over the period 2018-2020 for the stocks of 'energy' and 'resources and waste'. These are the two priorities of the national government: climate change and circular economy. The decline in 'soil' is quite large for both groups.

Economic stocks

Elected Municipalities improved practically as much as the total group of municipalities. The biggest improvement is seen for 'labor', but all stocks, except from 'spatial location conditions' have shown quite large improvements.

4 Elected Municipalities showing largest improvement or reduction in sustainability score in 2018-2020 depending on city typology

In this chapter, a closer examination of the improvements or reductions in total sustainability score of individual Elected Municipalities will be discussed. The assessment will be presented for each of the 14 types of municipalities that are discerned in the Framework for the BNG Bank Sustainability Bond of 2018: agricultural-, center-, green-, growth-, historic-, old industrial-, mid-sized-, New Town-, shrink-, small, residential, tourist, work- and 100,000plus municipalities. The list of best-in-class municipalities in each type of municipalities will be presented as described in the framework document. The scores for 2018 have in this assessment been corrected for additional indicators used in 2020 to make them comparable with the 2020 data. The results are therefore sometimes differing from those given in the 2018 Framework document.

4.1 Elected agricultural municipalities

Table 4.1 presents the 15 best-in-class municipalities of the agricultural type, their reconstructed 2018 scores and the 2020 scores for total sustainability. All municipalities improved over the past two years. Wierden, Montfoort and Dinkelland improved the most in the period 2018-2020. Overall, the score of the group of elected agricultural municipalities improved 1.6 percentage point since 2018.

Table 4.1 Improvements and reductions in total sustainability scores of elected agricultural municipalities over 2018-2020

Agricultural municipality	Sustainability score 2018	Sustainability score 2020	Difference
Wierden	52.1	54.5	2.4
Montfoort	49.7	52.1	2.4
Dinkelland	53.4	55.8	2.4
Bunnik	53.3	55.5	2.2
Zwartewaterland	52.4	54.4	2.0
Oost Gelre	52.9	54.8	1.9
Olst-Wijhe	51.3	53.1	1.8
Staphorst	53.1	54.8	1.7
Raalte	53.0	54.6	1.6
Eemnes	51.1	52.5	1.4
Voorst	53.0	54.3	1.3
Dalfsen	54.1	55.2	1.1

Eijsden-Margraten	52.3	53.2	0.9
Midden-Delfland	55.7	56.3	0.6
Zoeterwoude	50.0	50.5	0.5
Average	52.5	54.1	1.6

Figure 4.1 Oud stadhuis - Montfoort (Photo: Onderwijsgek)

4.2 Elected center municipalities

As table 4.2 shows, two elected municipalities did not improve their sustainability score over the past two years. Apeldoorn improved the most with 2.6 percentage points, followed by Castricum and Deventer.

Table 4.2 Improvements in total sustainability scores of elected center municipalities over 2018-2020

Center municipality	Sustainability score 2018	Sustainability score 2020	Difference
Apeldoorn	51.6	54.2	2.6
Castricum	53.1	55.6	2.5
Deventer	52.8	54.7	1.9
Ede	52.5	54.4	1.9
Zwolle	52.3	54.1	1.8
Hilversum	52.0	53.6	1.6
Westland	49.7	50.9	1.2
Middelburg (Z.)	50.2	51.2	1.0
Delft	54.1	55.1	1.0

Katwijk	51.9	52.9	1.0
Nijmegen	54.4	55.1	0.7
Utrecht (gemeente)	53.8	54.4	0.6
Groningen (gemeente)	53.5	53.8	0.3
Gooise Meren	53.3	53.4	0.1
Leiden	53.5	52.4	-1.1
Amsterdam	52.0	50.7	-1.3
Average	52.5	53.5	1.0

4.3 Elected green municipalities

Elected green municipalities improved on average 1.2 percentage points last year. All elected municipalities improved their score since 2018, as shown in Table 4.3. Leusden improved the most with 2.4 percentage points.

Table 4.3 Improvements and reductions in total sustainability scores of elected green municipalities over 2018-2020

Green municipality	Sustainability score 2018	Sustainability score 2020	Difference
Leusden	54.3	56.7	2.4
Ede	52.5	54.4	1.9
Bloemendaal	56.5	58.1	1.6
Putten	54.5	56.0	1.5
Baarn	51.6	53.0	1.4
Rozendaal	49.9	51.2	1.3
Mook en Middelaar	54.5	55.7	1.2
Nunspeet	53.8	55.0	1.2
Barneveld	52.7	53.9	1.2
Waalre	53.7	54.8	1.1
Utrechtse Heuvelrug	52.1	53.1	1.0
Heeze-Leende	54.6	55.4	0.8
Elburg	54.7	55.1	0.4
Ermelo	54.3	54.6	0.3
Wassenaar	53.0	53.1	0.1
Average	53.5	54.7	1.2

Figure 4.2 Boerderij Slijpkruik in Ede (Photo: Ben Bender)

4.4 Elected growth municipalities

The elected growth municipalities showed on average an improvement of 1.2 percentage points since 2018. All municipalities except Ameland improved their score. Woudenberg improved the most with 3.8 percentage points.

Table 4.4 Improvements and reductions in total sustainability scores of elected growth municipalities over 2018-2020

Growth municipality	Sustainability score 2018	Sustainability score 2020	Difference
Woudenberg	51.5	55.3	3.8
Bunnik	53.3	55.5	2.2
Wageningen	55.9	58	2.1
Staphorst	53.1	54.8	1.7
Bloemendaal	56.5	58.1	1.6
Bladel	53.6	54.9	1.3
Oegstgeest	54.7	55.9	1.2
Dalfsen	54.1	55.2	1.1
Heeze-Leende	54.6	55.4	0.8
Scherpenzeel	48.5	49.3	0.8
Houten	55.7	56.3	0.6
Midden-Delfland	55.7	56.3	0.6
Voorschoten	53.7	54	0.3
Ameland	54.6	54.3	-0.3
Average	54.0	55.2	1.2

4.5 Elected historic municipalities

Four elected municipalities did not improve their sustainability scores since 2018, which are Vlieland, Ameland, Leiden and Waterland. Staphorst improved its score the past two years the most, with 1.7 percentage points. The average score improved last year with 0.6 percentage points, as presented in Table 4.5.

Table 4.5 Improvements and reductions in total sustainability scores of elected historic municipalities over 2018-2020

Historic municipality	Sustainability score 2018	Sustainability score 2020	Difference
Staphorst	53.1	54.8	1.7
Oudewater	49.0	50.5	1.5
Bronckhorst	52.9	54.3	1.4
Lopik	50.8	52.1	1.3
Kampen	52.7	53.8	1.1
Delft	54.1	55.1	1.0
Eijsden-Margraten	52.3	53.2	0.9
Schiermonnikoog	53.1	53.9	0.8
Utrecht (gemeente)	53.8	54.4	0.6
Vlieland	55.7	55.4	-0.3
Ameland	54.6	54.3	-0.3
Leiden	53.5	52.4	-1.1
Waterland	52.9	51.6	-1.3
Average	52.9	53.5	0.6

4.6 Elected mid-sized municipalities

All municipalities improved their sustainability scores in the past two years, except from Amstelveen. Table 4.6 shows that mid-sized municipalities improved their sustainability scores on average with 1.1 percentage points since 2018. Doetinchem and Deventer improved their scores the most, with 1.9 percentage points.

Table 4.6 Improvements and reductions in total sustainability scores of elected mid-sized municipalities over 2018-2020

Mid-sized municipality	Sustainability score 2018	Sustainability score 2020	Difference
Doetinchem	49.0	50.9	1.9
Deventer	52.8	54.7	1.9
Hardenberg	49.5	51.3	1.8
Krimpenerwaard	51.8	53.5	1.7

Woerden	52.5	54.1	1.6
Heerenveen	50.8	52.4	1.6
Hilversum	52.0	53.6	1.6
Veenendaal	48.8	50.0	1.2
Barneveld	52.7	53.9	1.2
Kampen	52.7	53.8	1.1
Zeist	49.5	50.5	1.0
Katwijk	51.9	52.9	1.0
Pijnacker-Nootdorp	52.9	53.5	0.6
Meierijstad	50.2	50.4	0.2
Gooise Meren	53.3	53.4	0.1
Amstelveen	53.3	53.0	-0.3
Average	51.5	52.6	1.1

4.7 Elected New Town municipalities

Elected New Town municipalities improved their score with on average 1.0 percentage points (see table 4.7). Tubbergen is on top of the list of improvement, followed by Best and Langedijk.

Table 4.7 Improvements and reductions in total sustainability scores of elected New Town municipalities over 2018-2020

New Town municipality	Sustainability score 2018	Sustainability score 2020	Difference
Tubbergen	51.9	54.3	2.4
Best	51.7	53.5	1.8
Langedijk	51.6	53.4	1.8
Zeewolde	53.4	54.9	1.5
Eemnes	51.1	52.5	1.4
Renswoude	50.2	51.5	1.3
Culemborg	52.4	53.6	1.2
Hendrik-Ido-Ambacht	51.2	52.4	1.2
Barneveld	52.7	53.9	1.2
Urk	54.4	55.2	0.8
Houten	55.7	56.3	0.6
Midden-Delfland	55.7	56.3	0.6
Duiven	51.9	52.2	0.3
Heumen	55.0	55.0	0.0
Koggenland	50.4	49.0	-1.4
Average	52.6	53.6	1.0

Figure 4.3 Kasteel Renswoude (Photo: Bas)

4.8 Elected old industrial municipalities

Elected old industrial municipalities scored on average 1.2 percentage points higher over the reporting period, as shown in Table 4.8. The scores of two municipalities decreased since 2018, these municipalities are Nuenen, Gerwen en Nederwetten, and Oostzaan. Wierden improved the most with 2.4 percentage points.

Table 4.8 Improvements and reductions in total sustainability scores of elected old industrial municipalities over 2018-2020

Old industrial municipality	Sustainability score 2018	Sustainability score 2020	Difference
Wierden	52.1	54.5	2.4
Rijssen-Holten	52.5	54.8	2.3
Oisterwijk	51.2	53.3	2.1
Losser	52.5	54.4	1.9
Best	51.7	53.5	1.8
Landsmeer	51.5	53.2	1.7
Putten	54.5	56.0	1.5
Heusden	51.0	52.3	1.3
Bladel	53.6	54.9	1.3

Waalre	53.7	54.8	1.1
Hellendoorn	53.7	54.5	0.8
Bergeijk	54.0	54.6	0.6
Brummen	52.5	52.8	0.3
Hattem	51.8	52.0	0.2
Nuenen, Gerwen en Nederwetten	53.3	52.9	-0.4
Oostzaan	52.4	51.9	-0.5
Average	52.6	53.8	1.2

4.9 Elected residential municipalities

Residential municipalities are a well performing elected group of municipalities when comparing the scores in 2018 with those of 2020, resulting in an average increased score of 1.0 percentage points (Table 4.9). Waterland showed a decrease of 1.3 percentage points in the sustainability score. The highest improvement was found for Castricum.

Table 4.9 Improvements and reductions in total sustainability scores of elected old industrial municipalities over 2018-2020

Residential municipality	Sustainability score 2018	Sustainability score 2020	Difference
Castricum	53.1	55.6	2.5
Heiloo	51.4	53.7	2.3
Bloemendaal	56.5	58.1	1.6
Rozendaal	49.9	51.2	1.3
Heusden	51.0	52.3	1.3
Mook en Middelaar	54.5	55.7	1.2
Waalre	53.7	54.8	1.1
Eijsden-Margraten	52.3	53.2	0.9
Buren	51.1	51.8	0.7
Wijk bij Duurstede	53.8	54.4	0.6
Grave	50.7	51.3	0.6
Voorschoten	53.7	54.0	0.3
Heumen	55.0	55.0	0.0
Waterland	52.9	51.6	-1.3
Average	52.8	53.8	1.0

4.10 Elected shrink municipalities

The elected shrink municipalities improved with 1.4 percentage points on average the last two years (see Table 4.10). One municipality decreased in its sustainability score, while the others improved. Voerendaal improved the most with 2.5 percentage points.

Table 4.10 Improvements and reductions in total sustainability scores of elected shrink municipalities over 2018-2020

Shrink municipality	Sustainability score 2018	Sustainability score 2020	Difference
Voerendaal	49.0	51.5	2.5
Meerssen	50.2	52.5	2.3
Aalten	52.1	54.0	1.9
Leudal	49.6	51.5	1.9
Berkelland	52.8	54.6	1.8
Bergen (NH.)	53.0	54.5	1.5
Bronckhorst	52.9	54.3	1.4
Mook en Middelaar	54.5	55.7	1.2
Grave	50.7	51.3	0.6
Gulpen-Wittem	50.0	50.4	0.4
Valkenburg aan de Geul	51.0	50.6	-0.4
Average	51.4	52.8	1.4

4.11 Elected small municipalities

The group of small municipalities has improved its score in 2020 by 0.8 percentage points on average. Bunnik leads this group by improving 2.2 percentage points, while Ameland and Vlieland lost some of its earlier score.

Table 4.11 Improvements and reductions in total sustainability scores of elected old industrial municipalities over 2018-2020

Small municipality	Sustainability score 2018	Sustainability score 2020	Difference
Bunnik	53.3	55.5	2.2
Bloemendaal	56.5	58.1	1.6
Rozendaal	49.9	51.2	1.3
Bladel	53.6	54.9	1.3
Mook en Middelaar	54.5	55.7	1.2

Oegstgeest	54.7	55.9	1.2
Dalfsen	54.1	55.2	1.1
Heeze-Leende	54.6	55.4	0.8
Houten	55.7	56.3	0.6
Wijk bij Duurstede	53.8	54.4	0.6
Midden-Delfland	55.7	56.3	0.6
Voorschoten	53.7	54.0	0.3
Heumen	55.0	55.0	0.0
Vlieland	55.7	55.4	-0.3
Ameland	54.6	54.3	-0.4
Average	54.4	55.2	0.8

Figure 4.4 Oud Ameliswaard – Bunnik (Photo: Michele Ahin)

4.12 Elected tourist municipalities

The sustainability score of the elected tourist type of municipalities has improved on average 0.6 percentage points. (see Table 4.12). The biggest improvement over time was found for Noordwijk, while four municipalities decreased their score.

Table 4.12 Improvements and reductions in total sustainability scores of elected tourist municipalities over 2018-2020

Tourist municipality	Sustainability score 2018	Sustainability score 2020	Difference
Noordwijk	52.6	55.0	2.4
Hilvarenbeek	53.2	55.2	2.0
Landsmeer	51.5	53.2	1.7
Mook en Middelaar	54.5	55.7	1.2
Eijsden-Margraten	52.3	53.2	0.9
Schiermonnikoog	53.1	53.9	0.8
Bergeijk	54.0	54.6	0.6
Veere	52.8	53.4	0.6
Terschelling	54.6	55.0	0.4
Groningen (gemeente)	53.5	53.8	0.3
Wassenaar	53.0	53.1	0.1
Vlieland	55.7	55.4	-0.3
Ameland	54.6	54.3	-0.3
Oostzaan	52.4	51.9	-0.5
Waterland	52.9	51.6	-1.3
Average	53.4	54.0	0.6

4.13 Elected work municipalities

Elected work municipalities performed well with an improvement of 1.0 percentage points on average, as illustrated in table 4.13. Oldenzaal showed a large improved of 3.4 percentage points.

Table 4.13 Improvements and reductions in total sustainability scores of elected work municipalities over 2018-2020

Work municipality	Sustainability score 2018	Sustainability score 2020	Difference
Oldenzaal	51.3	54.7	3.4
Apeldoorn	51.6	54.2	2.6
Noordwijk	52.6	55.0	2.4
Veldhoven	50.6	52.8	2.2
Zwolle	52.3	54.1	1.8
Best	51.7	53.5	1.8
Westland	49.7	50.9	1.2
Barneveld	52.7	53.9	1.2
Ouder-Amstel	53.0	54.0	1.0
Utrecht (gemeente)	53.8	54.4	0.6

Son en Breugel	51.2	51.8	0.6
Groningen (gemeente)	53.5	53.8	0.3
Duiven	51.9	52.2	0.3
Amstelveen	53.3	53.0	-0.3
Leiden	53.5	52.4	-1.1
Amsterdam	52.0	50.7	-1.3
Average	52.2	53.2	1.0

4.14 Elected 100,000plus municipalities

The, for Dutch dimensions, relative large elected 100,000plus performed well with an average improvement of 1.1 percentage points from 2018 to 2020. Apeldoorn improved most followed by Ede and Zwolle. Amsterdam and Leiden performed less in 2020 compared to 2018.

Table 4.14 Improvements and reductions in total sustainability scores of elected 100,000plus over 2018-2020

100,000plus municipality	Sustainability score 2018	Sustainability score 2020	Difference
Apeldoorn	51.6	54.2	2.6
Ede	52.5	54.4	1.9
Zwolle	52.3	54.1	1.8
Eindhoven	50.9	52.6	1.7
Amersfoort	51.3	52.8	1.5
Westland	49.7	50.9	1.2
Breda	49.6	50.7	1.1
Delft	54.1	55.1	1.0
Arnhem	52.5	53.4	0.9
's-Hertogenbosch	50.9	51.6	0.7
Nijmegen	54.4	55.1	0.7
Utrecht (gemeente)	53.8	54.4	0.6
Groningen (gemeente)	53.5	53.8	0.3
Leiden	53.5	52.4	-1.1
Amsterdam	52.0	50.7	-1.3
Average	52.2	53.1	0.9

Figure 4.5 Zwolle (Photo: Ben Bender)

4.15 Summary of score changes of Elected Municipalities and their typology

Table 4.15 gives an overview of the average performance of the 14 groups of municipalities. Highest improvements in percentage points were found in agricultural municipalities, with 1.6 percentage points. Highest sustainability scores were measured in small and growth municipalities (55.2 percentage points), followed by green municipalities.

Table 4.15 Changes in total sustainability scores of 14 types of elected municipalities over 2018-2020

Type of municipality	Sustainability score 2018	Sustainability score 2020	Difference
Small municipalities	54.4	55.2	0.8
Mid-sized municipalities	51.5	52.6	1.1
100.000plus municipality	52.2	53.1	0.9
Agricultural municipality	52.5	54.1	1.6
Center municipality	52.5	53.5	1.0
Former industrial municipality	52.6	53.8	1.2
Green municipality	53.5	54.7	1.2
Growth municipalities	54.0	55.2	1.2

Historic municipalities	52.9	53.5	0.6
New Town municipality	52.6	53.6	1.0
Residential municipalities	52.8	53.8	1.0
Shrink municipality	51.4	52.8	1.4
Touristic municipalities	53.4	54.0	0.6
Work municipality	52.2	53.2	1.0

5 Overall outcome for Elected Municipalities including their CO2-emission scores in 2018-2020

This chapter presents a final overview of the performance of the Elected Municipalities, independent from their typology.

The green bonds were started by the World Bank to help promote the transition to a low carbon economy, in order to slow down further climate change. Considering this background, this chapter includes a description of the performance of the Elected Municipalities in relation to CO2-emissions. Although they are included as indicator in the ecological capital, this aspect will be highlighted as an element of special interest, being often the key factor for green bond and sustainability bond investors.

5.1 General outcome of improving and regressing Elected Municipalities

Among Elected Municipalities more then 90% had similar or higher sustainability scores in 2020 compared to 2019 (see also Annex 1).

Tables 5.1 and 5.2 show Elected Municipalities which were changing their sustainability score most or least favorably. The best performing municipality in this respect among Elected Municipalities is Woudenberg followed by Oldenzaal and Apeldoorn.

Table 5.1 Ten Elected Municipalities improving sustainability score most in the period 2018-2020

Elected municipality	Typology	Total score 2018	Total score 2020	Difference
Woudenberg	Small, Growth	51.5	55.3	3.8
Oldenzaal	Small, Former industrial, Work	51.3	54.7	3.4
Apeldoorn	Large, Centre, Green, Work	51.6	54.2	2.6
Voerendaal	Small, Agricultural, Former industrial, Residential, Shrink, Tourist	49.0	51.5	2.5
Castricum	Small, Centre, Residential	53.1	55.6	2.5
Noordwijk	Small, Green, Tourist, Work	52.6	55.0	2.4
Tubbergen	Small, Agricultural, New town	51.9	54.3	2.4
Wierden	Small, Agricultural, Former industrial	52.1	54.5	2.4
Leusden	Small, Green	54.3	56.7	2.4
Montfoort	Small, Agricultural	49.7	52.1	2.4

The largest reduction in sustainability score among Elected Municipalities was detected in Koggenland followed by Amsterdam and Waterland.

Table 5.2 Ten Elected Municipalities with largest declining sustainability score in the period 2018-2020

Municipality	Typology	Total score 2018	Total score 2020	Difference
Koggenland	Small, Agricultural, Growth, New town	50.4	49.0	-1.4
Amsterdam	Large, Centre, Growth, Historic, Tourist, Work	52.0	50.7	-1.3
Waterland	Small, Historic, Residential, Tourist	52.9	51.6	-1.3
Leiden	Large, Centre, Growth, Historic, Tourist, Work	53.5	52.4	-1.1
Oostzaan	Small, Former industrial, Growth, Tourist	52.4	51.9	-0.5
Nuenen, Gerwen en Nederwetten	Small, Former industrial	53.3	52.9	-0.4
Valkenburg aan de Geul	Small, Shrink, Tourist	51.0	50.6	-0.4
Ameland	Small, Growth, Historic, Tourist	54.6	54.3	-0.3
Vlieland	Small, Historic, Tourist	55.7	55.4	-0.3
Amstelveen	Medium, Growth, Work	53.3	53.0	-0.3

5.2 CO2-emission score performance of Elected Municipalities

Finally, the outcome of the CO2-emission assessment of Elected Municipalities will be discussed. This is one of the key transitions to which national governments have committed themselves in the framework of the UN Climate Change Convention and particularly since the 2015 Paris Agreement. But also individual municipalities have similar commitments, e.g. in the framework of the Covenant of Mayors to combat climate change. In the Netherlands the Association of Dutch Municipalities (VNG) has signed an agreement in 2013 with the national government and other parties to substantially reduce CO2-emissions the coming years. New agreements are underway.

Data on CO2 emissions are available for each municipality via the web-portal of the Dutch Emissions Authority. They calculate the CO2 emissions every five years, including the most recent two years. At this moment, data are available for 1990-2015 in a five-year interval, supplemented with the two most recent years in their database (2017 and 2018). In this impact report, the reduction over the two most recent years has been used.

A closer look at the CO2 reductions shows that the group of Elected Municipalities did not realize a reduction in CO2 emissions over de last year; the CO2 emissions

increased with 1.08%. The other municipalities, to the contrary, did realize a decrease in CO2 emissions of 2.88%. The outcome of this analysis is shown in table 5.3.

Table 5.3 CO2 reductions in different time periods of the Elected Municipalities and the total group of municipalities

Considered group of municipalities	1990-2018	2010-2018	2017-2018
Elected (117)	-14.71%	-18.13%	1.08%
Others	12.64%	-6.18%	-2.88%
Total (355)	5.83%	-8.84%	-2.11%

The highest reduction was found Brummen, Ameland and Doetinchem. Table 5.4 shows that Hilvarenbeek, Berkelland and Vlieland noted the largest increase in CO2 emissions. Vlieland however is the municipality with the lowest CO2 emissions in the Netherlands. CO2 emission changes for all municipalities over the last year are given in Annex 2.

Table 5.4 Ten Elected Municipalities with most and least reduction in CO2-emissions over the last year (equals measuring years 2017-2018)

Elected municipality	Emission change over measuring years 2017-2018		Elected municipality	Emission change over measuring years 2017-2018
Brummen	-6		Hilvarenbeek	15
Ameland	-5		Berkelland	15
Doetinchem	-4		Vlieland	11
Hardenberg	-4		Leiden	10
Bergeijk	-3		Hattem	5
Barneveld	-3		Son en Breugel	4
Tubbergen	-3		Groningen (gemeente)	4
Scherpenzeel	-2		Nunspeet	4
Renswoude	-2		Amsterdam	3
Deventer	-2		Terschelling	3

6 SDGs scores

In the 2018 framework report, a method was introduced to measure the achievement of the 2015 UN Sustainable Development Goals (SDGs). Showing the impacts of societal activities in terms of their contribution to the SDGs, is recently becoming a must for many organizations and particularly for banks and pension funds. These have been active since 2015 to develop a so-called 'taxonomy on Sustainable Development Investments (SDIs)' that translates the SDGs into investable opportunities from the perspective of Asset Owners[5].

An elaborated description of the methodology used to calculate the SDG scores can be found in the framework report 2020[6]. In essence it is based on aggregating elements of the sustainability scores in a way consistent with the definitions of the SDGs.

6.1 Progress of the elected municipalities towards the SDGs

Comparison over the years 2018 and 2020, as shown in table 6.1, makes clear that the performance of several goals improved substantially (Goals 1, 4, 6, 7, 8, 10, 11, 12 and 16) , but others showed a small fallback (Goals 3, 11, and 15).

[5] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-fi-nance_en

[6] Mulder, R., Paenen, S., Bijster, F., & Dagevos, J. (2020). BNG Bank sustainability bond for Dutch best-in-class municipalities. document nr 205275, October, Het PON & Telos, www.telos.nl

	All municipalities (n=355)				Elected municipalities (n=117)			
SDG	2018	2019	2020	Difference 2018-2020	2018	2019	2020	Difference 2018-2019
1. No Poverty	65.1	65.3	65.8	0.7	68.9	69.2	69.7	0.8
2. Zero Hunger	40.1	40.1	40.1	0.0	47.2	47.2	47.2	0.0
3. Good Health and Well-being	49.7	48.3	47.9	-1.8	52.0	50.6	50.1	-1.9
4. Quality Education	58.6	60.4	60.9	2.3	61.5	63.0	63.0	1.5
5. Gender Equality								
6. Clean Water and Sanitation	56.6	57.3	57.3	0.7	57.9	59.0	59.0	1.1
7. Affordable and Clean Energy	33.1	34.6	36.7	3.6	34.1	35.6	37.7	3.6
8. Decent Work and Economic Growth	48.7	50.8	51.9	3.2	52.2	54.1	55.0	2.8
9. Industry, Innovation and Infrastructure	38.4	39.4	41.6	3.2	41.2	42.5	44.8	3.6
10. Reduced Inequalities	51.9	53.3	54.1	2.2	56.5	57.9	58.6	2.1
11. Sustainable Cities and Communities	52.5	52.1	52.1	-0.4	53.1	52.7	52.6	-0.5
12. Responsible Consumption and Production	53.0	53.9	54.9	1.9	54.3	55.6	56.7	2.4
13. Climate Action	52.9	52.9	52.9	0.0	52.0	52.0	52.0	0.0
14. Life below Water								
15. Life on Land	45.2	44.5	42.8	-2.4	46.5	46.0	44.4	-2.1
16. Peace, Justice and Strong Institutions	47.9	50.9	51.5	3.6	51.0	54.4	55.6	4.6
17. Partnerships for the Goals								

Table 6.1 SDG scores for elected (n=117) and all (n=355) municipalities 2018-2020

As shown in table 6.1, 3 of the 17 SDGs could not be measured because of lack of data, or because they are not relevant for municipalities. These are nr. 5 (Gender equality), nr. 14 (Life below water) and nr.17 (Partnerships for the Goals).

6.2 Differences between the elected and the total group of municipalities on the SDGs

The performance of the group of elected municipalities deviates for some goals from the total group of municipalities. The elected municipalities still outperforms the total group for 13 out of the 14 measured goals, but the differences become smaller. Only for goal 13 (Climate action) the total group performs better than the elected group, as was the case in 2018.

There are, however, some differences in the development of the scores between the two groups. For example, for goal 16 (peace, justice and strong institutions) the difference between the groups was already quite large in 2018 (3.1 percentage

points), and grew even larger over the last year to 4.1 percentage points. The same holds for goal 1 (No poverty), goal 6 (Clean water and sanitation), goal 9 (Industry, Innovation and Infrastructure) and goal 12 (Responsible Consumption and Production). The total group shows a higher improvement on goals 4 (Quality education), 8 (Decent work and economic growth), goal 10 (Reduced inequalities) than the elected municipalities.

More information about the method of analyses on the SDGs can be found in the 2020 framework report for municipalities[7].

[7] Zoeteman, B.C.J., Mulder, R., Dagevos, J. (2019). Sustainability Framework for Best-in-Class Municipality Investment; NV Bank Nederlandse Gemeente (BNG Bank) Sustainability Bond 2019, Telos report nr 19.214, August 2019, Tilburg University

7 Discussion and overview of outcome of assessment period 2018-2020

The end result shows that the 117 Elected Municipalities continued to outperform the total group of municipalities with 2.24 percentage points (53.49 vs 51.25), as listed in Table 1. Both groups of municipalities show an improvement of the overall score with 1.17-1.20 percentage points. Largest improvements occurred this year for the economic capital (2.33/2.61 percentage points), while those for the ecological and socio-cultural capital were relatively small (0.50/0.59 and 0.68/0.39 percentage points).

The analysis shows that more then 90% of Elected Municipalities realized the same or an improved total sustainability score compared to last year. Little less then half of the Elected Municipalities realized a reduction in CO2 emissions from 2017-2018. A closer look at the CO2 reductions shows that the group of Elected Municipalities did not realize a reduction in CO2 emissions over de last year; it increased with 1.08%. The other municipalities did realize a reduction of CO2 emissions with 2.88%.

Scores of municipalities are rather dynamic from year to year, although major differences and advantages among municipalities are of a structural nature. In the reporting period Elected Municipalities Woudenberg, Oldenzaal, Apeldoorn and Voerendaal were able to improve their total sustainability score most, with 2.6 to 3.8 percentage points. The largest reduction in sustainability score among Elected Municipalities was detected in Koggenland, Amsterdam, Waterland and Leiden, with -1.1 to -1.4 percentage points.

The performance of several sustainable development goals improved substantially (Goals 1, 4, 6, 7, 8, 9, 10, 12 and 16), but other showed a small fallback (Goals 3, 11, and 15). The performance of the group of elected municipalities deviates for some goals from the total group of municipalities. The elected municipalities still outperform the total group in 13 out of the 14 measured goals, but the differences become smaller for some goals. Only for goal 13 (Climate action) the total group performs better than the elected group, as was the case in 2018 and 2019. The total group shows a higher improvement on goals 4 (Quality education), 8 (Decent work and economic growth) and 10 (Reduced inequalities) than the elected municipalities.

It is not always the best scoring municipality in a certain class that shows the biggest improvement of its score in the next year. The advantage of a high score on sustainability may turn into a (temporary) disadvantage under certain circumstances. Yet, the differences in position on a scoring list and the magnitude of improvement or fallback from year to year provide relevant incentives for municipalities to better understand their position, learn from each other, reduce vulnerabilities and develop new approaches to existing and new challenges. Impact reporting of Sustainability Bonds stimulates elected and other

municipalities to invest proceeds from the bonds and other resources in most effective operational and innovative structural activities to improve sustainability.

Annex A. Overview of the differences in total sustainability scores in 2018 and 2020 for all 117 Elected Municipalities

Municipality	Total sustainability score 2018	Total sustainability score 2020	Difference 2018-2020
Woudenberg	51.5	55.3	3.8
Oldenzaal	51.3	54.7	3.4
Apeldoorn	51.6	54.2	2.6
Voerendaal	49	51.5	2.5
Castricum	53.1	55.6	2.5
Leusden	54.3	56.7	2.4
Noordwijk	52.6	55	2.4
Tubbergen	51.9	54.3	2.4
Wierden	52.1	54.5	2.4
Montfoort	49.7	52.1	2.4
Dinkelland	53.4	55.8	2.4
Heiloo	51.4	53.7	2.3
Rijssen-Holten	52.5	54.8	2.3
Meerssen	50.2	52.5	2.3
Bunnik	53.3	55.5	2.2
Veldhoven	50.6	52.8	2.2
Wageningen	55.9	58	2.1
Oisterwijk	51.2	53.3	2.1
Hilvarenbeek	53.2	55.2	2
Zwartewaterland	52.4	54.4	2
Deventer	52.8	54.7	1.9
Losser	52.5	54.4	1.9
Doetinchem	49	50.9	1.9
Aalten	52.1	54	1.9
Leudal	49.6	51.5	1.9
Oost Gelre	52.9	54.8	1.9
Ede	52.5	54.4	1.9
Olst-Wijhe	51.3	53.1	1.8
Zwolle	52.3	54.1	1.8
Berkelland	52.8	54.6	1.8
Best	51.7	53.5	1.8
Langedijk	51.6	53.4	1.8
Hardenberg	49.5	51.3	1.8
Eindhoven	50.9	52.6	1.7
Landsmeer	51.5	53.2	1.7
Krimpenerwaard	51.8	53.5	1.7
Staphorst	53.1	54.8	1.7

Woerden	52.5	54.1	1.6
Heerenveen	50.8	52.4	1.6
Raalte	53	54.6	1.6
Hilversum	52	53.6	1.6
Bloemendaal	56.5	58.1	1.6
Bergen (NH.)	53	54.5	1.5
Zeewolde	53.4	54.9	1.5
Amersfoort	51.3	52.8	1.5
Oudewater	49	50.5	1.5
Putten	54.5	56	1.5
Eemnes	51.1	52.5	1.4
Bronckhorst	52.9	54.3	1.4
Baarn	51.6	53	1.4
Lopik	50.8	52.1	1.3
Rozendaal	49.9	51.2	1.3
Voorst	53	54.3	1.3
Renswoude	50.2	51.5	1.3
Heusden	51	52.3	1.3
Bladel	53.6	54.9	1.3
Culemborg	52.4	53.6	1.2
Mook en Middelaar	54.5	55.7	1.2
Nunspeet	53.8	55	1.2
Veenendaal	48.8	50	1.2
Hendrik-Ido-Ambacht	51.2	52.4	1.2
Oegstgeest	54.7	55.9	1.2
Westland	49.7	50.9	1.2
Barneveld	52.7	53.9	1.2
Breda	49.6	50.7	1.1
Dalfsen	54.1	55.2	1.1
Waalre	53.7	54.8	1.1
Kampen	52.7	53.8	1.1
Utrechtse Heuvelrug	52.1	53.1	1
Middelburg (Z.)	50.2	51.2	1
Zeist	49.5	50.5	1
Delft	54.1	55.1	1
Katwijk	51.9	52.9	1
Ouder-Amstel	53	54	1
Eijsden-Margraten	52.3	53.2	0.9
Arnhem	52.5	53.4	0.9
Urk	54.4	55.2	0.8
Schiermonnikoog	53.1	53.9	0.8
Scherpenzeel	48.5	49.3	0.8
Heeze-Leende	54.6	55.4	0.8

Hellendoorn	53.7	54.5	0.8
's-Hertogenbosch	50.9	51.6	0.7
Nijmegen	54.4	55.1	0.7
Buren	51.1	51.8	0.7
Wijk bij Duurstede	53.8	54.4	0.6
Bergeijk	54	54.6	0.6
Utrecht (gemeente)	53.8	54.4	0.6
Veere	52.8	53.4	0.6
Pijnacker-Nootdorp	52.9	53.5	0.6
Houten	55.7	56.3	0.6
Midden-Delfland	55.7	56.3	0.6
Grave	50.7	51.3	0.6
Son en Breugel	51.2	51.8	0.6
Zoeterwoude	50	50.5	0.5
Gulpen-Wittem	50	50.4	0.4
Elburg	54.7	55.1	0.4
Terschelling	54.6	55	0.4
Ermelo	54.3	54.6	0.3
Duiven	51.9	52.2	0.3
Groningen (gemeente)	53.5	53.8	0.3
Voorschoten	53.7	54	0.3
Brummen	52.5	52.8	0.3
Hattem	51.8	52	0.2
Meierijstad	50.2	50.4	0.2
Wassenaar	53	53.1	0.1
Gooise Meren	53.3	53.4	0.1
Heumen	55	55	0
Amstelveen	53.3	53	-0.3
Vlieland	55.7	55.4	-0.3
Ameland	54.6	54.3	-0.3
Valkenburg aan de Geul	51	50.6	-0.4
Nuenen, Gerwen en Nederwetten	53.3	52.9	-0.4
Oostzaan	52.4	51.9	-0.5
Leiden	53.5	52.4	-1.1
Waterland	52.9	51.6	-1.3
Amsterdam	52	50.7	-1.3
Koggenland	50.4	49	-1.4

Annex B. Overview of the changes in CO2-emissions in 2017-2018 for all Elected Municipalities

Elected municipality	Typology	% Difference 2017-2018
Brummen	Small, Former industrial	-5.8
Ameland	Small, Growth, Historic, Tourist	-5.3
Doetinchem	Medium, Work	-4.4
Hardenberg	Medium, Agricultural	-3.9
Bergeijk	Small, Former industrial, Tourist	-3.2
Barneveld	Medium, Green, Growth, New town, Work	-3.2
Tubbergen	Small, Agricultural, New town	-3.0
Scherpenzeel	Small, Growth	-2.5
Renswoude	Small, Agricultural, Growth, New town	-2.3
Deventer	Medium, Centre	-2.2
Elburg	Small, Green	-2.2
Oudewater	Small, Agricultural, Historic	-1.8
Hendrik-Ido-Ambacht	Small, Former industrial, Growth, New town, Residential	-1.8
Olst-Wijhe	Small, Agricultural	-1.8
Dalfsen	Small, Agricultural, Growth	-1.7
Meierijstad	Medium, Work	-1.6
Bladel	Small, Former industrial, Growth	-1.4
Raalte	Small, Agricultural	-1.4
Urk	Small, Growth, New town	-1.3
Wijk bij Duurstede	Small, Residential	-1.2
Hilversum	Medium, Centre, Green, Growth	-1.1
Breda	Large, Centre, Growth, Work	-1.1
Nuenen, Gerwen en Nederwetten	Small, Former industrial	-1.0
Heerenveen	Medium, Centre, Work	-1.0
Langedijk	Small, Growth, New town, Residential	-0.8
Oisterwijk	Small, Former industrial	-0.8
Veenendaal	Medium, Former industrial, Growth	-0.7
Houten	Small, Growth, New town	-0.7
Middelburg (Z.)	Small, Centre, Historic	-0.7
Aalten	Small, Agricultural, Shrink	-0.7
Best	Small, Former industrial, New town, Work	-0.7
Ede	Large, Centre, Green, Growth	-0.7
Gulpen-Wittem	Small, Agricultural, Historic, Residential, Shrink, Tourist	-0.6
Valkenburg aan de Geul	Small, Shrink, Tourist	-0.6
Woudenberg	Small, Growth	-0.6

Leudal	Small, Centre, Shrink	-0.5
Utrecht (gemeente)	Large, Centre, Growth, Historic, Work	-0.5
Wierden	Small, Agricultural, Former industrial	-0.5
Zwartewaterland	Small, Agricultural	-0.5
Heeze-Leende	Small, Green, Growth	-0.5
Zwolle	Large, Centre, Growth, Work	-0.4
Bronckhorst	Small, Agricultural, Historic, Shrink	-0.4
Voorst	Small, Agricultural	-0.3
Apeldoorn	Large, Centre, Green, Work	-0.3
Dinkelland	Small, Agricultural	-0.3
Gooise Meren	Medium, Centre	-0.2
Oldenzaal	Small, Former industrial, Work	-0.2
Losser	Small, Former industrial	-0.1
Rijssen-Holten	Small, Former industrial	-0.1
Grave	Small, Residential, Shrink	-0.1
Amstelveen	Medium, Growth, Work	-0.1
Meerssen	Small, Former industrial, Residential, Shrink, Tourist	-0.1
Veere	Small, Tourist	-0.1
Wageningen	Small, Growth	0.0
Buren	Small, Agricultural, Residential	0.0
Veldhoven	Small, Former industrial, Work	0.0
Leusden	Small, Green	0.1
's-Hertogenbosch	Large, Centre, Growth, Work	0.1
Bunnik	Small, Agricultural, Growth	0.1
Kampen	Medium, Growth, Historic	0.1
Landsmeer	Small, Former industrial, Growth, Residential, Tourist	0.2
Eijsden-Margraten	Small, Agricultural, Historic, Residential, Tourist	0.2
Arnhem	Large, Centre, Green, Growth, Tourist, Work	0.2
Bergen (NH.)	Small, Green, Shrink, Tourist	0.2
Bloemendaal	Small, Green, Growth, Residential	0.3
Castricum	Small, Centre, Residential	0.3
Voerendaal	Small, Agricultural, Former industrial, Residential, Shrink, Tourist	0.3
Baarn	Small, Green	0.3
Voorschoten	Small, Growth, Residential	0.4
Staphorst	Small, Agricultural, Growth, Historic	0.4
Oostzaan	Small, Former industrial, Growth, Tourist	0.4
Rozendaal	Small, Green, Residential	0.4
Midden-Delfland	Small, Agricultural, Growth, New town	0.4
Heumen	Small, New town, Residential	0.4
Waalre	Small, Former industrial, Green, Residential	0.4
Wassenaar	Small, Green, Tourist	0.4

Lopik	Small, Agricultural, Historic	0.5
Oegstgeest	Small, Growth	0.5
Zeist	Medium, Green, Work	0.5
Culemborg	Small, Former industrial, New town	0.5
Koggenland	Small, Agricultural, Growth, New town	0.5
Eindhoven	Large, Centre, Former industrial, Growth, Work	0.6
Ouder-Amstel	Small, Work	0.6
Oost Gelre	Small, Agricultural	0.6
Amersfoort	Large, Growth, New town	0.6
Eemnes	Small, Agricultural, New town	0.6
Delft	Large, Centre, Growth, Historic	0.6
Noordwijk	Small, Green, Tourist, Work	0.7
Putten	Small, Former industrial, Green	0.7
Utrechtse Heuvelrug	Small, Green	0.8
Nijmegen	Large, Centre, Growth	1.0
Katwijk	Medium, Centre, Growth	1.1
Woerden	Medium, Agricultural, Growth	1.1
Heiloo	Small, Residential	1.1
Hellendoorn	Small, Former industrial, Green	1.1
Krimpenerwaard	Medium, Agricultural	1.2
Heusden	Small, Former industrial, Residential	1.4
Zeewolde	Small, Growth, New town	1.5
Mook en Middelaar	Small, Green, Residential, Shrink, Tourist	1.6
Zoeterwoude	Small, Agricultural	1.7
Ermelo	Small, Green	1.8
Waterland	Small, Historic, Residential, Tourist	1.9
Montfoort	Small, Agricultural	2.0
Schiermonnikoog	Small, Historic, Tourist	2.0
Duiven	Small, New town, Work	2.0
Pijnacker-Nootdorp	Medium, Growth, New town, Residential	2.5
Westland	Large, Centre, Growth, Work	2.5
Terschelling	Small, Tourist	2.9
Amsterdam	Large, Centre, Growth, Historic, Tourist, Work	3.4
Nunspeet	Small, Green	3.7
Groningen (gemeente)	Large, Centre, Growth, Tourist, Work	4.3
Son en Breugel	Small, Growth, Work	4.3
Hattem	Small, Former industrial	5.4
Leiden	Large, Centre, Growth, Historic, Tourist, Work	9.6
Vlieland	Small, Historic, Tourist	11.4
Berkelland	Small, Agricultural, Shrink	15.1
Hilvarenbeek	Small, Tourist	15.5

(Source: www.emissieregistratie.nl)

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