

# KEINO

## Green deal



## The Concept for the emission-free construction sites

Annex 1- Emission-free construction sites:  
The green deal agreement for sustainable procurement

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# General information about the concept (1/2)

The concept of a zero-emission construction sites is a general description of the principles and practices aiming at reducing emissions from construction sites.

This concept can be used, where applicable, in the following construction sites and projects that procurement units undertake themselves or invite tenders for: The city's own maintenance and construction work (infrastructure and housing), tendered maintenance work and contracts.

The more specific limitations are defined as parts of the organisations' own strategies, and the implementation plans of the procurement units that have joined the green deal, for example.

By default, private construction is not required to apply the concept. However, if the procurement unit wishes, it may also require operations to follow the concept in full or partially, e.g. as a part of plot conveyance terms. By its own decision, the procurement unit may require that the environmental impact of transport equipment be taken into consideration even before the dates specified in this concept and agreed on in the green deal on zero-emission construction sites.

# General information about the concept (2/2)

The concept for zero-emission construction sites aims to reduce the carbon dioxide emissions, harmful exhaust emissions and noise from sites. The concept does not cover things such as the carbon footprint of construction materials or the lifecycle emissions of construction. In addition to the emissions defined in the concept, it is also recommended that operators attempt to reduce dust, in particular. This can be done through measures such as requiring contractors to have dust control plans.

The concept has been prepared as a part of the green deal for zero-emission construction sites. The concept supports the implementation of the green deal but can also be used by other operators.

# Green deal targets for zero emission construction sites

The requirements apply to procurement made after the target dates.



06/2021

- The concept of zero-emission construction sites was created
- New construction sites:  
Stage III B, Euro V



2022

- The concept of zero-emission construction sites in use
- Monitoring system (List of machinery and vehicles) in use
- Fossil-freedom: Contracting entities' own construction sites
- New construction sites:  
Stage IV, Euro VI



2025

- Fossil-freedom: All construction sites
- Machinery and transport equipment: 20 % electricity, hydrogen, biogas
- Only onsite operations

Shares of alternative operating forces (20 % & 50 %) are total volumes for all sites and not for each individual site.



2030

- Fossil-freedom: All construction sites
- Machinery and transport equipment: 50 % electricity, hydrogen, biogas
- Including deliveries to the site

# Market dialogue (1/2)

Examples of topics that can be studied by charting the market:

- Availability of various types of driving power, which may be affected by the geographical location or the opportunities to deliver low-carbon fuel to construction sites.
- Sufficiency and suitability of electric worksite machinery for the object of the procurement.
- Any needs for deviating from the environmental criteria for machinery.

## Market survey and dialogue

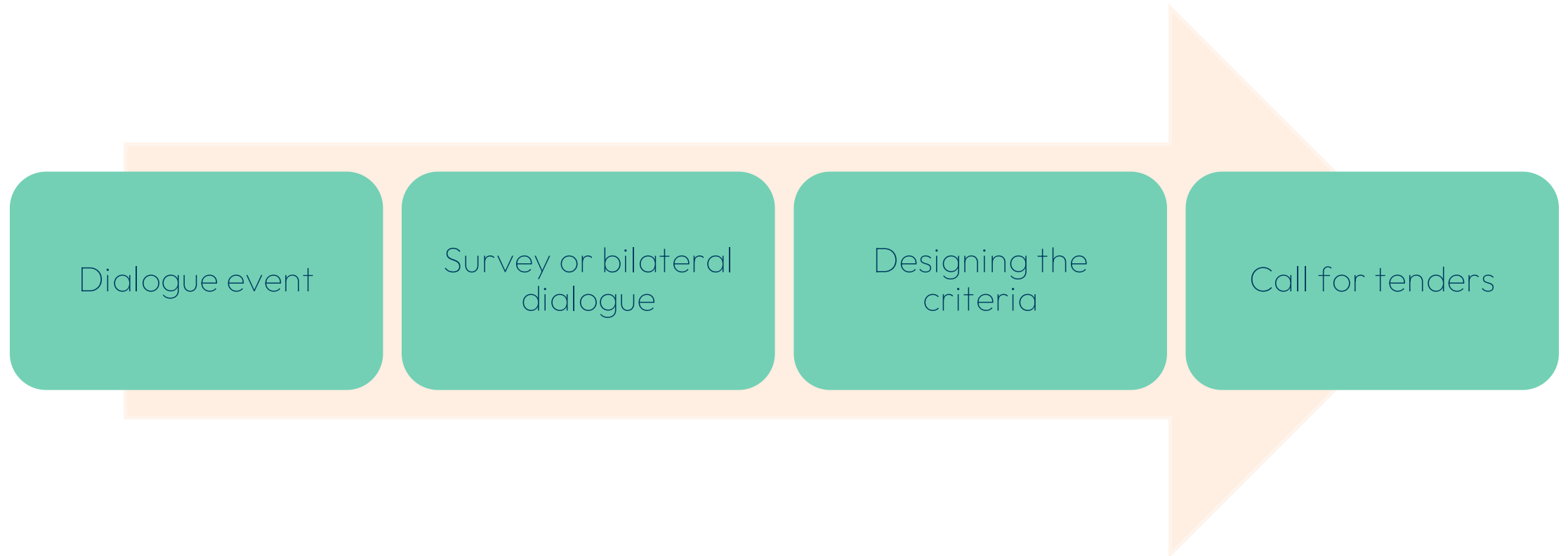
- The market survey starts sufficiently early, in the planning and preparation stages of the procurement. Through it, the market can be actively informed of upcoming tendering and the related requirements. Sufficient time needs to be reserved for the procurement process and participation.
- An advance notice of the market dialogue will be published in the HILMA portal. This way, interested and potential tenderers can be invited. Using HILMA's information request feature, the tenderers' general willingness to participate in the procurement and other details can be surveyed. In addition to the market dialogue, the client can also hold one-on-one negotiations. Based on this information, the procurement unit will prepare the call for tenders. Sharing information about the best practices arising from projects is key for the industry's development.

# Market dialogue (2/2)

Regarding the green deal on zero-emission construction sites, three types of market dialogue can be held:

1. The green deal on zero-emission construction sites involves annual market dialogue that brings operators together to go through the requirements for the coming years. These dialogue sessions focus on the goals of the green deal and applying them to the procurement criteria.
2. Procurement units can also hold dialogue sessions specific to a contract or type of contract, either by themselves or together with KEINO Competence Centre.
3. For a single construction sites or procurement, a separate market dialogue session can be held, based on which the call for tenders and requirements will be prepared. These types of targeted dialogue are recommended particularly if new models are being tested for promoting alternative driving power.

# Example of dialogue prior to a call for tenders





# Example of dialogue: Kulosaaren puistotie in Helsinki

In December 2019, the Urban Environment Division of Helsinki held a market dialogue event aimed at infrastructure contractors interested in submitting tenders for the zero-emission infrastructure construction sites of the City of Helsinki. The invitation to the event was published in the Hilma system, in addition to which the contractors' received invitations by e-mail.

At the event, the Helsinki's carbon neutrality goals for 2035 were presented extensively, and participants received information about what zero-emission construction sites are and what role they play in achieving the goals. In addition to this, the environmental criteria for machinery and the opportunity to use electric machinery at construction sites were discussed.

The market dialogue involved eight contractors. City representatives also talked to the contractors one-on-one. They mostly agreed that the industry is developing towards zero-emission construction sites. The topics discussed included the current availability and prices of electric machinery. Based on the discussions, a call for tenders was finished and published in spring 2020. The market dialogue provided certainty on the previously suggested minimum criteria for low-emission construction sites. It also added the finishing touches to the scoring system for electric machinery.

# Procurement criteria used for machinery and energy consumption (1/6)

Overview of procurement criteria:

- The environmental criteria for equipment in zero-emission construction sites are divided into:
  1. general minimum requirements for machinery and transport equipment arising from the green deal
  2. requirements and models through which procurement units aim to achieve the proportion of equipment using alternative driving power as defined in the green deal
  3. requirements related to other environmental impacts and quality set for the construction sites
  4. The examples of criteria presented in this section and detailed requirements for each contract type arise from the shared dialogue.

# Procurement criteria used for machinery and energy consumption (2/6)

1. General minimum requirements in organisations included in the green deal
  - All construction sites will use the emission levels for machinery and heavy transport equipment, as defined in the green deal, as their minimum requirements. The minimum levels for the machinery used in the project and transport inside the construction sites are Stage III B and Euro V from 1 July 2021 onwards, and Stage IV and Euro VI from 1 January 2023 onwards. The Euro VI minimum requirement will apply to transport to and from construction sites from 2030 onwards.
  - From 1 January 2023 onwards, construction sites where the procurement unit is the primary implementer will no longer use fossil fuels. Freedom from fossil fuels can be achieved through drop-in biofuels used in diesel equipment, or gas or electricity, among others.
  - From 1 January 2026 onwards, new construction sites will no longer use fossil fuels. Freedom from fossil fuels can be achieved through drop-in fuels used in diesel equipment, or gas or electricity, among others.
  - As for the requirements for emissions classes and driving power, some deviations and flexibility are permitted for specific machinery, if this is considered necessary based on market dialogue. Such machinery may include some hoisting machines and asphalt pavers. The flexibility or deviations added to the minimum requirements must be stated in the documents for the call for tenders.

# Procurement criteria used for machinery and energy consumption (3/6)

2. Promoting the use of alternative driving power
  - Types of alternative driving power in accordance with the green deal include electricity, biogas and hydrogen.
  - Alternative driving power will be introduced at construction sites selected by the procurement unit and in a manner decided by the unit. In addition to the minimum requirements, alternative driving power can also be encouraged through bonuses or bases for comparison.
  - When using the bases for comparison, the environmental criteria should be weighted at 30% of the total criteria.

# Procurement criteria used for machinery and energy consumption (4/6)

Example of the minimum requirement applied:

Of the machinery used for the project, at least 30% must use electricity, hydrogen or biogas as their sole driving power.

The other machinery at the construction sites uses non-fossil fuels.

Acceptable (non-fossil) fuels include ethanol (e.g. ED95) and renewable HVO diesel or fuel oil in accordance with the EN 15940 standard.

Example of the bonus applied:

For electric or biogas machinery used at the construction sites and weighing over 1.5 tonnes, the bonus is €25/h based on the operating hours of the machine in question. The bonus for using biogas-fuelled transport vehicles is 25 cent/km. The bonus for machinery at STAGE V in active use at the construction sites, based on operating hours, €15/h. The bonus paid is €30,000, at the maximum.

# Procurement criteria used for machinery and energy consumption (5/6)

Example of the quality scoring:

The contractor with the most economically advantageous tender will be selected. The most economically advantageous tender is the one with the best price-quality ratio out of the tenders that meet the developer's criteria. Price accounts for 70% of the comparison, and quality for 30%.

Quality points for overall economy are awarded for electric machinery. The contractor may enter up to five electric machines in the scoring.

The quality score is calculated in the following way:

- Five electric machines, 100 p.
- Four electric machines, 80 p.
- Three electric machines, 60 p.
- Two electric machines, 40 p.
- One electric machine, 20 p.
- No electric machines, 0 p.

# Procurement criteria used for machinery and energy consumption (6/6)

## 3. Other operating methods and development during the contract period

Other operating methods aiming at emissions reductions should be considered in proportion to the procurement size to avoid unnecessary restrictions on the market. In the procurements of procurement units that have joined the green deal, most of the requirements will generally be applied to all contracts worth more than one million euros. They may also be applied to smaller contracts at the procurement unit's discretion.

- A project-specific environmental plan or a part of an environmental or quality plan aiming at emissions reductions is required. The procurement unit may also set its own, more detailed requirements for the environmental plan.
- An environmental management system according to a standard or verified by a third party is required. e.g. SFS-EN ISO 14001 or RALA certification.
- All small machinery (power of below 4 kW) used at construction sites need to run on electricity. Some deviations may be allowed as agreed with the client.
- The machinery at zero-emission construction sites is monitored, and the contractor is obligated to participate in the monitoring.

# Induction for the personnel and operations during the project (1/2)

Introducing personnel to low-emission operating methods

- The contractor and the client will go through the construction site personnel's expertise at the initial meeting. The main implementer or contractor of the project is in charge of introducing personnel to environmental working methods and the principles of zero-emission construction sites. The contractor can prove the induction by using completion certificates for the Association of Finnish Technical Traders' machinery training or by presenting its own training model. The training should be completed in advance. The employer will carry out the induction of its own personnel with different languages, etc. taken into consideration.
- In the call for tenders, the client will define relevant persons who are obligated to participate in the training entity on machinery.



# Induction for the personnel and operations during the project (2/2)

Operating principles at the construction site and contract documents

- The contractor must have an environmental plan and an appointed person responsible. During a project, follow-up inspections are held regularly, and the reports are delivered to the client. Quality, safety and environmental matters will be taken into consideration throughout the project. Any safety hazards related to new alternative driving power (such as biogas) will be taken into account in the project plans. Feedback will be requested from contractors in connection with the acceptance inspection.
- If the project is required to be fossil-free, the contractor must verify the source of the construction site electricity by presenting an electricity agreement.

# Monitoring and verification (1/3)

## Overview of monitoring and verification

- The monitoring of construction site equipment serves two primary purposes. The primary goal of the monitoring is ensuring that the equipment used at the construction sites complies with the tender and contract. The secondary goal is collecting information to verify the realisation of the green deal on zero-emission construction sites. Careful planning benefits both the client and the tenderer and ensures that tenderers are treated fairly. Emissions from machinery are monitored via the equipment list or the electronic system to be created at a later date. The equipment list and the machinery recorded in the electronic system will be monitored at the worksite meetings. They may also be monitored through random checks performed by site supervisors, for examples.

# Monitoring and verification (2/3)

## Equipment list

- Before the start of the project, the selected contractor must provide an initial equipment list, which can be complemented during the project with the client's approval if equipment needs to be replaced or added. Machinery not recorded in the equipment list must not be used on the worksite. All additions made to the equipment list must fulfil the same requirements as those defined in the call for tenders.
- A sample equipment list is included in the appendices. The procurement unit may also use an equipment list in a different format, provided that it includes the same items.

## Electronic system

- The equipment list may also be in an electronic system used by the client. The development of the electronic system started in 2021.

# Monitoring and verification (3/3)

## Inspections

- A representative of the client, such as a site supervisor, will go through the equipment used at the construction site with the contractor at the initial meeting or first worksite meeting, based on the equipment list or electronic system. If equipment used at the worksite differs from the equipment stated in the tender, the contractor must submit an updated version of the equipment list at the initial meeting, at the latest.
- At the site meetings or follow-up meetings, the client's representative will go through the types of driving power used at the construction site with the contractor, based on the minimum requirements and the information stated by the contractor in the tender. For example, if there are doubts about the fuel being fossil-free, the client may demand that the contractor submit a receipt from the fuel provider or similar proof of the fuel sold to the construction site.
- The client's site supervision may perform random checks at the worksite, through which the matters discussed at the initial meeting will be verified.

## Sanctions

- If deviations from the agreement are observed in the equipment used at the construction site, the contractor will be subject to a contract penalty defined in the call for tenders and the agreement. The sum of the contractual penalty is subject to the procurement unit's discretion.

# Emissions calculations

## Overview of emissions calculation

- Calculations of construction site emissions do not need to be performed for all construction sites by default. Based on its needs, the client will define the construction sites for which more detailed data is desired for further development, For worksites from which data is collected, the contractor must provide the following information as an attachment to the equipment list or on the electronic system:
  - Operating hours of machinery and vehicles
  - Fuels and driving powers of machinery and vehicles
  - Fuel consumption of machinery and vehicles

# Collecting feedback from contractors

## Overview of feedback collection

The contractors' opinions will be heard so that the requirements and concept for zero-emission construction sites can be developed further. Feedback on the requirements is received through market dialogue, but it is also necessary to learn about any issues or challenges in a specific project.

Feedback is collected at worksite meetings and the final feedback collected in connection with the worksite's transfer. The final feedback will include the following, at the minimum:

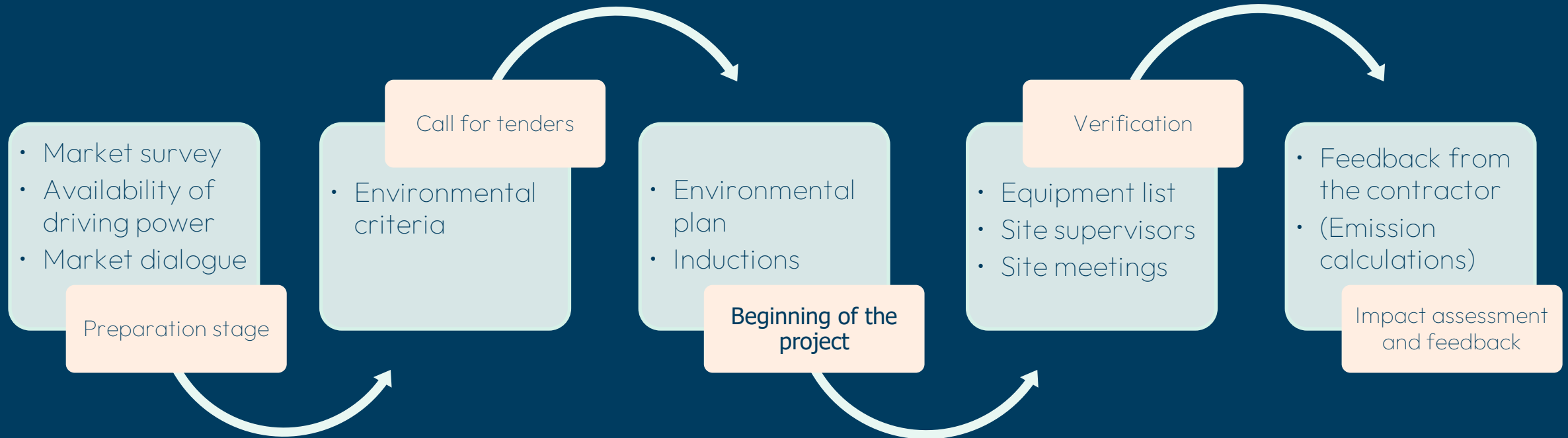
- Environmental criteria for equipment and how easy it was to fulfil them
- Experiences of the training for machinery operators
- Availability of potential alternative driving power and experiences of using it
- Issues and resolving them

If criticism or wishes regarding the environmental criteria arise in the contractor feedback, the feedback will be shared with the personnel developing the criteria, such as the green deal contact person.

# APPENDIX: Example of the list of machinery and vehicles

nro.	merkki	malli	Vuosimalli	Rekisterinumero jos rekisterissä	Koneluokka	päästöluokka	käyttövoima	Pääasiallinen käyttötarkoitus työmaalla	Arvioidut käyttötunnit urakassa	Aliurakoitsijan nimi ja Y-tunnus
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# Summary of matters to be considered at different stages





# More information

The network-based competence center for sustainable and innovative public procurement (KEINO) plays a key role in the implementation of the contract in cooperation with the ministry. KEINO supports and helps public procurers with sustainable and innovative public procurement. The Ministry of the Environment and the KEINO competence center monitors the green deal, evaluates its effectiveness and further develop the agreement with procurement organizations.

More information about the green deal agreement (in Finnish):

- <https://www.hankintakeino.fi/fi/palvelut/hankintojen-green-deal-sopimukset/paastottomien-tyomaiden-green-deal-sopimus>
- <https://sitoumus2050.fi/paastotontyomaa#/>

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