



PORTA NOVA

sustainability report 2024–2025

Porta Nova. The most beautiful red roses, with the smallest ecological footprint

At Porta Nova, we have specialised for many years in growing Red Naomi® roses of absolute top quality. Each year, we produce approximately 52 million roses, all cultivated with care, craftsmanship and passion. At the same time, we strive to keep our environmental impact as low as possible, create optimal social conditions and operate responsibly.

We work on this every day. We have invested in the latest sustainable technologies: our greenhouses are fully equipped with full-LED lighting, and we use advanced climate control systems with climators to create the perfect growing conditions. This allows us to light and heat our greenhouses using less energy. We have also made significant progress in reducing the use of chemical products, with an increasing focus on biological crop protection and the introduction of the UV-C robot.

Thanks to the implementation of FloriPEFCR, we can now officially and independently demonstrate how sustainably we grow our roses. As one of the first growers, we had our entire footprint for 2021, 2022, 2023 and 2024 calculated and validated in 2025, something we are extremely proud of.

However, we do not see sustainability as a one-time achievement. At Porta Nova, we continue to invest and improve. Our goals for the coming years are clear:

- By 2030, we aim to reduce the use of crop protection products in our newest greenhouse by two thirds, using only so-called green products.
- In 2026, we aim to phase out all non-recycled films and replace them with films containing 70% recycled plastic.
- Step by step, together with our supply chain partners, we aim to transition fully to wind energy, until 100% of our roses are grown using green electricity.

Our mission remains unchanged:

“To grow the best red roses in the world with minimal impact on the environment.”

Through continuous innovations in the greenhouse, such as the introduction of UV-C robots and full-LED lighting, we have significantly reduced our impact in recent years. This progress enabled us to introduce our new sustainable label FUTURA: roses grown using 100% wind energy. With this step, we reduce our CO₂ emissions per rose by nearly 95%.

With this first sustainability report, we aim to be open and transparent about our efforts. We invite everyone to think along with us and to ask questions. We are happy to personally share the results of our footprint calculations, because only together can we continue to grow towards a sustainable future.

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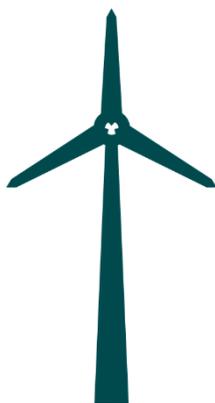
1. Sustainability in action: how we grow the cleanest Red Naomi! roses

At Porta Nova, we have invested for years in smart innovations to grow our roses with minimal environmental impact. Not by just talking about sustainability, but by actually doing it. We proudly share the steps we've taken to reduce our footprint and improve the quality of our Red Naomi! roses.

Climator: Summer heat captured, winter warmth supplied

With our own *Climator* system, we capture summer heat and store it as warm water 100 meters underground. In winter, this natural heat source warms our greenhouses, reducing fossil fuel use. Cooling works the opposite way.

We started developing this in 2008 and gradually expanded it. When we built a new greenhouse in 2018, we immediately installed Climators there as well.



Green energy: 9 km of private power line

In 2019, we invested in a 9 kilometer private power line directly connected to the nearest substation. This allows us to choose between generating our own energy with the CHP or switching to purchased electricity — even going gas-free and opting for 100% wind energy.

💡 LED lighting: Smarter growth, lower consumption



Since 2022 we have fully transitioned to full-LED lighting, completed in 2025. With specially developed light spectra, our roses get exactly what they need — saving 40% energy without compromising quality.

💧 Water management: Nothing goes to waste

We collect rainwater from our own greenhouses and surrounding buildings. This purified water forms the basis of our nutrient systems, where 100% of the drainage water is reused. Occasionally, we flush our dune sand filter to maintain optimal filtration.

🛡️ Biological crop protection: Natural allies

We strive for 100% biological pest control: from predatory mites against thrips to our Solar UV-C cannon that patrols the greenhouse daily to prevent diseases. We began testing this technology as early as 2014. In 2022, we developed a dedicated robot, followed by the acquisition of a second unit in 2024. With the addition of two more UV-C robots in 2025, we expect to control powdery mildew in our newest greenhouses naturally, significantly reducing the need for spraying. Less chemistry and a stronger natural balance for our biological control systems.

Every innovation brings us closer to our goal: growing the cleanest, most beautiful red rose with the lowest footprint in the industry. With FUTURA as our sustainable label, we show that true beauty begins with respect for nature and the environment.

2. Proof through passion: certification and transparency as foundation

At Porta Nova, we believe that real sustainability is not about nice words, but about hard facts. Anyone can claim to be “green,” but we prefer to show that we go further with passion and proof.

Our first major step towards certified sustainability was taken in 2020 with our FSI compliance. Porta Nova holds both MPS-A and MPS-GAP certifications, confirming that our environmental performance, traceability, safety and hygiene are structurally maintained at the highest level.

Still, we wanted to go further. That is why we embraced FloriPEFCR; the new European benchmark for sustainability. Thanks to the innovations we have implemented in our greenhouse over recent years, we already felt we were on the right track. Now we can finally prove this objectively and compare ourselves fairly with other growers.

To guarantee full transparency, we partnered with ValidIT, an independent specialist in sustainability data validation. This makes Porta Nova the first grower to calculate and officially validate its footprint according to the FloriPEFCR methodology. No assumptions, no hidden calculations, just complete clarity.

We notice that the different sustainability measurement systems in the market can sometimes cause confusion. A good example is the difference between our product footprint and our MPS score. Our MPS-A rating demonstrates that we operate sustainably within Dutch greenhouse rose production.

While our footprint per rose is among the lowest in the sector, we do not achieve an A+ within the MPS system, which measures inputs per square metre rather than per stem. This difference lies in our cultivation efficiency: we use our greenhouse space extremely efficiently and produce a high number of stems per m². As a result, energy use per square metre is slightly higher, but per rose, which is what truly matters, we are exceptionally efficient.

It is important to understand that MPS measures company-level inputs, not product impact. The score therefore says nothing about how sustainable the rose itself is when purchased by traders or consumers. In addition, MPS only compares growers within the same country. An A+ score in the Netherlands is therefore not directly comparable to an A+ score in Ecuador.

For a truly fair comparison, you need to look at the product footprint per stem, across all impact categories: climate change, water use, toxicity, particulate matter, and more. This is exactly what we do through the official European FloriPEFCR methodology, validated by ValidIT. That is where Porta Nova truly makes the difference.

**Real sustainability.
Real data.**

At Porta Nova, we believe that words only matter when they are backed by facts. That's why we combine our passion for the most beautiful roses with hard, independent proof of sustainable cultivation.

Transparent. Validated. Setting the standard in our industry.

3. FUTURA is the wind of change

Sometimes, making operations more sustainable isn't about taking major detours, but simply about making the right choice. During our extensive footprint analysis in 2023, we discovered that over 95% of our CO₂ emissions (cradle to gate) could be directly traced back to energy consumption. That insight made us pause and rethink.

What if we were to switch entirely to wind energy? All the infrastructure was already in place, it was essentially just a matter of pushing the green button.

To fully understand the impact, we modelled a detailed scenario in which we replaced:

- All “grey” electricity with 100% wind energy.
- Our own CO₂ production with sustainably sourced CO₂

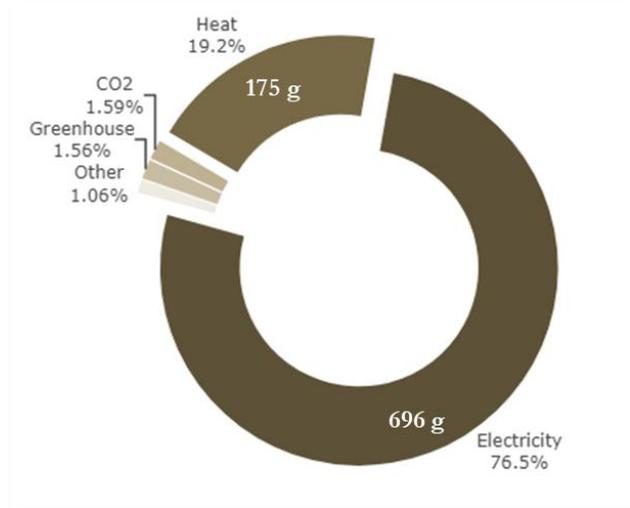


Figure 1: The different sources of CO₂-equivalent emissions in the production of Red Naomi® roses in 2023

The results? Groundbreaking.

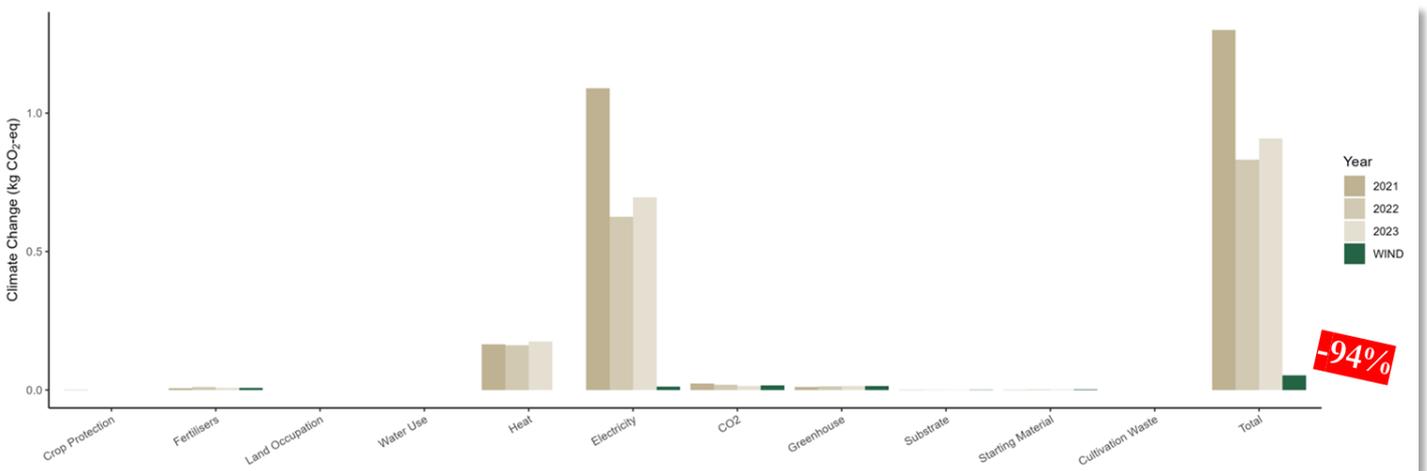


Figure 2: The impact of switching to wind energy on the climate change footprint of a Porta Nova Red Naomi® rose

- 94% reduction in CO₂-equivalent emissions
- 89% reduction in the single score — the comprehensive sustainability index that combines all 16 environmental impact categories

Because real sustainability goes beyond climate change alone, we have included all impact categories in our assessment.

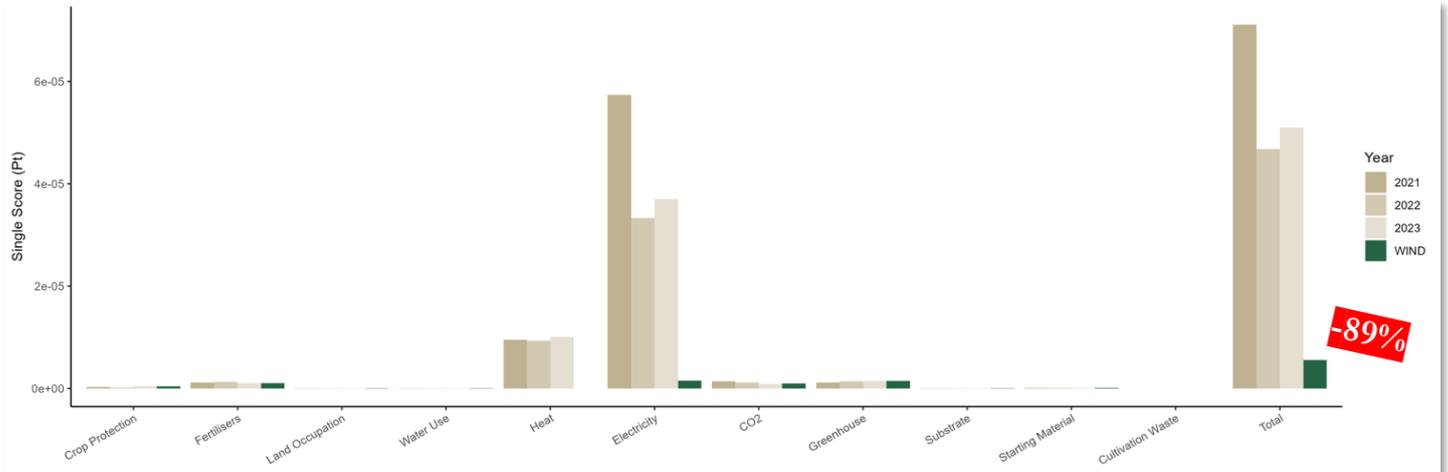


Figure 3: The impact of switching to wind energy on the overall footprint (single score) of a Porta Nova Red Naomi® rose

Table 1: The impact of Porta Nova Red Naomi® roses across the 16 impact categories of FloriPEFCR

Impact categories	2021-2023	2023 scenario	difference %
	average	FUTURA	with 2023
Acidification (mol H ⁺ eq)	1.30*10 ⁻³	2.62*10 ⁻⁴	-78%
Climate change (kg CO ₂ eq)	1.01	0.0524	-94%
Ecotoxicity, freshwater (CTUe)	1.88	1.53	-31%
Eutrophication, freshwater (kg P eq)	1.09*10 ⁻⁵	5.97*10 ⁻⁶	-6%
Eutrophication, seawater (kg N eq)	4.17*10 ⁻⁴	6.35*10 ⁻⁵	-84%
Eutrophication, terrestrial (mol N eq)	4.52*10 ⁻³	6.74*10 ⁻⁴	-84%
Human toxicity, cancer (CTUh)	3.67*10 ⁻¹⁰	3.41*10 ⁻¹⁰	+9%
Human toxicity, non-cancer (CTUh)	1.52*10 ⁻⁹	7.05*10 ⁻¹⁰	-52%
Ionising radiation (kBq U-235 eq)	4.04*10 ⁻²	2.08*10 ⁻³	-94%
Land use (Pt)	2.07	1.54	-25%
Ozone depletion (kg CFC11 eq)	5.35*10 ⁻¹⁰	6.36*10 ⁻¹⁰	0%
Particulate matter (kg PM2,5)	1.12*10 ⁻⁸	4.3*10 ⁻⁹	-59%
Photochemical ozone creation (kg NMVOC-eq)	1.27*10 ⁻³	1.49*10 ⁻⁴	-88%
Raw material cons. fossil (MJ)	15.1	0.66	-95%
Raw material cons. minerals & metals (kg Sb eq)	1.69*10 ⁻⁷	4.60*10 ⁻⁷	+190%
Water use (m ³ deprived)	2.65*10 ⁻²	1.62*10 ⁻²	-37%
Single score (Pt)	5.63*10⁻⁵	5.70*10⁻⁶	-89%

Around November/December 2024, we sold Porta Nova FUTURA roses for the first time, using purchased wind energy. This allowed us to calculate the footprint for both our standard and FUTURA roses for the year 2024.

Due to cultivation changes, a larger growing area was in full production for most of the year. Combined with the weather conditions in 2024, this resulted in a higher energy demand and, consequently, a higher footprint per stem.

In 2024, the average CO₂ footprint of a Porta Nova Red Naomi® rose amounted to 1,350 g (compared to 909 g in 2023).

In 2024, the CO₂ footprint of a Porta Nova FUTURA Red Naomi® rose amounted to 70 g (compared to 55 g in 2023).



For the single score, we see a similar pattern in 2024: a significant increase for our standard roses and only a minimal increase for FUTURA.

The appendices include the 2024 graphs for the other impact categories.



4. Porta Nova vs. import

At present, there are no reliable, publicly available figures on the CO₂ footprint of growing high-quality long-stem roses in Ecuador or Kenya. To date, no growers from these regions have used the latest footprinting tools to publish their results transparently. What we do know is that roses from these countries are standardly transported to Europe by air or sea, and that air freight is one of the largest sources of CO₂ emissions in the supply chain.

Because we do not want to rely on assumptions, we worked together with the specialists at Greenhouse Sustainability to calculate the actual transport impact. They calculated the CO₂ emissions for a single rose (50, 70 or 80 cm) transported from an average grower in Kenya or Ecuador to the Netherlands. The results are shown in the graph (updated with the latest EF database, January 2025).

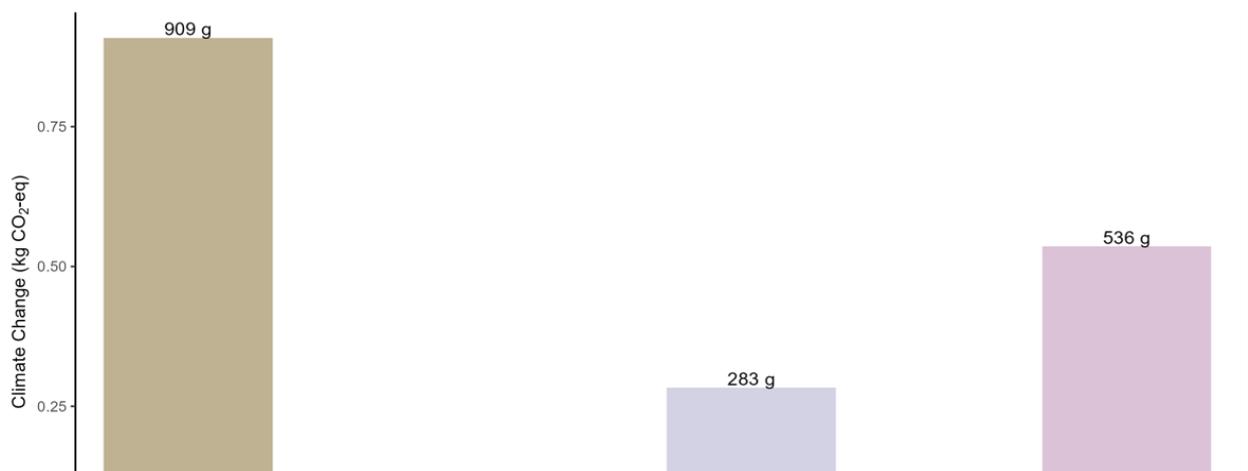


Figure 4: Comparison of the climate change impact of the original Porta Nova Red Naomi® rose and the FUTURA variant with the transport impact of roses from Kenya and Ecuador. The impact of cultivation itself is excluded.

Naturally, these remain average values. Packaging, weight and logistical details differ per grower, but the overall picture is clear. Producing a traditional Dutch rose does indeed result in slightly higher CO₂ emissions than the transport alone of a rose from Kenya or Ecuador. At first glance, this does not appear to be in our favour.

However, when we look at a Porta Nova FUTURA rose, the story changes completely. The transport footprint of, for example, an 80 cm Ecuadorian rose can be up to ten times higher than the entire footprint of a FUTURA rose grown on 100% wind energy. Compared to roses from Kenya, FUTURA also remains significantly cleaner.

When roses are transported by sea freight, the transport footprint decreases substantially and comes close to the footprint level of a FUTURA rose. It is important to remember, however, that this comparison relates only to transport. The emissions associated with cultivating the rose itself still need to be added.

In addition, sea freight comes with several challenges: roses are around thirty days older upon arrival, and logistics are more vulnerable to disruptions. Sea freight also requires a different way of planning and operating within the trade.

Furthermore, roses grown near the equator should also be compared across the other environmental impact categories. We expect that cultivation abroad in plastic greenhouses and in-soil production will score very differently on key categories such as water use, fertiliser input and crop protection products.

For Porta Nova, gaining insight into the actual environmental performance of fellow growers is crucial. Competition in the European market is increasing, and the demand for transparency and sustainability continues to grow. We would therefore welcome the opportunity to compare with other (rose) growers, enabling us to work even more purposefully on making our sector more sustainable.

5. Together for a more sustainable rose

The switch to 100% wind energy was already technically fully within reach for Porta Nova. The infrastructure was in place. What remained was the economic challenge. With an additional cost of approximately 2 euro cents per stem, fully green electricity requires a relatively small investment per rose, but represents a major step towards a more sustainable world. Even so, with an annual production of over 52 million roses, this limited surcharge still results in a substantial investment. We cannot carry this transition to wind energy on our own.

At the same time, the largest part of the footprint of the chain partners that follow after us is driven by the flowers they buy and sell. It is therefore also important for our customers (and their customers, and so on) to purchase products with a lower footprint.

That is why we make a clear call: let's reduce our footprint together.



Figure 5: Marge-escalatie in the flower sector.

However, we encountered a challenge. In the flower supply chain, prices are often increased at every step (margin escalation), with each party adding its own margin. As a result, a small sustainable investment at the source can ultimately lead to a significant price increase for the consumer, thereby slowing demand.

This margin escalation stands in the way of introducing sustainable solutions. For example, an increase in our costs of 2 euro cents would result in a consumer price increase of approximately 11 euro cents, of which the florist would retain an additional 8 euro cents in margin. This becomes too expensive for most customers and ultimately hinders sustainability progress.

With FUTURA, we show that real sustainability starts with a choice and only truly makes an impact when we carry it together throughout the entire chain. We charge an added value of 2 euro cents per stem, covering our wind energy costs, and ask the chain not to apply any margin on this amount. In this way, we ensure that no one profits from sustainability and that a sustainable rose remains affordable for the consumer.

6. Good employment practices and social sustainability

At Porta Nova, we believe that sustainability is not only about energy and resources, but also about people. Good employment practices start for us the moment someone first walks through the door. A warm and careful onboarding ensures that new colleagues immediately feel welcome and valued. Every new employee is assigned a dedicated supervisor or buddy during the initial period, and we ensure regular personal contact with their manager. We operate an open-door policy: colleagues do not need to wait for formal review moments to raise questions or concerns.

Every employee has an annual performance and development review, with room for personal growth. This includes training opportunities (such as Excel or job-specific courses) and internal career progression, for example from assistant team leader to team leader, or from team leader to grower. An internal training programme is available to support this development.

We actively invest in young talent and collaborate with various MBO, HBO and university-level programmes. We offer challenging internships, supervise student project groups and provide guided tours for classes from, among others, Yuverta and the university of applied sciences InHolland. Several former interns and students are now permanently employed with us in key roles, such as (assistant) grower.

Job satisfaction is just as important as performance. Teams receive an annual budget for team activities, and we regularly organise company-wide events for all colleagues.

All employees at Porta Nova are on permanent contracts. Over the past four years, more than 60 temporary agency workers have transitioned into permanent employment. As a result, our permanent workforce has doubled over the past five years. We operate in accordance with the Glastuinbouw collective labour agreement (CAO).

Our strength lies in personal attention. The HR department is actively and visibly present on the work floor and complements the management team. This involvement has demonstrably contributed in recent years to high job satisfaction and low sick leave.

7. Looking ahead

With the introduction of FUTURA, we have taken a strong first step towards a more sustainable Porta Nova. But we are far from finished — and we want to go further.

More FUTURA every year

We realise that we cannot make the transition to more sustainable cultivation on our own. That is why we actively focus on motivating our trading partners to grow together with FUTURA. The more roses we jointly market through this line, the further we can reduce the overall footprint of our company. Every FUTURA rose contributes to that goal. We therefore aim to continue increasing the share of FUTURA roses sold each year, with targets of 5% FUTURA in 2026 and 10% in 2027.

In addition, Porta Nova aims to actively form partnerships with complementary growers operating at (almost) the same sustainability level as Porta Nova itself. By creating such “sustainability alliances,” we can offer a broader and more attractive assortment. The penetration of FUTURA at high-end food retailers has so far remained limited, as these channels are looking for a wider solution than large-flowered red roses alone.

New films with 70% recycled plastic

Plastic plays a relatively small role in the total environmental impact of a rose, but symbolically it sends a powerful signal. That is why, in the coming years, we aim to phase out all non-recycled films and switch to films containing 70% recycled plastic. In 2024, the share of recycled material already stood at 13.66%. In 2025, we will further increase this percentage, and once our new corporate identity goes live in 2026, we will fully switch to films with at least 70% recycled plastic.

A one-third reduction in crop protection

We are also taking steps in crop protection. In our newest greenhouse sections, we aim to reduce the use of crop protection products by 33% in 2026 compared to 2023. The deployment of robotics plays an important role here: with the expansion of our UV-C robot fleet, we expect to control powdery mildew completely without chemical intervention.

Towards 100% natural crop protection

From 2025 to 2028, we will launch the three-year programme “100% Green Grown.” Within this project, one of our three locations will transition entirely to crop protection products of natural origin. We apply an escalation ladder: natural and biological solutions always form the basis, with a

strong focus on prevention and plant resilience. Only if a pest outbreak truly escalates and crop health is at risk do we keep the option open to intervene with minimal use of synthetic products.

The objective of “100% Green Grown” is clear: to demonstrate that fully green cultivation is both feasible and future-proof within intensive rose production. With this project, we aim to learn, inspire and scale up.

Closure of the oldest location

In 2025, we will close Porta Nova’s oldest location. This greenhouse offers the least potential for further sustainability improvements: it is lower, and therefore less energy-efficient, and not suitable for the autonomous deployment of our UV-C robots. The existing LED fixtures will be reused at our other locations. In this way, we maximise the impact of the resources we already have and take another step towards a more efficient and sustainable cultivation structure.

Clarifying the concept of “footprinting”

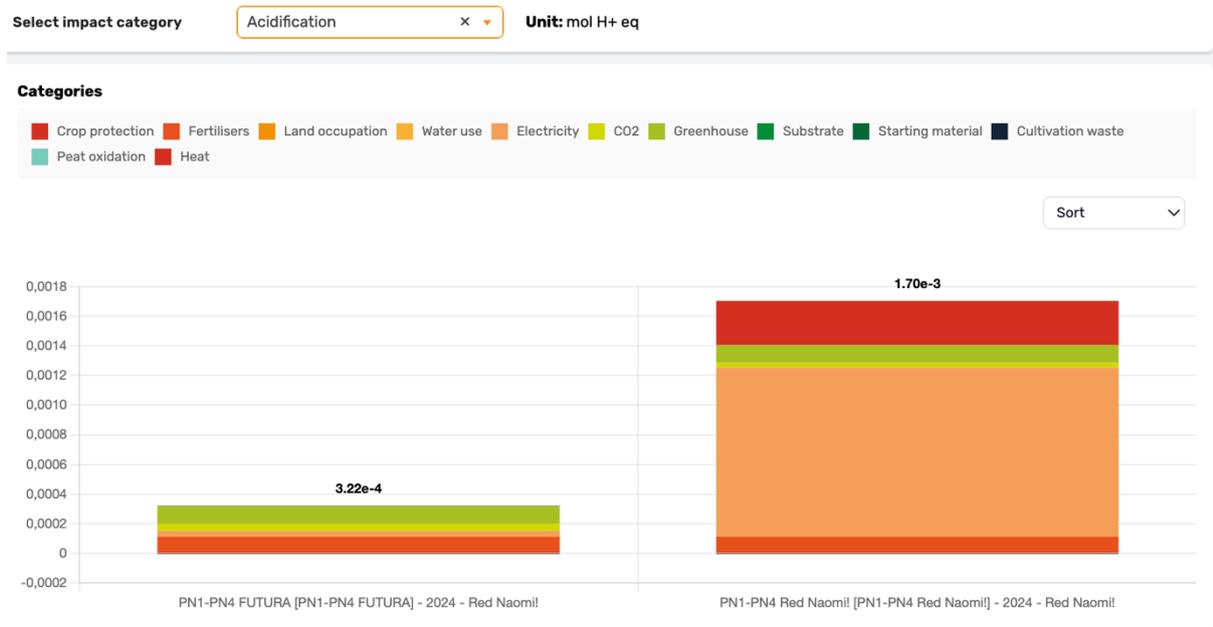
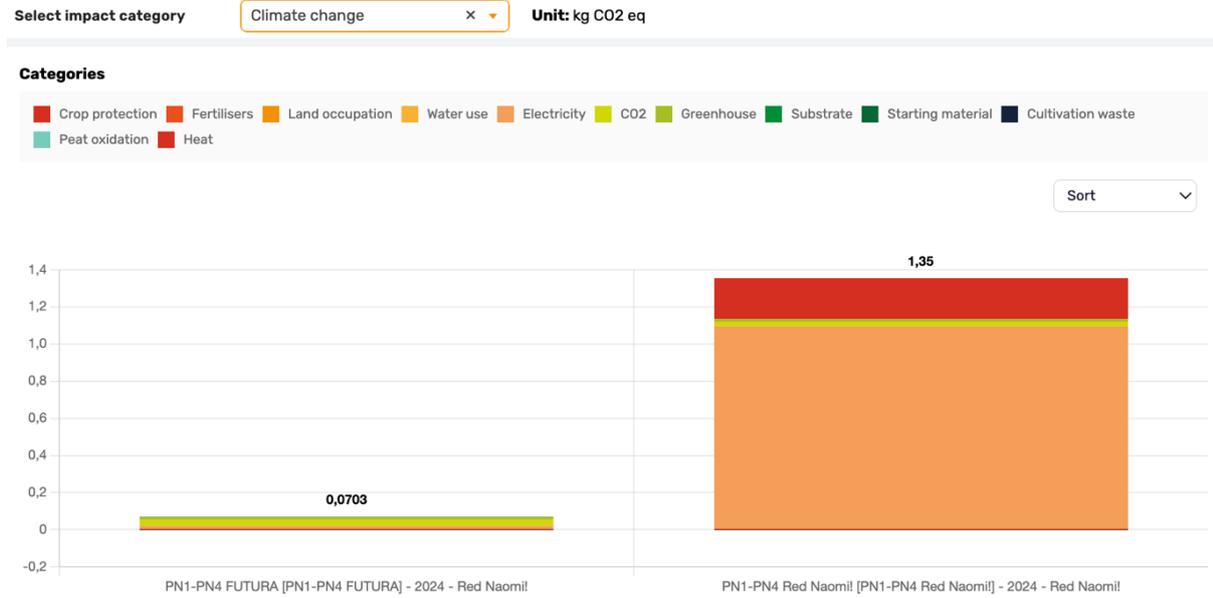
We notice that the concept of “footprinting” is not yet widely known or fully understood within our sector and supply chain. Because it forms an important foundation for transparent and measurable sustainability, we want to actively communicate about it.

We therefore commit to making the concept of footprinting more accessible for customers and partners. In addition, we advocate for a simple, recognisable sustainability indicator — comparable to the Nutri-Score used for food — that allows the environmental impact of different flowers or products to be compared more easily. This will make it clearer for both trade partners and consumers that FUTURA roses are a responsible and sustainable choice.

With this first sustainability report, we start a new tradition: providing annual insight into our footprint, our performance and our goals. Each year, we further sharpen our ambitions. Step by step, we are building a more sustainable Porta Nova — with less impact, greater transparency and more FUTURA..

8. Appendices

Below are the graphs from the latest 2024 footprint calculation for both FUTURA and regular Porta Nova roses.



Select impact category

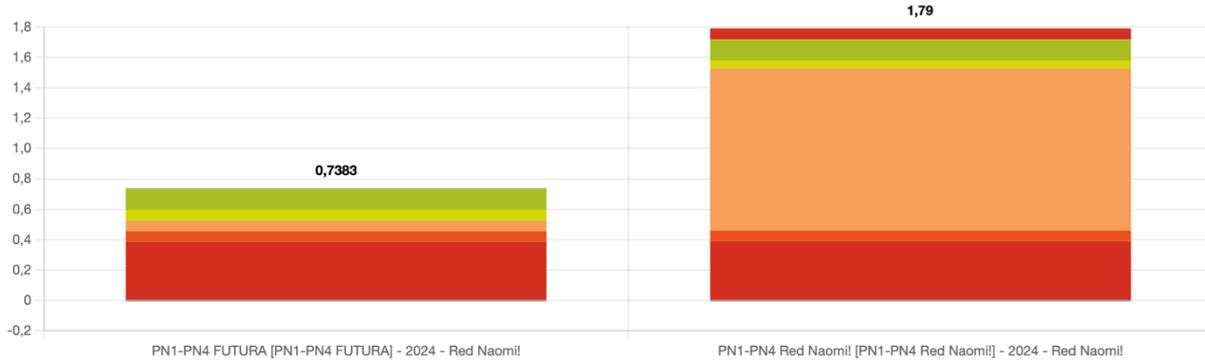
Ecotoxicity, freshwater x

Unit: CTUe

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort



Select impact category

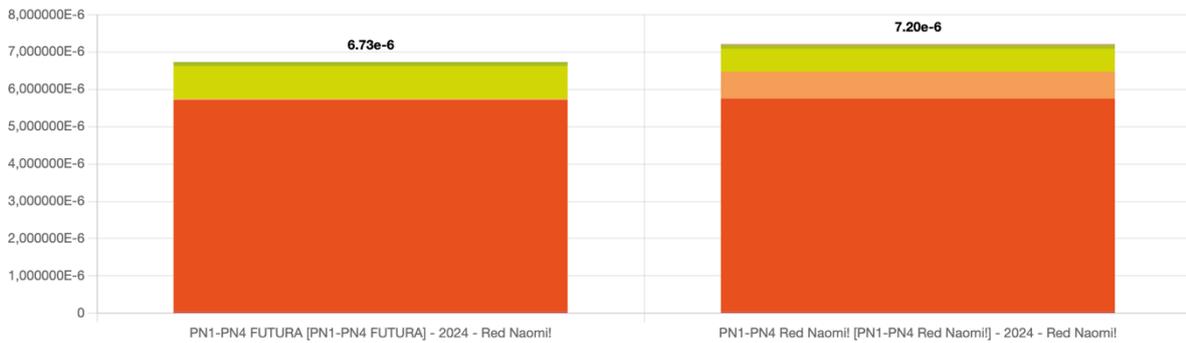
Eutrophication, freshwater x

Unit: kg P eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort



Select impact category

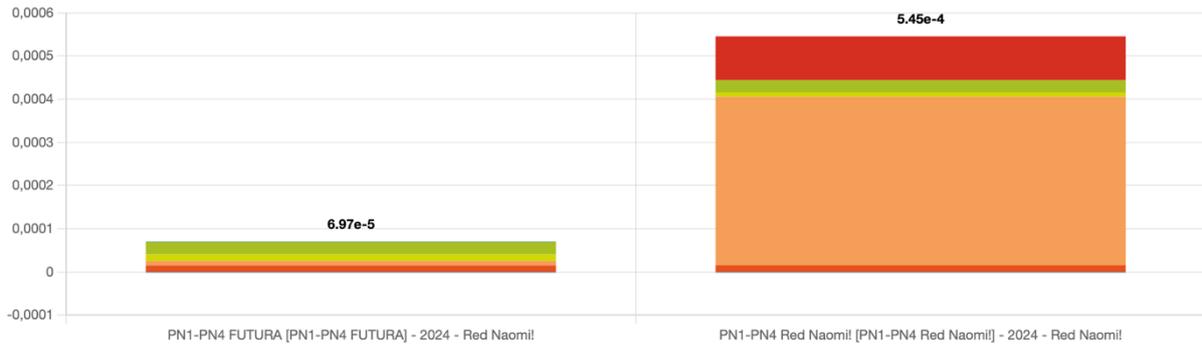
Eutrophication, marine x v

Unit: kg N eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort v



Select impact category

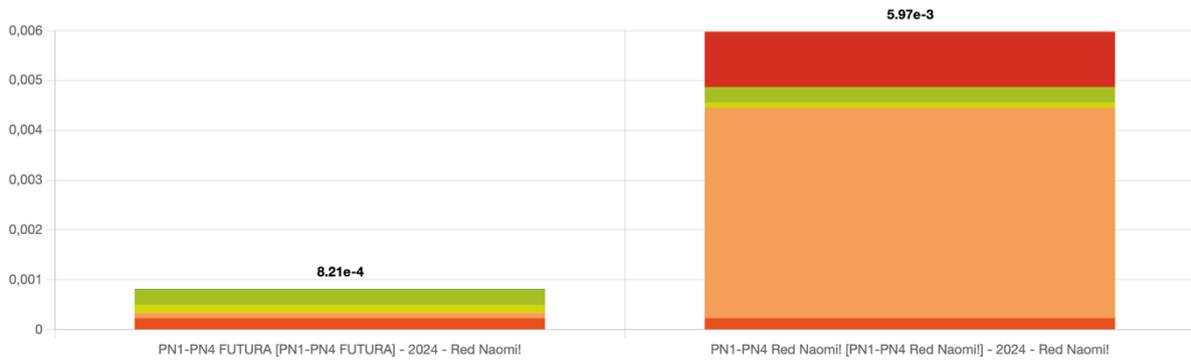
Eutrophication, terrestrial x v

Unit: mol N eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort v

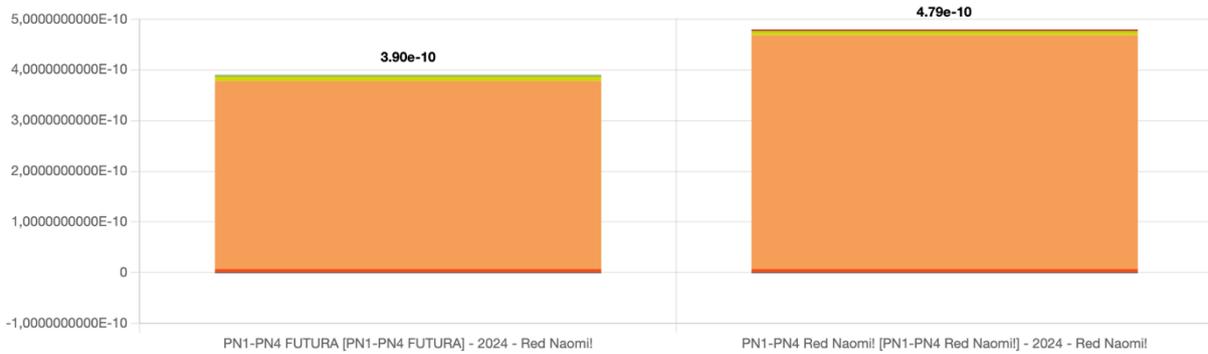


Select impact category Human toxicity, cancer × **Unit: CTUh**

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▾

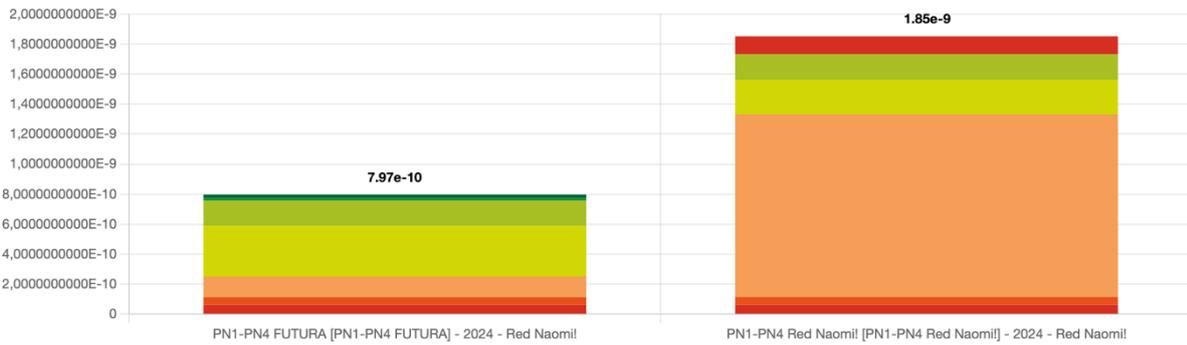


Select impact category Human toxicity, non-cancer × **Unit: CTUh**

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▾

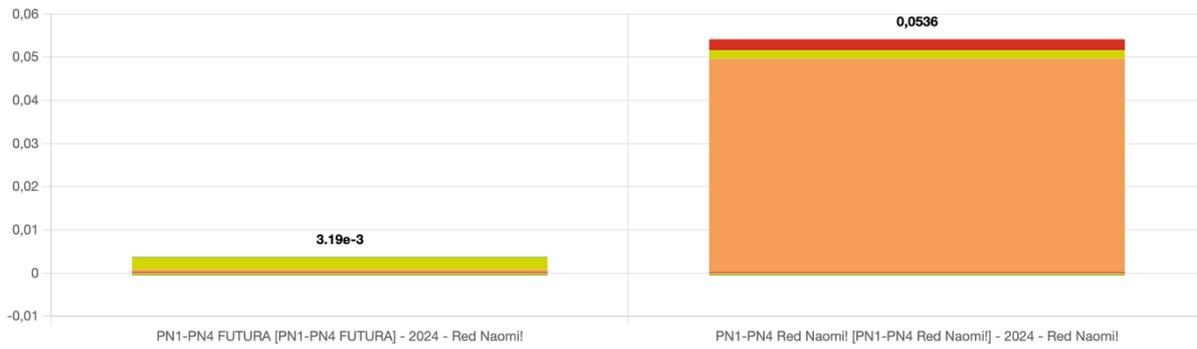


Select impact category Ionising radiation × **Unit:** kBq U-235 eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▾

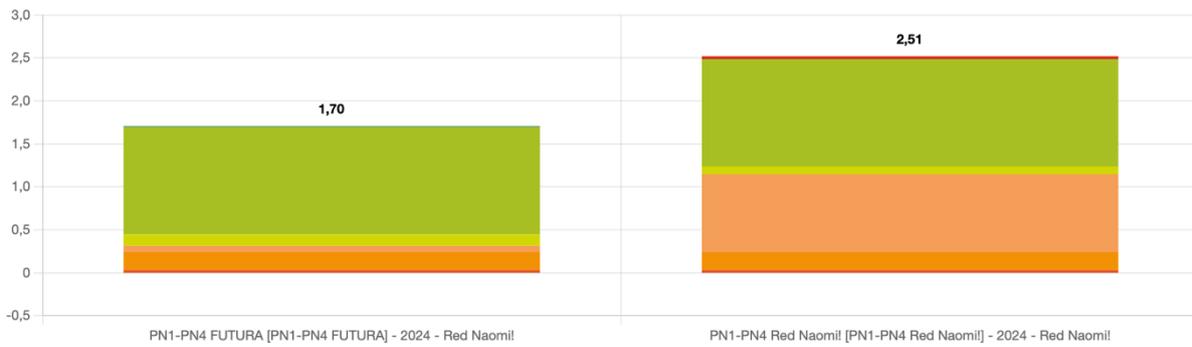


Select impact category Land use × **Unit:** Pt

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▾



Select impact category

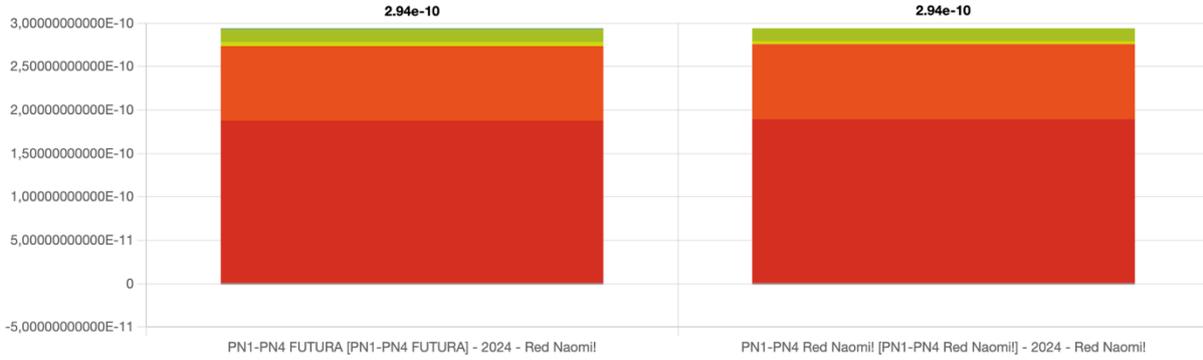
Ozone depletion x v

Unit: kg CFC11 eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort v



Select impact category

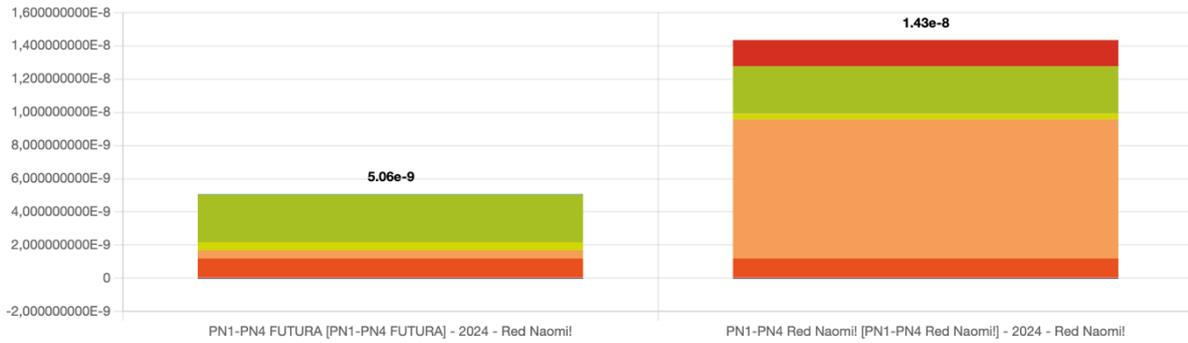
EF-particulate matter x v

Unit: disease incidences

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort v

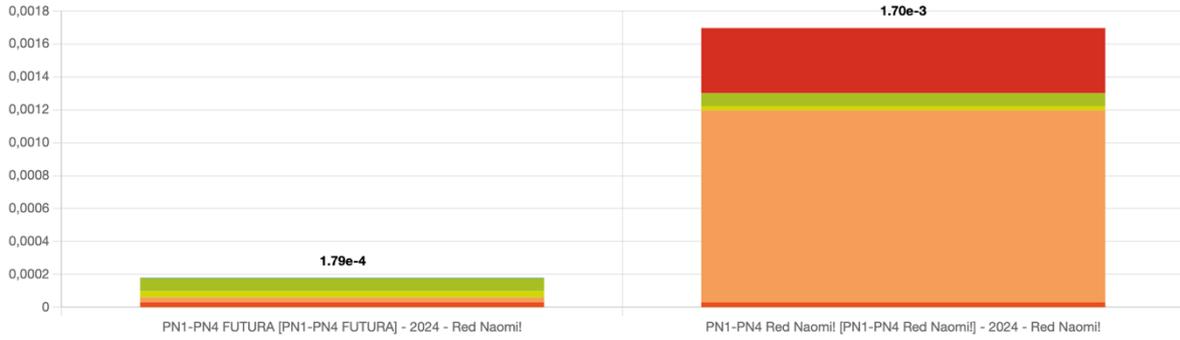


Select impact category Photochemical ozone forma...x Unit: kg NMVOC eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▼

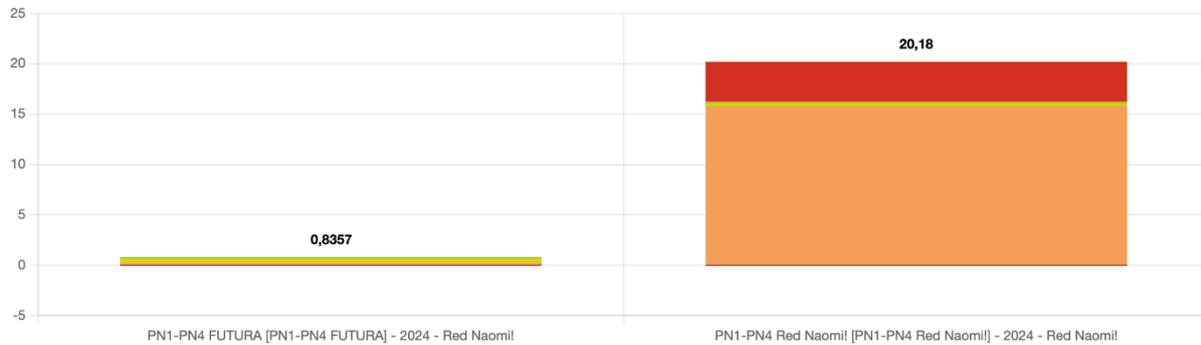


Select impact category Resource depletion, fossils x Unit: MJ

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▼

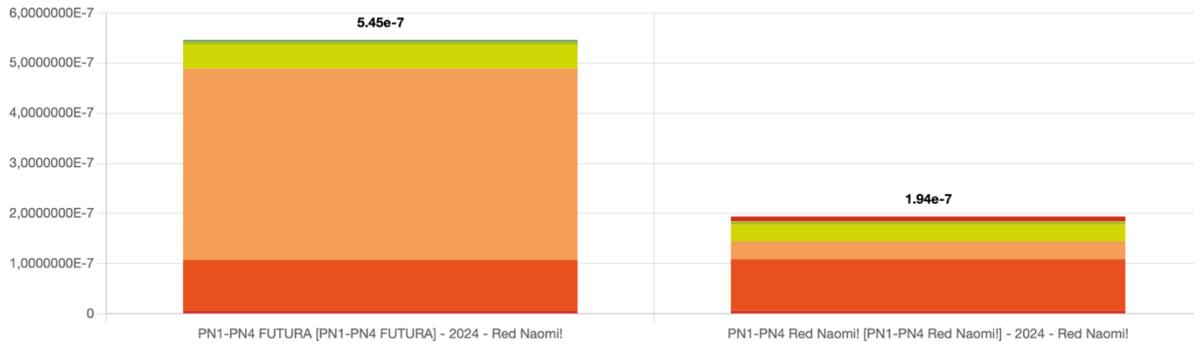


Select impact category Resource depletion, mineral... x Unit: kg Sb eq

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▼

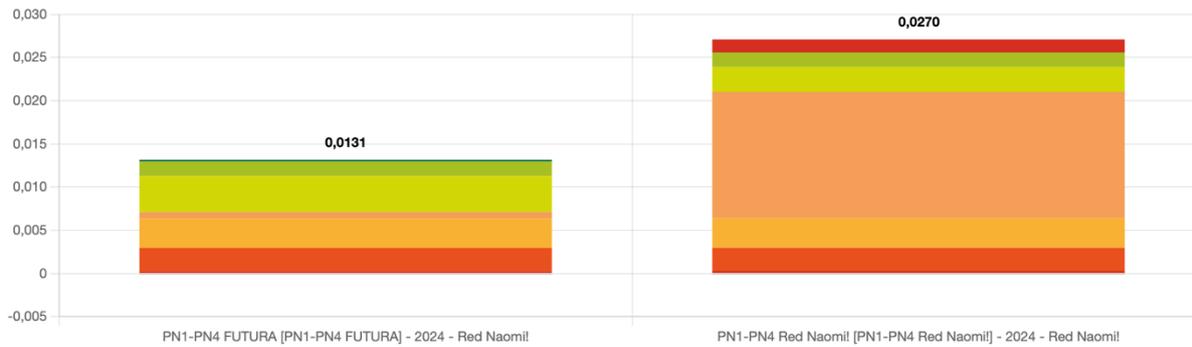


Select impact category Water use x Unit: m3 depriv.

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort ▼



Select impact category

Single score x

Unit: Pt

Categories

- Crop protection
- Fertilisers
- Land occupation
- Water use
- Electricity
- CO2
- Greenhouse
- Substrate
- Starting material
- Cultivation waste
- Peat oxidation
- Heat

Sort v

