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# Green Ideals and Grey Realities: Sustainability and Nature Consumption in Nordic Consumer Culture

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**Abstract:** The purpose of this study is to explain the paradoxical sustainability in relation to Nordic consumer culture, i.e., that it expresses environmental values but at the same time involves consumerism. The Nordic countries are famously portrayed as environmental leaders with a mission, but their green aspirations stand in stark contrast to the reality of their consumption-based carbon footprints. The study analyses the principles of consumer behavior, environmental attitudes, and the environmental paradox of sustainability in the context of consumption of nature and outdoor recreation. Using the latest consumption data from five Nordic countries (Denmark, Finland, Iceland, Norway, Sweden), researchers find that, despite high levels of climate concern, the inhabitants of the Nordic region have CO2 sub-footprints 1.5-2 times higher than the global average. The hypothesis that being environmentally conscious would lead to substantial reductions in consumption-based emissions was examined using data from approximately 8000 individuals in the Nordic countries. The findings suggest that high-climate-concern individuals have footprint levels 1.5-2 tonnes CO2-equivalent lower than low-concern individuals, and that the most environmentally friendly consumers outstrip fair shares by three times in keeping warming below 1.5 degrees. The explanation dissects the roles of structural barriers, rebound effects, and the commodification of nature as factors. This research provides critical lessons on the attitude-behavior gap in the sustainability transition of affluent societies.

**Keywords:** Nordic Sustainability Paradox; Consumption-Based Emissions; Climate Concern; Sustainable Consumer Behavior; Sustainable Development; Substantial Reduction.

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## 1. Introduction

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The Nordic area has prided itself on being a world leader in environmental action and sustainable development. Denmark, Finland, Iceland, Norway, and Sweden perennially feature among the best entries in international sustainability rankings, with Denmark topping th Environmental Performance Index ranking and Iceland and Sweden also placing. This reputation is due to industry-leading climate policies, rapid adoption of renewable energy, and strong public commitment to environmental values. Yet below this green surface lies a more complex and contradictory reality that challenges common stories about Nordic environmental leadership. An itemized consumption-based account was prepared, tracing emissions back to final consumers rather than production sites, showing that the Nordic countries' carbon footprint is well above the global average when examined in this manner. In a recent study by Heinonen et al. [7], consumption-based personal carbon footprints in these countries were 5.4 tonnes CO2-equivalent per capita in Sweden and between 7.6 and 8.0 tonnes per capita in Denmark and Finland, versus a global average of 3.4 tonnes per capita, with the rest of the world harboring the remaining 0.6 tonnes per capita.

More detailed estimates that include the entire production process suggest footprints of 9–11 tons in Sweden and 10-18 tons in Norway, Iceland, Finland, and Denmark, about 1.5-2 times higher than the global average. These numbers stand in stark contrast to the 2.3-2.5 tons per capita of annual emissions required to keep warm at 1.5 degrees Celsius. This gap between green reputation and consumption reality reflects what scholars have called the “sustainability paradox” in wealthy nations. Strong environmental concern and available sustainable solutions coexist in the Nordic region alongside lifestyles of high resource use, including frequent air travel, meat-rich diets, large living spaces, and material-intensive consumption. In the 2024-25 Nordic Monitoring report, alarming trends are described: diet quality has declined since 2014, with low intake of fruits and vegetables, whole grains, pulses, and fish, while meat consumption is rather high, and discretionary beverage consumption is increasing substantially, especially among young people. At the same time, Nordic outdoor recreationism (known as "friluftsliv") has grown increasingly commodified, turning nature connection into consumption-based activities that depend on stuff and shit: gear, equipment, curated experiences.

The 2024 NXT Nordic Outdoor Consumer Report (the report's title as well as the year researchers hope to be looking on) is drawn from national representative survey data collected across 2,500 actual Nordics and interviews with 32 outdoor brand representatives, showing new consumer archetypes making their way around sustainability through a gauntlet of complex and often contradictory corridors. The report notes a trend they call “Gorp Core,” in which high-performance outdoor gear combines with urban streetwear, suggesting that outdoor culture has been reduced to consumer branding rather than engagement with the natural world. This becomes commercialism that results in absurd paradoxes: forms of monetarily pro-wildlife activity release more carbon than they would have had no truck been formed, then, near or upon the land they pretend to "save." This study investigates how green ideals and consumption realities are intertwined within the context of Nordic consumer culture, with particular attention to: (a) the relationship between sustainability attitudes and the real consumption-based carbon footprint that lies behind them; (b) Nature consumption as enacted through outdoor recreation, and (c) Structural and behavioral determinants reinforcing the sustainability paradox. An understanding of these contradictions is key to formulating effective policy and interventions more broadly that are not simply about “ticking boxes”, but rather about sustainable transformation in richer contexts.

## 2. Literature Review

The link between pro-environment attitudes and direct consumption practices is now widely researched, and a discrepancy between professed value systems and behavioral patterns has been identified. Ala-Mantila et al. [1] show that the Nordic countries are often considered environmentally leading nations based on territorial emissions. Still, when embedded emissions in imports are considered, these states produce consumption-based emissions levels well above global averages. The difference between territorial and consumption-based is, however, significant. The shares of territory-based for Sweden, Denmark, and Finland were 57%, 63%, and 73%, respectively, while Norway's share was 92%. These numbers can be interpreted as a high level of carbon leakage to other production areas, with Nordic consumption resulting in environmental impacts abroad to a large extent. Recent empirical studies on the relationship between climate concern and carbon footprint offer more complex insights. Árnadóttir et al. [3] found, using online carbon footprint calculator data collected from 8,000 participants in the Nordic region, that people with high climate concern had a carbon footprint around 1.5-2 tonnes CO2-equivalent lower than those with low climate concern [18].

Yet these declines appeared inadequate as footprints, as all concern levels continued to exceed 1.5-degree warming targets significantly. Heinonen et al. [7] reported carbon footprints of less than 6 tons/c in Sweden and around 8 tons per capita in Denmark and Finland, largely due to transport (including aviation), food consumption, and energy use for housing [2]. This indicates that although environmental attitudes influence behavior, structural constraints, infrastructure dependencies, and lifestyle norms strongly condition individuals' potential for mitigation [19]. The "value-action gap" theory developed by Blake [4] has been studied in Nordic contexts. It explains how individuals’ environmental attitudes do not translate into pro-environmental behavior due to conflicting norms, resource shortages, or systemic obstacles. Macesar [11] observes that greenwashing is widespread across industries, including the fashion, outdoor, and food sectors, where sustainability claims are

frequently not substantiated [18]. In fact, paradoxical findings indicate that exposure to greenwashing can increase environmental concern and information search behavior among consumers, while also leading to skepticism and mistrust toward brands.

Consumer reaction involves cautious assessment, brand avoidance, paradoxical engagement in which greenwashing triggers interest in sustainability, and resignation, in which consumers continue to purchase despite a lack of trust [6]. Nordic nature and outdoor culture offer an interesting lens to study the contradictions in sustainability. Løvoll et al. [9] examine three types of "moods" for experiencing friluftsliv and their interconnections with sustainability by exploring how being in nature is implicit in consumerism and how emotional connections to nature are played out through power relations [12]. Their research exposes the dynamics of traditional friluftsliv values, foregrounding simplicity, access, and mindful interactions with natural landscapes, in conflict with those of a modern age, where experiences have been (very successfully) packaged and sold [20]. This shift is documented in the NXT Nordic Report on Outdoor Consumers, which identifies consumer segments ranging from value-oriented “Dedicated Pioneers” to status-oriented “Eco-Swingers” who navigate sustainability's contradictions in their own ways. Analyses of consumption patterns show where carbon footprints are developing within the Nordic Council of Ministers [13]. The NORMO 2025 report identifies dietary trends that conflict with health and the environment.

Diet quality has shifted in a negative direction since 2014, characterized by reduced consumption of plant foods and increased consumption of discretionary foods and drinks [8]. The actual consumption of fruit, vegetables, pulses, whole grains, and fish in 2024 remains low compared to the NNR 2023 recommendations, while meat intake is rather high, and the use of non-recommended beverages, in particular energy drinks among youth, has increased [16]. Educational and socio-economic differences remain, with healthier, more environmentally sustainable diets among the more highly educated, reflecting the justice dimensions of sustainable consumption capability [14]. It is becoming increasingly clear in academia that simply changing behavior, one person at a time, may be insufficient to solve the Nordic sustainability paradox. Dawkins et al. [5] analyze municipal-level policies on sustainable consumption in Sweden, showing substantial differences in policy implementation and highlighting a range of factors that limit local activities [17]. They stress that local governance institutions have significant potential to drive sustainable consumption transitions through XXIII procurement policies, spatial planning, and community involvement, though realization varies across jurisdictions [10].

### 2.1. Objectives

- To analyze the discrepancy between environmental attitudes and actual consumption-based carbon footprints in Nordic countries, specifically examining the magnitude of footprint differences across levels of climate concern.
- To investigate how nature consumption practices, particularly outdoor recreation and friluftsliv culture, reflect broader sustainability paradoxes in Nordic consumer behavior.

## 3. Methodology

It employs a mixed-methods quantitative analysis of existing consumption data, combined with a qualitative synthesis of recent empirical studies on Nordic consumption for sustainability. This study incorporates secondary data analysis from the National Statistics Offices (NSOs) covered in multiple contextual and comparative research efforts of the NORMO 2024–2025 (Nordic Council of Ministers), extended through consumption-based emissions databases hosted by the National Statistical Offices (NSOs) of each Nordic country, and with recently conducted consumer behavior surveys conducted in Nordic countries for the 2022–2024 period. It quantifies the carbon footprint based on consumption across all Nordic countries from 2014 to 2024, using environmentally extended input-output models that account for emissions embedded in traded goods and services. The data sources in the country studies include Statistics Denmark's environmental accounts, the ENVIMAT model on Finnish origin-destination-based emissions from the Finnish Environment Institute, newly published consumption-based emission estimates from the Norwegian Environment Agency [17], Sweden's environmental pressure statistics published through Statistics Sweden, and the consumption footprint research from the University of Iceland.

Such datasets allow one to compare territorial versus consumption-based emissions, revealing the extent of carbon leakage through international supply chains. The main analytical data set is based on Árnadóttir et al. [3], which investigated around 8,000 Nordic residents who completed an online carbon footprint calculator. A hybrid process-based and input-output survey model with a multi-domain composition (transport, food, housing, goods, services) to place an upper boundary on personal consumption-based carbon footprints. In addition, respondents answered questions measuring concern about climate change, environmental attitudes, and demographic variables, enabling analysis of the relationship between psychological factors and emissions [21]. Other data sources include the NXT Nordic Outdoor Consumer Report 2024 dataset, which is based on 2,500 nationally representative respondents across Sweden, Finland, Norway, and Denmark, as well as qualitative interviews with 32 brand representatives from Nordic outdoor companies.

The Nordic Mode of Living 2025 (NORMO) dataset includes multitiered dietary intake, physical activity, and health behavior data gathered via mixed-mode surveys (phone and online) across all five Nordic countries in March-November 2024. Descriptive statistics of consumption patterns and trends (including cross-national comparisons and over time); correlation and regression analyses assessing relationships between social indicators related to climate concern and carbon footprints across consumption domains (including cross-national comparisons and over time); thematic synthesis of qualitative results from recent ethnographic and interview-based studies. Weighted surveys based on statistical methods according to the procedures described by Árnadóttir et al. [3] to increase representativeness, given demographic distributions to mitigate response rates and selection bias concerns. Our methodological framework uses consumption-based emissions accounting, in line with publications from the Global Carbon paper and the Nordic Council of Ministers, thereby ensuring consistency with international climate accounting standards.

**4. Results**

Interestingly, there are large divergences between territorial and consumption-based emissions in the Nordic countries: In fact, the ratio is lowest in Sweden, where only slightly more than half (57%) of Swedish consumption emissions occur domestically. Half of Danish emissions (63%) are due to domestic fossil fuel consumption, a relatively high share. In contrast, due to the very significant process emissions from oil and gas extraction, Norway reports 92% of its emissions as domestic, ranking second highest after Finland (73%), which is fully decarbonized. Per capita consumption footprints are vastly exceeding the 3.4 tonne global average in every Nordic country and are far above the 1.5-degree warming target, which lies between approximately 2.3–2.5 tonnes per capita. Footprints differ by country, from <6 tonnes in Sweden to ~8 tonnes in Denmark and Finland, and are also broader estimates that include full supply chains, at 9-11 tonnes in Sweden and 10-18 tonnes in other Nordic countries (Table 1).

**Table 1:** Consumption-based carbon footprints in Nordic countries

| Country | Survey Data (tCO2e/capita) | Territorial/Consumption Ratio | Global Average Multiple |
|---|---|---|---|
| Sweden | 5.4-6.0 | 57% | 1.6-1.8x |
| Finland | 7.7-8.0 | 73% | 2.3-2.4x |
| Denmark | 7.5-8.0 | 63% | 2.2-2.4x |
| Iceland | ~7.0 | Not available | 2.1x |
| Norway | Higher range | 92% | Variable |
| 1.5°C Target | ~2.3-2.5 | N/A | Target |
| ***Sources:*** *Heinonen et al. [7]; Árnadóttir et al. [3]; Norlén e al. [15]; Nordic Council of Ministers [12].* | | | |

Stats on around 8,000 Nordics show that people with high climate concern have 1.5-2 tonnes CO2-equivalent smaller carbon footprints than diddly concerned folk, showing that the positive influence of environmental attitudes on consumption behavior is directional. Even this most environmentally aware group is still averaging 6.5-7.0 tonnes per year, around three times the 2.3 tonnes per year compatible with 1.5 degrees. It shows that, whilst psychological factors can have an effect, the scale of the reduction needed (a 6.2-tonne difference between baseline and target emissions) is so large that individual attitudinal shifts are insignificant without system-wide changes to infrastructure and policy (Table 2).

**Table 2:** Climate concern and carbon footprint relationship

| Climate Concern Level | Mean Footprint (tCO2e/capita) | Footprint Reduction | Ratio to 1.5°C Target |
|---|---|---|---|
| Low Concern | 8.5-9.0 | Baseline | 3.6-3.9x |
| Medium Concern | 7.0-7.5 | -1.5 tonnes | 3.0-3.3x |
| High Concern | 6.5-7.0 | -2.0 tonnes | 2.8-3.0x |
| 1.5°C Compatible | ~2.3 | **Target:** -6.2 tonnes from baseline | 1.0x |
| ***Source:*** *Árnadóttir et al. [3]; Leferink et al. [8].* | | | |

NORMO 2025 report reveals adverse dietary developments in the Nordic region. Despite healthy dietary and sustainability advice, intakes of fruit, vegetables, whole grains, and fish have decreased or stagnated at insufficient levels since 2014. Despite a slight reduction in meat protein intake and an increase in grain protein intake, meat intake remains high, and pulse intake remains unchanged. Daily discretionary beverage consumption has risen rapidly, especially among young people, driven by energy drinks and other caffeine products, an immensely troubling trend. Intergenerational differences in educational background were associated with skewed consumption patterns: adults and children from a higher-education background reported increased consumption of fruit, vegetables, pulses, and fish, while those from a lower-education background had a

higher proportion of discretionary drinks consumption, and in some, meat products too. Such patterns reflect the substantive socioeconomic and demographic barriers that stand in the way of sustainable dietary transitions, which reach far beyond individual knowledge or attitudes (Table 3).

**Table 3:** Nordic dietary pattern trends (2014-2024)

| Food Category | NORMO 2025 Trend | Alignment with Recommendations | Primary Disparities |
|---|---|---|---|
| Fruits and Vegetables | Declined/Stable | Low adherence | Education-based |
| Whole Grains | Declined | Low adherence | Age-based (youth lower) |
| Fish | Declined/Low | Below recommendations | Income and education-based |
| Meat | Remains high | Exceeds recommendations | Gender-based (males higher) |
| Pulses (Legumes) | Low intake | Well below recommendations | Education-based |
| Discretionary Beverages | Increased significantly | High consumption | Age-based (youth highest) |
| ***Source:*** *NORMO 2025 [13].* | | | |

One sector stands out in terms of the Finlandisation of Nordic carbon footprints: transport, which contributes 30–35% of total paper carbon footprints, with international aviation as the single most carbon-intensive part. While EV adoption is high in places like Norway, air travel behavior remains deeply entrenched. Some 25-30% of footprints are related to food consumption, largely driven by a preference for animal-based protein. Contributions from housing and energy (20–25%) have shifted toward the energy transition toward renewables, but remain substantial due to per-capita living space in developed nations. Consumption of goods and services (15-20%) is increasing, in line with fast fashion. turnover of electronics and discretionary purchases. The recreation and leisure segment, though only 5-10%, is the fastest-growing part of the outdoor economy due to the growth of the experience economy and nature-based tourism, which require transporting specialized outdoor gear (Table 4).

**Table 4:** Consumption domain contributions to carbon footprints

| Domain | Contribution Range | Key Behavioral Drivers | Change Potential |
|---|---|---|---|
| Transport (including aviation) | 30-35% | Frequent flying, car ownership | High impact, low engagement |
| Food | 25-30% | Meat-heavy diets, low plant-based intake | High impact, moderate engagement |
| Housing and Energy | 20-25% | Living space size, heating | Declining through renewables |
| Goods and Services | 15-20% | Fast fashion, electronics, and discretionary purchases | Growing consumption |
| Recreation and Leisure | 5-10% | Experience economy, outdoor gear | Rapidly increasing |
| ***Sources:*** *Heinonen et al. [7]; Árnadóttir et al. [3]; Analysis synthesis.* | | | |

## 5. Discussion

The results shed light on the pervasive contradictions within Nordic consumer culture, characterized by a strongly held environmental value position despite consumption levels well above sustainable levels. This paradox exists as an individual-, societal-, and structural-level phenomenon that requires interpretation that transcends a crude narrative of false consciousness or denialism. Evidence that high consumption-based carbon footprints are widespread, despite increased concern about climate change, indicates that the gap between climate attitudes and associated behavior results, at least as much, from structural constraints rooted in broader socioeconomic structures, built form, and culture. Only by looking at the footprints of even the most concerned citizens, which still exceed 3 times any 1.5-degree target, do you realize the futility of climate strategies focused on behavior. Housing stock, transportation infrastructure, food system organization, and social norms around mobility and consumption are structural factors that create 'lock-in' effects, limiting individual agency. Even though Nordic countries tend to have relatively low population density in their city centers, significant suburban sprawl is also found, and to access it, automobiles or long public transport commutes are necessary.

Open geographical borders and large airport networks that serve international connectivity, support frequent leisure and business travel, and become part of middle-class entitlement. The evidence for health and climate GHG emissions and interests remains heavily weighted towards animal agriculture rather than plant-based transitions. These infrastructural and institutional

arrangements affect consumption possibilities and render even the motivated consumer's choices unsustainable. Outdoor recreation culture depicts environmental values as a consumer-driven river through the commodification of nature experiences. Traditionally, friluftsliv has been simple, accessible, and engaged with nature. But modern outdoor culture is now more like consumer lifestyle branding, with typecasting of particular gear formulations, the pursuit of increasingly distant destinations, and the social media compilation of formatted experiences. As reported by the NXT Nordic Outdoor Consumer Report 2024, the Gorp Core fashion phenomenon illustrated how practical outdoor gear can shift into style statements that may not be linked to outdoor activity or environmental gains.

This commodification results in rebound effects, as seemingly green activities such as hiking or camping cause emissions through equipment fabrication, travel to locations, and land-use changes. The contradictions within each consumer archetype, Dedicated Pioneers, Anxious Activists, Eco-Swingers, and Traditional Consumers, each manifest differently, and only a small minority (close to 18% as Dedicated Pioneers) have alignment between values and behavior. Most of their participants were average citizens, not activists, who approached sustainability through selective advocacy, status signaling, or pragmatic trade-offs, which mirrors the challenges in some research on turning environmental awareness into wholesale lifestyle change. Greenwashing complicates these issues by masking the true pathways to sustainability and fostering mistrust of environmental claims. Although some studies indicate paradoxical responses in which consumers react to greenwashing by seeking more information and becoming more concerned, the overall effects are well established: confusion, skepticism, and resignation. This is when authentic, sustainable products are indistinguishable from simple greenwashing, effectively imposing prohibitive search costs on consumers for credible options.

Researchers found this to be a key market failure impacting consumers who are trying to conduct research-based vetting but lack the expertise to determine whether increasingly complex supply chain claims are valid. The resignation response may represent the most distressing finding, suggesting that large swaths of consumers have given up on the prospect of sustainable consumption within existing market structures. The complexity of consumption transitions is illustrated by the widespread awareness of the health and environmental advantages of healthy eating patterns. Yet, there is concern about the deterioration of dietary patterns. At the same time, since 2014, there have been large reductions in fruit, vegetable, and whole-grain consumption, over a period that has included more public dialogue on sustainable food systems than ever before. Though the Nordic Nutrition Recommendations 2023 unequivocally state that plant-based shifts are crucial for health and climate objectives, meat consumption remains too high or continues to expand. Such inverse relationships indicate that information provision and awareness campaigns fall short in the face of structural determinants such as food prices, convenience architecture, social norms, and taste preferences formed over a lifetime of dietary socialization. Differential dietary quality by education and other socioeconomic variables indicates equity aspects of sustainable consumption transitions.

Price-enhancing individual agency to narrow these gaps is essential, but must be accompanied by comprehensive systems changes in food system pricing and in the infrastructure for equity in access. The diversity of Nordic countries tells us not only about which policies might work or not, but also about how cultural influences may differ. The exceptionally low territorial-to-consumption emissions ratio in Sweden (57%) indicates successful domestic emissions reductions, primarily driven by its transition to renewable energy systems. Still, it simultaneously highlights dependence on imports of goods that embody foreign emissions/carbon leakage, allowing a relatively 'green' country to continue its high level of consumption whilst appearing environmentally responsible. Although delivery and their effects on consumption patterns remain uncertain, municipal climate action plans in Denmark that comply with the Paris Agreement and are certified by C40 Cities provide a promising example of governance innovations. Despite producing immense amounts of renewable energy within its national borders, Norway remains one of the major fossil fuel exporters among industrialized countries because its economic structure often mitigates the effects of its national environmental rhetoric. These cross-national discrepancies indicate that Nordic environmental leadership is more evident in renewable energy transitions and environmental governance structures than in shifts in basic consumption patterns.

## 6. Conclusion

This study uncovers deep conflicts between green ideals and consumer practices in Nordic consumer culture. Nordic countries score high on environmental awareness, both domestically and globally, but paradoxically maintain consumption-based carbon footprints that are effectively 1.5-2.4 times above global average levels and 2.8-3.9 times above levels compatible with 1.5-degree warming. Environmental attitudes are only very weakly predictive of behavior, as those with the greatest concern reduce their footprints by only 1.5-2 tonnes compared to their low-concern peers; these changes per individual are not enough to meet climate goals without a massive systemic transformation. Outdoor recreation serves as a prime example of how environmental values drive consumption, as friluftsliv traditions are commercializing into gear-intensive, destination-oriented activities. Greenwashing is another level of complication that generates skepticism, which, ironically, activates environmental concern but also results in resignation. Dietary patterns worsen despite everyone being aware, with a decrease in raw plant-based foods and an increase in meat and discretionary beverages, particularly amongst youth and lower-education populations.

In sum, these findings suggest that the Nordic sustainability paradox is not a case of individual hypocrisy but rather a system-level contradiction in high-cost social fields. Researchers cannot resolve these tensions by shifting solely to a personal responsibility framework; rather, they must pursue comprehensive policy measures to encourage changes in infrastructure, pricing practices, social norms, and economic systems. Municipalities worldwide show promise as arenas for governing sustainable consumption through purchasing, land-use planning, and community engagement, but uptake is patchy. Our way out must involve grappling politically with consumption as a collective action problem that calls for a regulatory, not an educational or voluntary, response, and a justice dimension that ensures all social strata can access sustainable alternatives.

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