

## **How sustainable Nordic higher education actually is? Exploring the role of sustainable development in teaching at Nordic Higher Education Institutions**

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## **INTRODUCTION**

Education has been internationally recognized as a key method to manage and promote sustainable development (SD) [1, 2]. In fact, education was highlighted in environmental protection already in the United Nations (UN) Stockholm Conference in 1972 [3]. Thereafter, especially the role of higher education has been emphasized in the UN world summits on sustainable development (WSSD), the UN Decade for Education for Sustainable Development (DESD) 2005-2014 and the goals of UN Global Action Plan (GAP) [4-6]. The following UN DESD and GAP targets guide institutions to co-operate with developers of education in order to promote the role of sustainable development in education:

- Advancing policy;

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- Integrating sustainability practices into education and training environments (whole-institution approaches);
- Increasing the capacity of educators and trainers;
- Empowering and mobilizing youth;
- Encouraging local communities and municipal authorities to develop community-based ESD programmes.

The Nordic countries, including Denmark, Finland, Iceland, Norway and Sweden, have a long history of organized collaboration, and the region is renowned for its high-level education, technological development and SD [7]. The Nordic Council of Ministers has published a common Nordic strategy for sustainable development since 2001, which also emphasizes the role of higher education [8]. The recent strategies of the Council state additionally that the Nordic countries target at leading the way in Education for Sustainable Development (ESD) [9, 10].

For European Union, sustainable development is not a choice, but an imperative. This is how the former president of the Commission, Romano Prodi, formulated the challenge [11]. Accordingly, SD is widely visible in the strategy 2020 of the EU [12], in the national strategies of its member states [13], and additionally in the vision and mission –statements of many European universities [13]. In a recent project by the Nordic Sustainable Campus Network [14], selected university staff in the Nordic HEIs assessed that ESD is moderately well included in their strategies, too. However, the implementation of ESD varies substantially between the countries and institutions, since the national strategies only rarely provide extensive models for implementation and only a few countries have legislative obligations for HEIs to follow the principles of SD [13].

A large number of HEIs have signed a sustainability declaration as a measure to communicate their commitment to SD, and to enhance their sustainability efforts [15]. Especially the most recent declaration, the Rio+20 Higher Education Sustainability Initiative, HESI 2012, highlights the importance of teaching sustainable development concepts [16]. Also 12 Nordic HEIs have signed the declaration. The Rio+20 Initiative comprises the following commitments:

- Teach sustainable development concept
- Promote research on sustainable development
- Green campuses and promote SD in local collaboration
- Share practices and network internationally.

However, despite of the high-level Nordic targets, and the efforts many Nordic HEIs have made to integrate SD in their operations, the current status of SD contents in teaching has remained unexplored. Therefore, we investigated, if the recent level of SD in the Nordic HEIs' teaching reflects the forward-looking, ambitious and sustainability-oriented strategies established in the region. In this paper, we present the evaluations of selected Nordic university teachers on the current situation, emphasizing the following:

- How is SD integrated in Nordic HEIs' teaching at the moment?
- How to enhance the drivers and overcome the obstacles encountered in integrating SD in teaching?
- How have the teaching methods and contents related to SD developed during the UN DESD 2005-2014?

Moreover, we discuss the measures needed to further promote ESD in the Nordic HEIs. Finally, we suggest how our results can benefit teachers and decision-makers in all universities. The paper complements and updates the abstract and presentation on

the survey results presented in the 8th World Environmental Education Congress WEEC 2015 [17].

## **1 Background on the integration of SD in higher education**

Wals (2014) [18] and Ramos et al. (2015) [19] indicated that universities have moved towards better levels of sustainability integration during the past decades, but also, that the development concerns widely the improving of the ecological footprint of a university, while measures to promote ESD are only emerging. However, a transformative change towards sustainability would require an institutional approach to sustainability and proper connections and collaboration between research, education, university operations and stakeholder relations [1, 20, 21].

Top management has a key position in the change towards SD [22]. For instance, in Chalmers University of Technology, Sweden, engaged management and sustainability-oriented strategy enabled sustainability to become an integral part of all university operations [23]. In fact, low commitment of university management has been recognized as a key barrier to SD integration [24, 25].

In addition to unengaged leaders, numerous other challenges exist in implementing ESD, such as overcrowded curricula [26], limited resources, and teachers' motivation and SD competences [27]. Numerous teachers still consider SD as a threat to their teaching traditions, and are unable to see the connection between their discipline and SD [28]. For instance, in a case study from Plymouth by Jones et al. (2008) [26], teachers' responses to ESD-related questions revealed lack of motivation, fear of change and even hostility towards subjects that were considered outside their own field.

What is then the best way to integrate ESD - should it be offered as separate courses or as a cross-cutting theme in all teaching? What are the competences everyone should acquire on SD-related global and local issues before graduation? The answer is, that there is no one solution to tackle the integration of ESD. The aim of ESD is to provide abilities for problem-solving according to the principles of SD, support life-long learning skills and ability to think in a holistic manner, to provide basic knowledge on global and local environmental, social and economic challenges, and to facilitate the transformation process in peoples' mind-sets to enable and enhance sustainable behaviour. Therefore, no one model has been suggested, which would ensure that the aims of ESD would become fulfilled in a university programme. Instead, development is made mostly by sharing best practices and case studies, those relating for example to awareness-raising [29], recognizing key competences related to SD [30], embedding sustainability aspects into learning outcomes of courses [31], and training the teachers to include SD [29, 13].

In the roundtable of UNESCO chairs in 2014 [32], however, one suggestion for a common guideline was presented, including 1) starting with additional, vocational courses on SD and 2) finding like-minded people to support the agenda, 3) finding "a window for opportunities", such as the Bologna process that causes structural changes in any case, 4) trying to benefit from external pressure caused by sustainability-oriented stakeholders and 5) internal pressure like mission statements and SD declaration and 6) finally, creating incentive structures for lecturers to encourage them to improve their competences in ESD. All these steps suggested by the UNESCO chairs, as well as achieving the recent Rio+20 HESI and GAP targets, call for institutional commitment. This paper discusses if the recent level of SD in the Nordic HEIs' teaching reflects an institutional engagement to sustainability.

## 2 RESEARCH METHODS

Sustainability contents of Nordic university teaching were surveyed by exploring the views of university teachers on the implementation of SD in different levels of curricula, the enabling and hindering factors, and progress made during the DESD. The survey was implemented in October-November 2014 as an online questionnaire using Webropol. The link to the survey was distributed by email to all Nordic HEIs through national SD-networks, the presidents of the HEIs, the Nordic Sustainable Campus Network's (NSCN) mailing-list and website, The Nordic Association of University Administrators' (NUAS) LinkedIn-group, and the Nordic Council of Ministers' (NCM) channels.

The questionnaire was implemented keeping the institutions and respondents unidentified. The first page of the survey offered background information on the Rio+20 HESI initiative targets and on the integration of SD in universities to introduce the respondents into the topic. The respondents were then asked to name the best drivers and the most severe barriers in their view by open-ended questions, and to suggest measures to enhance the drivers and overcome the obstacles they brought up. The responses were analysed and 10 classes of drivers and barriers comprised based to the analyses. SD in teaching and the development during the DESD were estimated using Likert-type scales on given statements. Finally, the respondents were asked if they are satisfied at the moment with the level their university implements SD in teaching in general. The scales used were:

- SD in teaching: 1=Entirely disagree, 2=Mostly disagree, 3=Do not agree or disagree, 4=Mostly agree 5=Entirely agree
- Development during the DESD: 1=Clear decrease, 2=Minor decrease, 3=No change, 4=Minor increase, 5=Clear increase

The statements were created by the authors in collaboration with 13 sustainability experts working in the Nordic HEIs and the Finnish Ministry of the Environment. They were additionally designed to emphasize the internationally renowned measures to implement ESD [4] as well as different integrating measures discussed in the scientific literature (see chapter 1 for selected references). The statements relating to the DESD were linked to the targets and implementation strategies defined for the DESD [4].

## 3 RESULTS

### 3.1 Respondents of the survey

The survey gathered 49 responses from the teaching staff of 29 Nordic HEIs. A part of the respondents left the open-ended questions unanswered. The majority of the teachers were from Finland (*Fig. 1*). The average age of the respondents was 50 years, varying from 31 to 66 years, and the gender distribution was quite equal with 43% being men and 57% women. Most of the respondents represented environmental and social sciences (including economics). 33% of the respondents indicated additionally that their research field relates to sustainable development (*Fig. 1*).

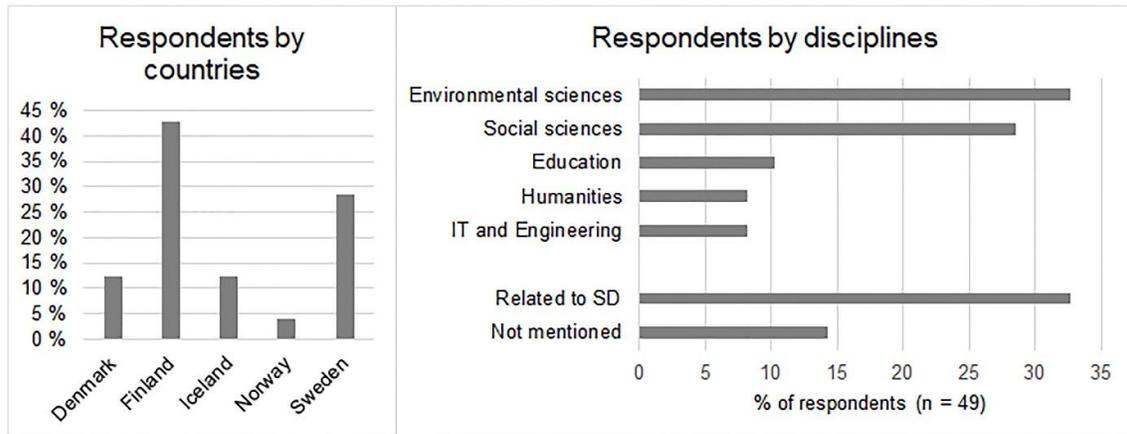


Fig. 1. The disciplines and countries of the respondents in the survey.

### 3.2 Integration of sustainable development in teaching

The findings of the survey indicated that 50% of the respondents were unsatisfied with the level their university integrates SD in teaching at the moment (Fig. 2). Respectively, only 29% were satisfied with the integration level. According to the respondents, SD is best included in the course descriptions (when the course includes SD-related contents) and the learning outcomes of minor subjects, but only less than moderately embedded in the learning outcomes of major subjects and degree programmes. Teacher training and compulsory sustainability courses were given the lowest scores. (Fig 2.)

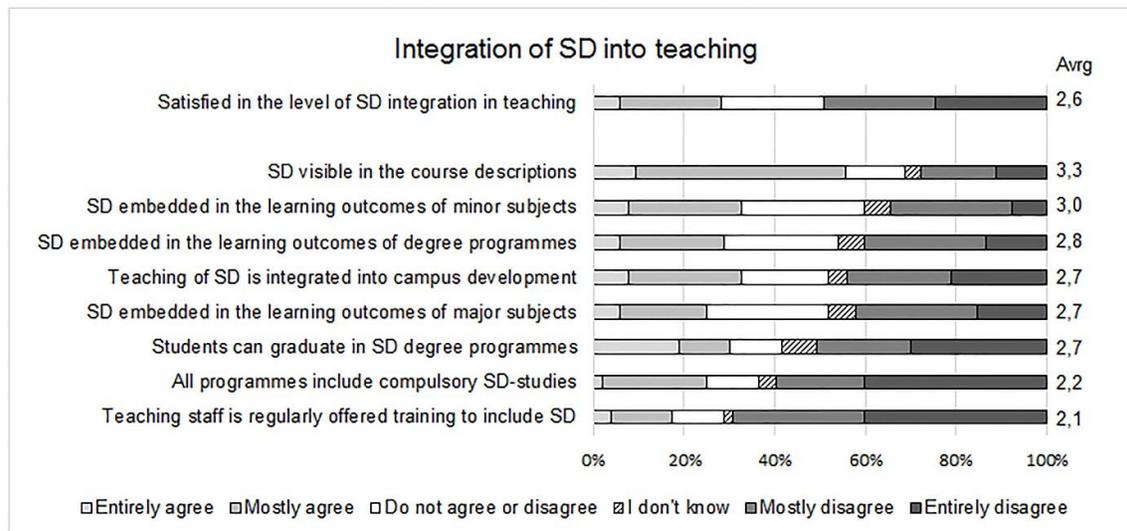


Fig. 2. The level of integration of SD into teaching, n=49. The average scores of the responses (Avg) were counted from the scale: 1=Entirely disagree, 2=Mostly disagree, 3=Do not agree or disagree, 4=Mostly agree 5=Entirely agree.

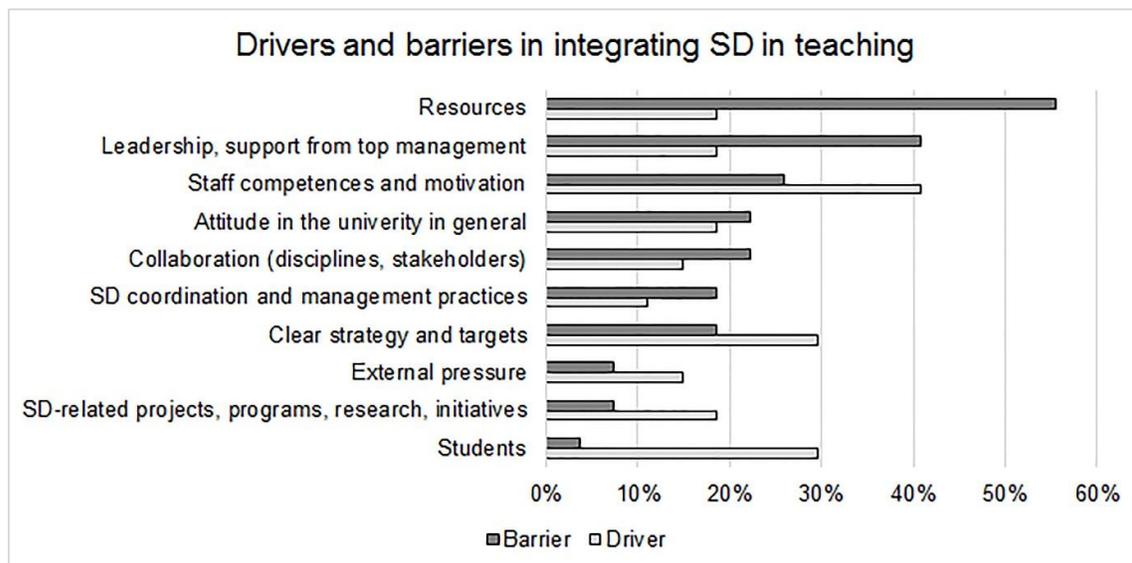
### 3.3 Drivers and barriers

In the open-ended questions, the respondents named several driving and hindering factors in integrating SD in university teaching, as well as ways to enhance SD or

overcome the obstacles. The given responses were classified to form ten categories (*Fig. 3*). Many factors were mentioned almost equally being both drivers and barriers.

The barriers brought up most frequently were the lack of various resources and support from top management, the lack of SD-competences among the staff, and attitudes in the university in general (*Fig. 3*). In the responses especially fear of change in the academic community was mentioned several times. For overcoming these obstacles, 30% of the respondents recommended that university managers and staff should be trained to reach competences, which enable making changes in university policies and mind-sets of people. In addition, 26% of the responded teachers would like to have more supportive leaders and around 20% more resources and a more supportive SD strategy. Other suggested measures included incentives and external steering (15%), such as legislation and results-based financial steering, clearer university organization relating to SD implementation (15%), more collaboration around SD (15%), and better communication (10%). Measures mentioned only by a few respondents were student engagement and promotion of research.

The most efficient drivers pointed out by the respondents included motivated and skilful teaching staff, student collaboration, and clear strategy and targets related to SD (*Fig 3*). Means suggested to enhance SD in teaching highlighted increased collaboration around SD: 37% of the respondents called for better communication and 30% for more interdisciplinary projects and research. Around 25% of the respondents found also clearer institutional organization, targets and strategy, better resources, as well as increased student engagement important in promoting SD.

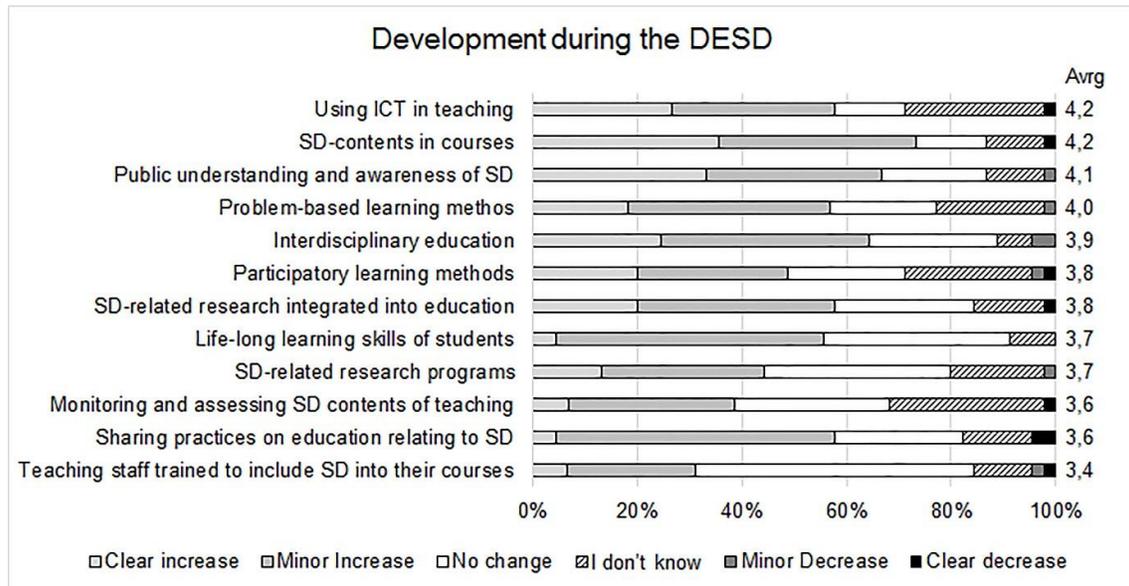


*Fig. 3.* The barriers and drivers in integrating sustainable development in teaching, n=27. X-axis indicates the % of respondents.

### 3.4 Progress made during the DESD

According to the respondents, the ten-year period during the Decade of ESD has brought some increase in all surveyed areas (*Fig. 4*). Noticeable increase was indicated in sustainability contents of courses, public awareness, interdisciplinary teaching, and in combining sustainability-related research into teaching. The teaching methods relating to SD have improved according to the respondents, including

problem-based and participatory learning, and the usage of ICT. Training teachers in including SD seemed to have remained almost the same during the DESD period.



*Fig. 4.* The progress during the DESD (2005-2014) in implementing SD in teaching, according to the DESD targets. X-axes indicates the % of respondents, n=44. The average scores of the responses (Avrg) were counted from the scale: 1=Clear decrease, 2=Minor decrease, 3=No change, 4=Minor increase, 5=Clear increase.

## 4 DISCUSSION

In this section, we discuss the broader relevance of the survey results, using also our earlier experience on the theme as well as relevant other studies. Based on our survey results and related literature, we argue that there are three broader themes that are particularly important when discussing ESD, and which are additionally underlined by the targets of the UN GAP [6]: 1) support from the top management 2) institutional approach, and 3) training the teachers in SD. We will next discuss these in more detail.

Poor leadership and lack of support from top management are the most severe barriers affecting the integration of ESD, according to the Nordic university teachers responding our survey. Also Sammalisto (2007) [22], Christensen et al. (2009) [24] and Leal Filho (2011) [25] stated that the attitudes and knowledge of decision-makers make a key barrier in implementing ESD. Therefore, it would be of utmost importance to educate also the managers in SD. However, a Nordic project report [14] stated that training the staff in SD is not considered as being among the core issues of Nordic universities.

Committed top management is, however, a fundamental factor in reaching a whole-university, or institutional, approach to sustainability [23]. In the institutional approach, SD ought to be equally addressed in all university operations, research, teaching and outreach [1, 20, 21]. Also the respondents of our survey appreciated a clear organization, targets and strategy in promoting SD. However, Karvinen et al. (2015) [14] found that the Nordic HEIs are lacking both targets and indicators measuring SD in teaching and research, especially when compared to the amount of indicators measuring ecological footprint. The same trend has additionally been noticed in the HEIs in England [33], and indicated in the reviews of Wals (2014) [18] and Ramos et al. (2015) [19]. The lack of proper monitoring of SD in teaching may indicate lack of

top-down management and poor institutional coordination of SD implementation in the Nordic HEIs. Furthermore, top-down management could encourage teachers to enhance their competences in SD and create positive pressure to include SD into learning outcomes.

However, our results suggest that the Nordic HEIs are currently allocating insufficient resources to train their teachers in sustainability, although training the educators has been appointed as a key target in the UN GAP [6]. Moreover, limited teacher qualifications have been recognized to hinder the mainstreaming of ESD [27]. Referring to the project report by the Universities in Europe for Sustainable development –network (UE4SD) [13], insufficient professional education in SD seems to be a trend in the whole Europe. In addition, the Nordic HEIs' teachers responding our survey seem to exploit pedagogical measures inefficiently in promoting ESD, indicated by the modest results concerning learning outcomes related to SD. According to the principles of constructive alignment [34], the key to deep learning and acquiring good skills, knowledge and understanding, is in constructing the courses and programmes around thoroughly designed learning outcomes. However, applying these principles to promote ESD would possibly cause substantial amount of planning and re-structuring to support the holistic and transdisciplinary nature of the concept. The lack of time and human resources in implementing the re-structuring work, added with insufficient level of SD-expertise and professional education available, make a huge obstacle for integrating ESD.

Despite the numerous obstacles, many aspects of ESD have already improved in the Nordic HEIs, as indicated by our results from the period between 2005 and 2014 i.e. during the DESD. A part of the positive development may be explained by the general increase in awareness concerning SD, but however, improvement is still needed in monitoring SD in teaching and training the teachers. Therefore, in order to further integrate ESD and to reach a more institutional approach, we recommend HEIs specifically to review their targets and monitoring system relating to SD in teaching and research, and to consider offering training in SD to all staff members, including top management. Moreover, it would be crucial to allocate enough time and human resources to teaching to ensure holistic and interdisciplinary approaches, as well as appropriate teaching methods in courses.

Findings from this survey may facilitate especially the Nordic HEIs to recognize the overall commitment of their institutions towards sustainability by analysing the SD contents of their curricula, and specifically by exploring the contents of learning outcomes and professional development offered in SD. We additionally encourage every HEI to identify their individual obstacles and drivers to reach appropriate means to promote ESD. However, it would be beneficial to conduct comparative and even experimental studies on the effect of different SD-embedding strategies on the actual learning outcomes of students.

However, the indicators used in our survey were generalized, providing only an overview of Nordic university teachers' assessments on ESD integration, rather than detailed information on the institutions. Moreover, the channels used in distributing the survey were insufficient in reaching a representative sample of the whole Nordic community of university teachers, and are additionally mostly targeted at teachers already interested in sustainability. Thus, the authors acknowledge that the views of the respondents may be biased in this respect, and that the results can be considered only directive. Some of the statements may also have been interpreted varyingly by different respondents, and would have required more specific explanations. Therefore more data would be needed to support the results gained through this survey. The

impact of respondents' disciplines, nationalities, age and gender was additionally excluded from the focus of this paper, and ought to be addressed in further studies.

## 5 CONCLUSIONS

In this paper, we presented the results from a Nordic survey on integrating education for sustainable development (ESD) in Nordic universities. The survey explored the views of university teachers on integration levels, drivers and barriers in integration, as well as the progress made in ESD during the UN Decade of Education for Sustainable development (DESD 2004-2015) [4]. The results suggested that the level of ESD in the Nordic HEIs seems to have increased during the past ten years, but that SD is still very modestly taken into consideration in teaching. The integration of ESD would require much more attention and resources to fulfil the aims of the ambitious strategies of the region and the goals set by the Rio+20 HESI initiative [16], the UN DESD [4] and the UN Global Action Programme (GAP) [6]. A purely "green" curriculum is a result of both, motivated and active individuals and organizational support. Therefore, specific attention ought to be paid to teachers' attitudes and competences on SD to reach better levels of ESD, and to the training of university staff, including top management, to reach higher levels of collaboration and institutional engagement to sustainability. As Scott (2013) [35] stated, there is a strong connection between individual learning and organizational learning - the motivation and capabilities of individuals must be addressed simultaneously with changing the university mission and operations, and the changes must support each other.

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