ENVIRONMENTAL SUSTAINABILITY:
ATTITUDE OF BULGARIAN IT STUDENTS

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IT SECTOR

IT Sector Impact

Green IT
reducing the environmental impact of IT

#Tech4Good
applying IT to improve sustainability

#Tech4Bad
supporting and working for unsustainable (environmentally damaging) companies

Global and European politics

- **UN Framework Convention on Climate Change** (1992) - to combat "dangerous human interference with the climate system" through "stabilization of greenhouse gas concentrations"
- **Paris Agreement** (2015) - to limit global warming to "well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels"
- **UN 2030 Agenda for Sustainable Development** (2015) - 17 Sustainable Development Goals
- **Global Coal to Clean Power Transition Statement** (2021) - to "achieve a transition away from unabated coal power generation in the 2030s for major economies and in the 2040s globally" and to "cease issuance of new permits and construction of unabated coal-fired power generation projects"
- **Energy Transition Council** (2022) - with priority areas of engagement as "Coal and fossil fuel transition", incl. "retire coal plants early and no longer build new coal power capacity"
- **European Green Deal** (2020) - to convert Europe into "the first climate-neutral continent" by 2050
- **European Commission** (2021) - a set of proposals to reduce net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels
- **International Energy Agency Report** (2021) - sets out productive pathway for "a clean, dynamic and resilient energy economy dominated by renewables like solar and wind instead of fossil fuels" and "no new oil and natural gas fields, and no new coal mines or mine extensions are required"

Fossil fuel sector

List of the fossil fuel impacts (Environmental and Energy Study Institute, 2021):

- ocean acidification, extreme weather, sea level rise, plastic pollution, air pollution, water pollution, oil spills and health issues
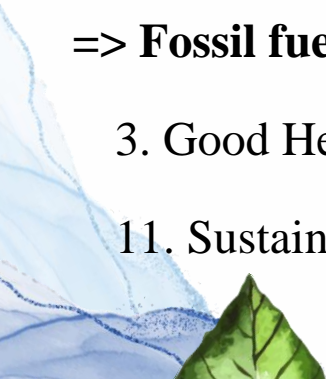
=> **Fossil fuels directly hinder:**

13. Climate Action

7. Affordable and Clean Energy

=> **Fossil fuels indirectly hinder:**

3. Good Health and Well-Being,

11. Sustainable Cities and Communities, etc.

Fossil fuel sector

World and European politics =>

    Shrinking of the fossil fuel sector =>

        Loss of many jobs

            BUT clean energy jobs will grow strongly

Politics will affect other sectors =>

- EU Taxonomy for sustainable activities (2020) with a list of environmentally sustainable economic activities, where fossil fuels are excluded
- Lists for recognition of sustainable companies:
  - MSCI Global Fossil Fuels Exclusion Indexes (2014) for institutional investors
  - Investopedia Environmental, social, and governance criteria (2022) – company's behavior standards for socially conscious investors
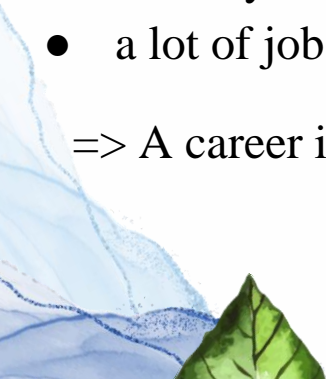
Pragmatic and ethical issues for IT specialist

Pragmatic point of view – when it doesn't make sense to work in this sector, IT specialists have to leave work and move to another sector

- The fossil fuel industry is coming to an end
- In the "net-zero emissions by 2050" pathway, companies will not invest in new fossil fuel exploration, development and supply
- There has been a rapid increase in net-zero emissions announcements from companies in recent years
- a lot of jobs will be lost (IEA, 2021) (incl. for IT specialists)

=> A career in the fossil fuel sector will be short-term, with no future perspective
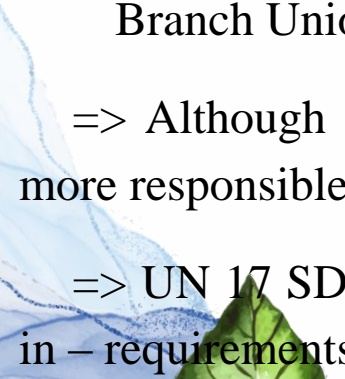
Pragmatic and ethical issues for IT specialist

Ethical point of view – when it's not right to work in an industry, the choice of whether or not to work in the environmentally damaging sector rests with the worker

- It is not illegal to produce or supply fossil fuels
- The ethical impact of work actions should also be considered
- Ethical considerations are addressed in the documents of a number of IT organizations – IEEE Code of Ethics (2020), BCS Code of Conduct (2022), ACM Code of Ethics and Professional Conduct (2018), program goal of the two Bulgarian Branch Syndicates in the STEM field (National Federation of Technical Industry, Science, Informatics and National Branch Union "Telecommunications and Information Technologies")

=> Although working for the fossil fuel industry is a legal job, IT professionals need to be more responsible to the world's critical topics

=> UN 17 SDGs and their 169 targets can be used as a guide to professional decision-making in – requirements in systems engineering, ethical job decisions, IT product communication, etc.
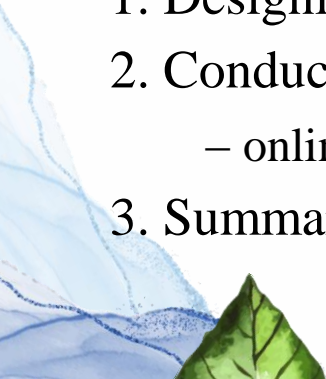
Objectives and Research Methodology

Objectives:

- to investigate young IT professionals' attitude to the sustainability and in particular the fossil fuel industry
- to explore IT students' opinion about the place of sustainability in higher education
- to study students' opinion about future employment in relation to sustainability

Research methodology:

1. Designing a survey
2. Conducting the survey with IT students
    – online voluntary and anonymous survey delivered on the Google cloud
3. Summarizing and presenting the data

Survey Results

20 questions:

- Demographic questions
- Sustainability awareness
- Sustainability at university
- Sustainability in employers
- Ethical concerns
- Practical concerns
- Community behavior

5-scale answers:

- **Strongly Disagree (1)**
- **Disagree (2)**
- **Undecided (3)**
- **Agree (4)**
- **Strongly Agree (5)**

choosing the correct sentence of two possible

01

Demographic data

Participants

260 students from the Faculty of Mathematics and Informatics at the University of Plovdiv "Paisii Hilendarski", Bulgaria
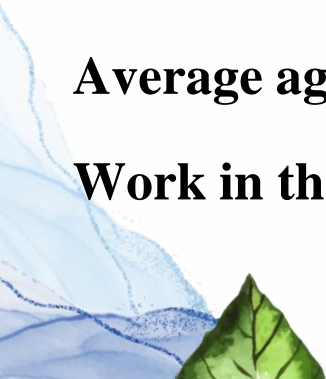
Majors: Computer Science, Business Information Technologies, Applied Mathematics, Business Mathematics, 2 pedagogical majors in IT

Year of study: 41.50% – 1 year, 25% – 2 year, 12.70% – 3 year, 20.80% – 4 year

Sex: 68% – male and 32% – female

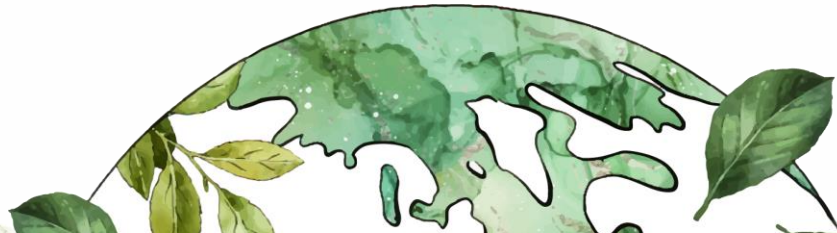**Average age:** 20.74 years (range from 17 to 29 years)

Work in the IT sector: no – 88%, yes – 12% (from a few months to about 4 years)
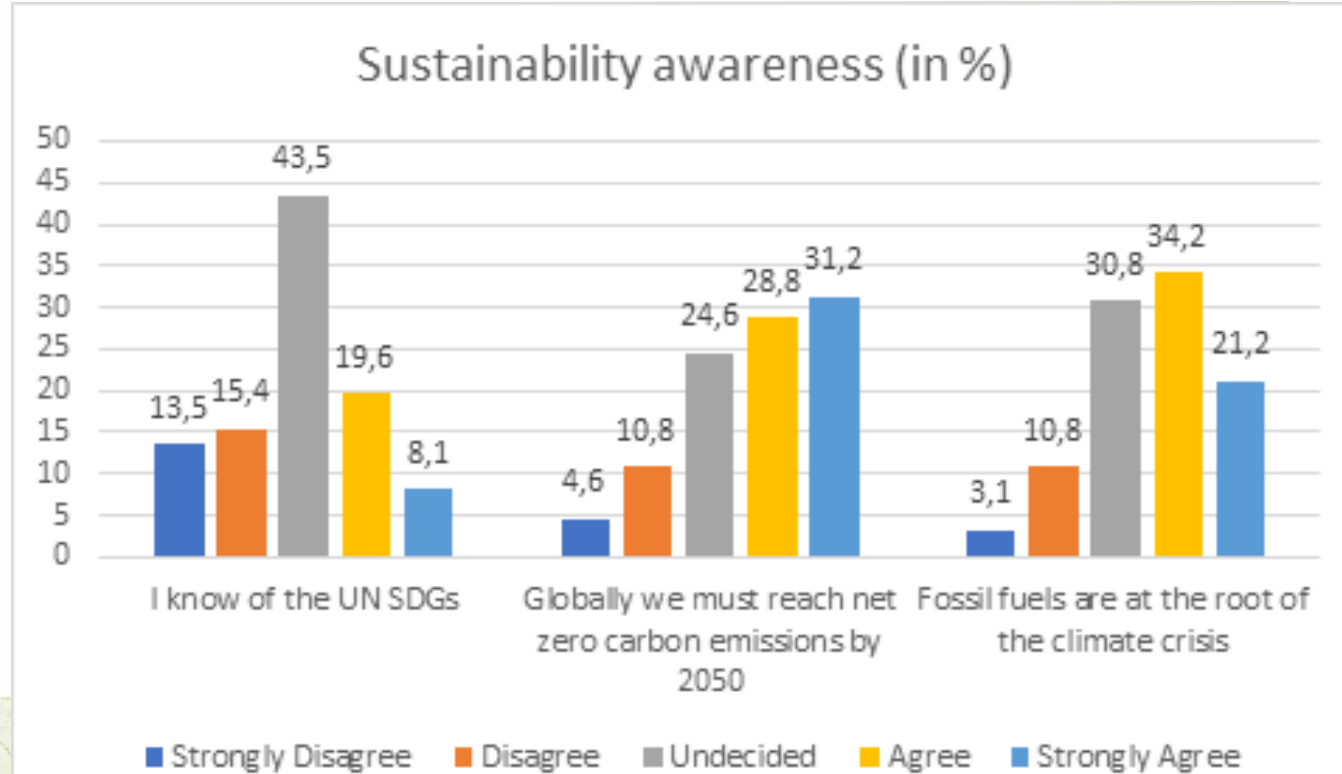
02

Sustainability awareness

27.7% know the UN SDGs

60% know that we must reach net zero carbon emissions by 2050

55.4% think t that fossil fuels are at the root of the climate crisis

Sustainability awareness (in %)

|	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I know of the UN SDGs	13,5	15,4	43,5	19,6	8,1
Globally we must reach net zero carbon emissions by 2050	4,6	10,8	24,6	28,8	31,2
Fossil fuels are at the root of the climate crisis	3,1	10,8	30,8	34,2	21,2

03

Sustainability
at university

47% consider that the university incorporates and promotes sustainability skills

35% agree that the university courses incorporate and promote sustainable development

62% (BG)/ 76% (UK) consider that the university is obliged to develop students' sustainability skills as part of courses
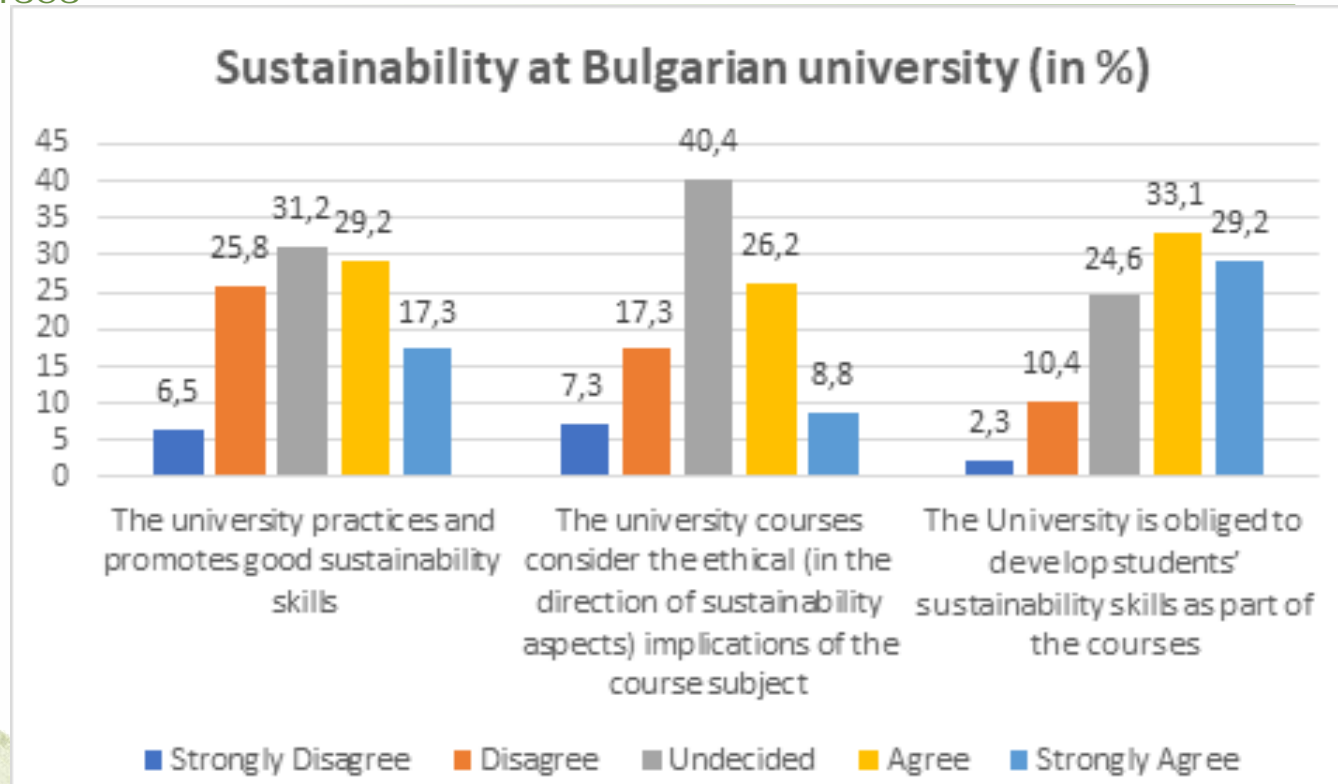

Sustainability at Bulgarian university (in %)

04

Sustainability in employers

71% (BG) / 30% (UK) think that the employer should consider the environmental and social impacts of its products and/or services

62% (BG) / 11% (UK) think that the employer should actively work for the reduction of carbon emissions

65% (BG) / 33% (UK) support the importance of the employee's skill of "understanding people's relationship to nature" for the employers
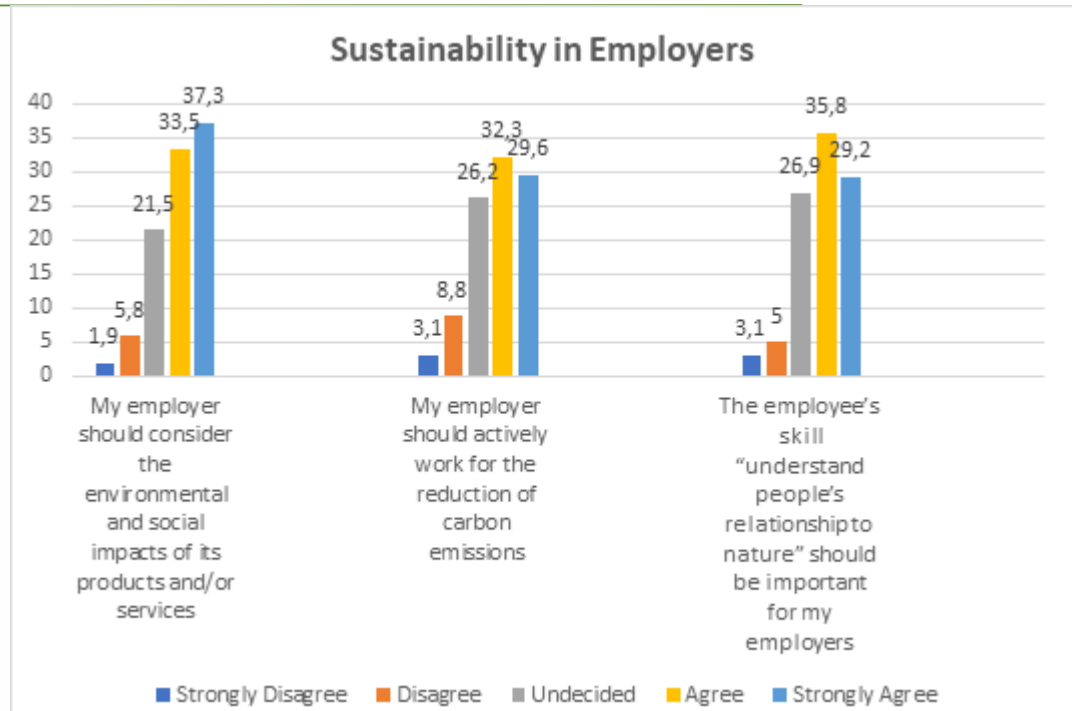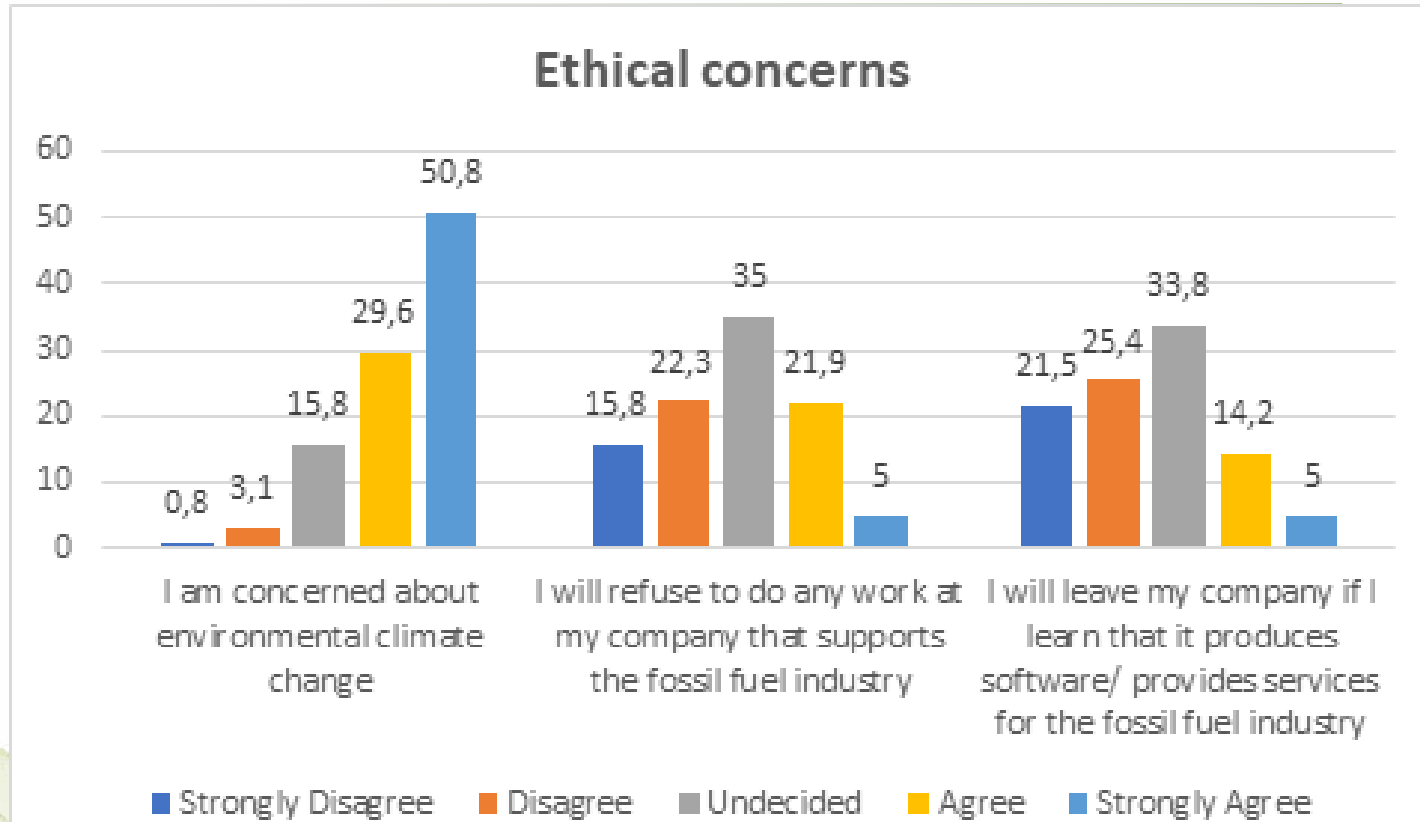
05

Ethical concerns

80.4% are concerned about environmental climate change

26.9% will refuse to work at a company that supports the fossil fuel industry

19.2% will leave their company if it produces software or provides services for the fossil fuel industry
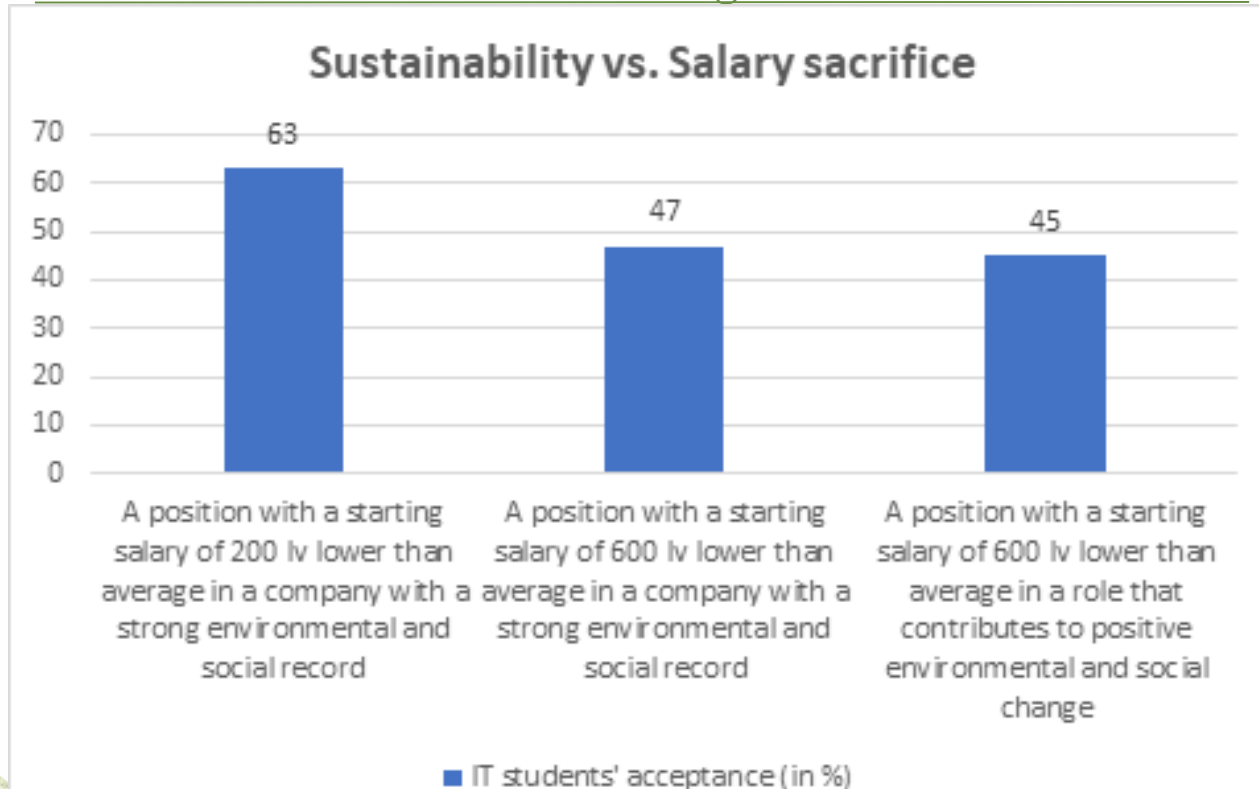

Ethical concerns

06

Practical
concerns

63% (BG) / 74% (UK) would accept 200 lv (around 100 Euro) lower salary than average

47% (BG) / 51% (UK) will sacrifice 600 lv (around 300 Euro) lower salary

45% (BG) / 53% (UK) would accept a position with a starting salary of 600 lv lower in a role that contributes to positive environmental and social change
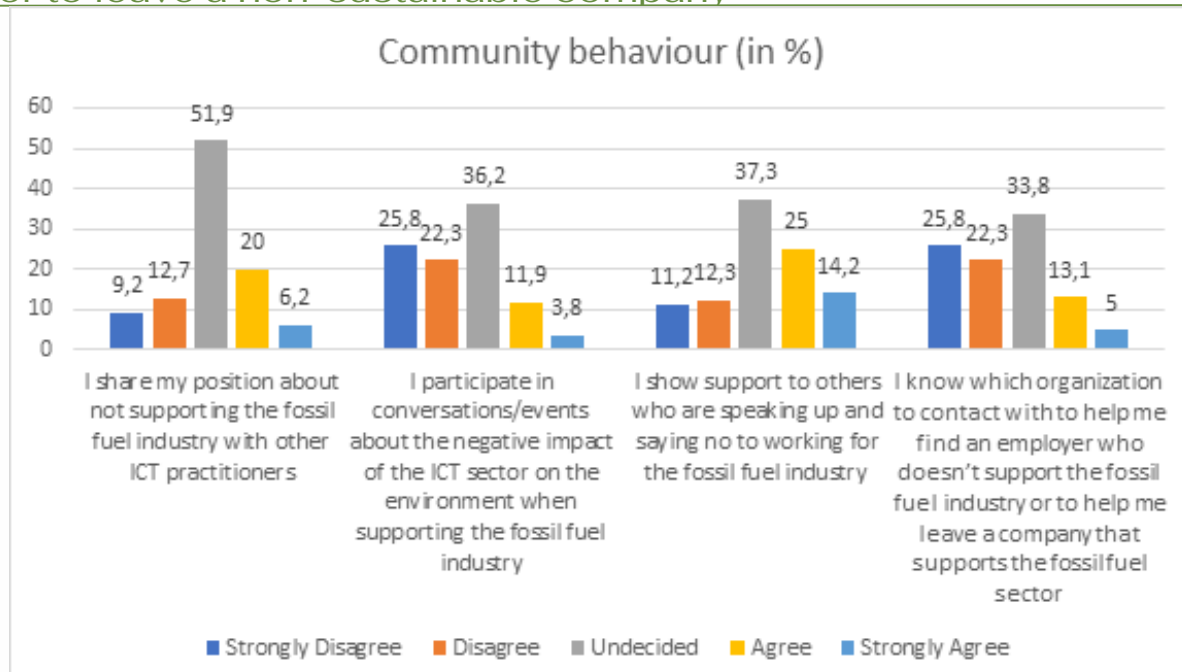
07

Community Behavior

26.2% share their position about not supporting the fossil fuel industry with other ICT practitioners

39.2% show support to others who are speaking up and saying no to working for the fossil fuel industry

15.7% participate in conversations or events about the negative impact of the ICT sector on the environment

18.1% know which organization to contact to help them find an employer who doesn't support the fossil fuel industry or to leave a non-sustainable company

Community behaviour (in %)

Thank you!