‘Jiihaa, it is almost summer!’

WAT SYNTHESIS SESSION

29.5.2019 @ Water Building – Marko, Meeri & co

AIMS FOR TODAY?

1) Think and breath!

→ *It has been a long & hectic year…*

All this together with your group & teachers, making use of your portfolio

→ Today also helps you to revise your portfolio!

2) Synthesise & reflect your first year of studies

→ *How does WAT look like for you now, after one year?*

3) Give feedback on our programme

→ *What works, what not? How to improve the programme?*

And by the way,
this is the last time
we are together
with this group!

PROGRAMME

14:00- Synthesis: What is WAT?

14:20- Reflection: Assessing your own learning

14:50- Feedback: How does WAT work?

- Synthesis on your survey answers + reflections (15 min)
- Group discussion with your mentor & teachers: how did WAT work? (30 min)
- Open discussion (15 min)

15:50- Next steps: 2nd year, incl. exchange + Thesis

→ Akva & WAT 'vesikahvit' from 4pm onwards: all welcome!

Aalto University

Short Synthesis Session

What is WAT?

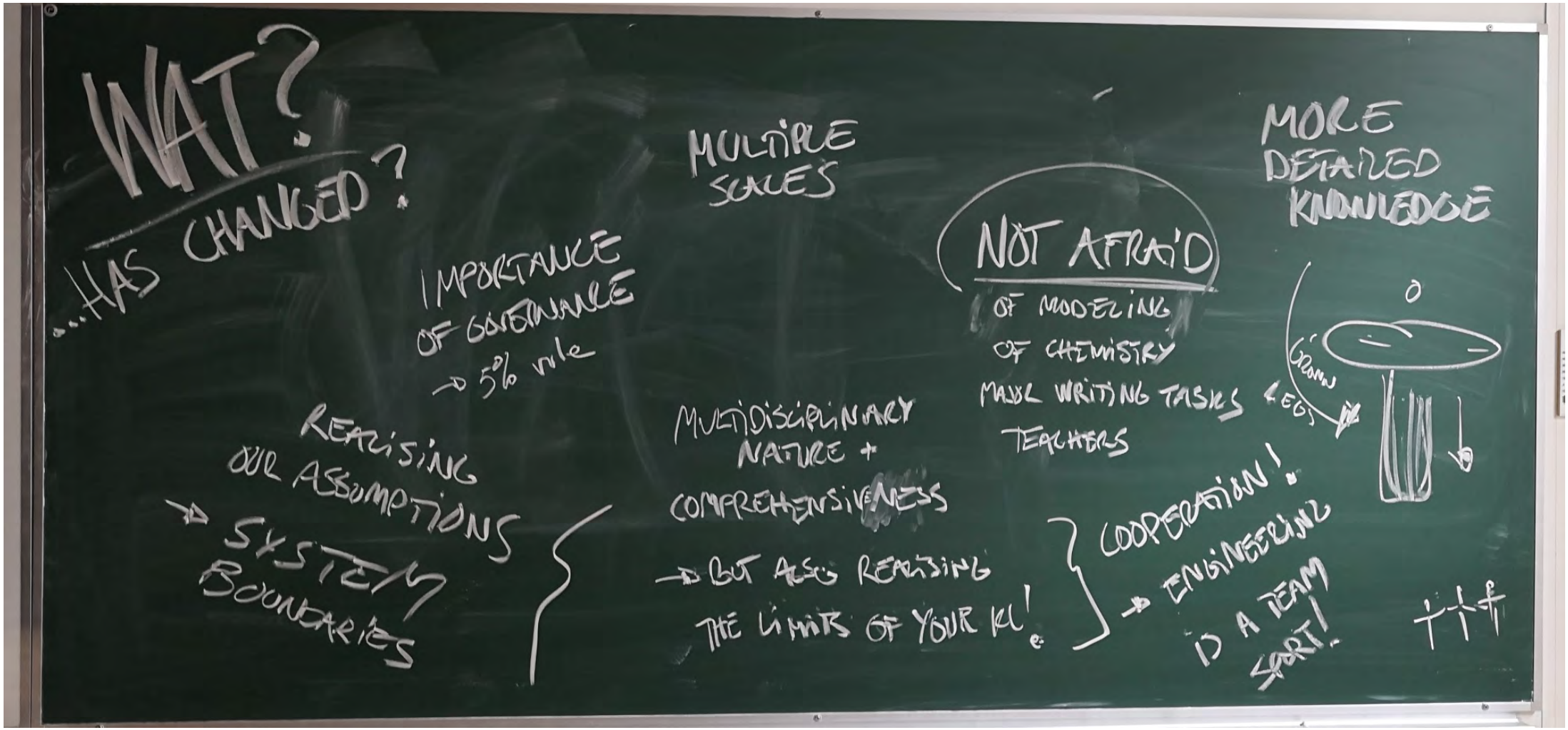
WHAT IS WAT I.E.

WATER & ENVIRONMENTAL ENGINEERING?

How you understand our field now?
Also think what has possibly changed
in your understanding during this year.

→ Discuss with a pair you don't know so well yet:
please take a cup of coffee while discussing

SUMMARY OF YOUR THOUGHTS



PROGRAMME

14:00- Synthesis: What is WAT?

14:20- Reflection: Assessing your own learning

14:50- Feedback: How does WAT work?

- Synthesis on your survey answers + reflections (15 min)
- Group discussion with your mentor & teachers: how did WAT work? (30 min)
- Open discussion (15 min)

15:50- Next steps: 2nd year, incl. exchange + Thesis

→ Akva & WAT 'vesikahvit' from 4pm onwards: all welcome!

Aalto University

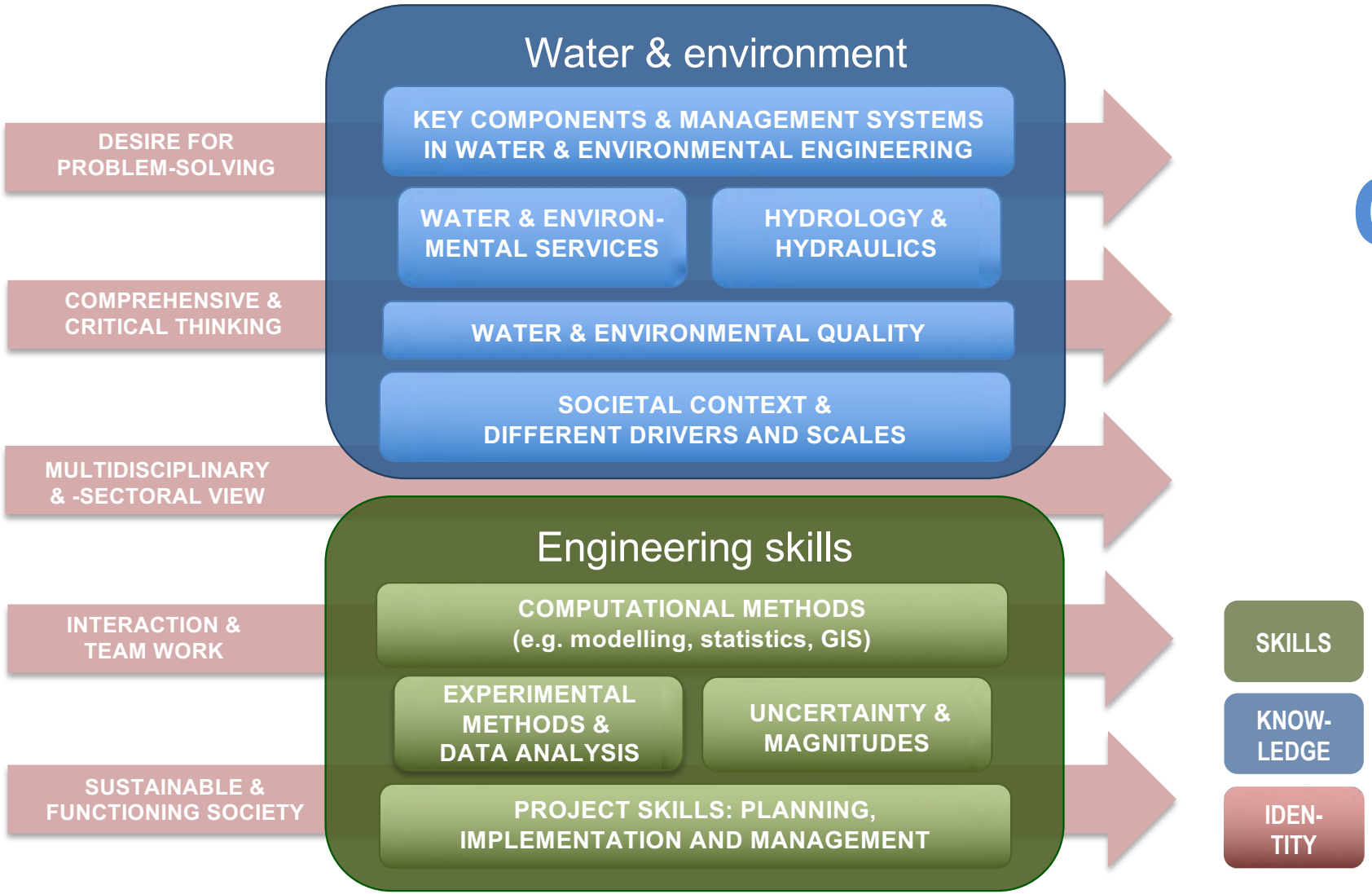
REFLECTION

WHAT YOU HAVE LEARNED DURING YOUR 1ST YEAR?

WAT COMPETENCES AND LEARNING OUTCOMES?

Our programme-level learning outcomes: what have you learned during the 1st year?

→ *Please make use of your portfolio as well as your WAT Survey answers!*



WAT COMPE-TENCES

ILOs: knowledge

Our graduate is able to:

1) Recognise the key **components and management systems in water and environmental engineering**, and understand the relevance of **sustainability** for the field
2) Understand the principles of the **hydrological cycle** and movements of water in natural and built environments
3) Define and differentiate the main sections of **water and environmental services**, including treatment of water and waste water as well as environmental risk analysis and life cycle assessment
4) Understand the key principles of **water and environmental quality**, and their relation to pollution, contamination and restoration
5) Identify the **societal context** relevant to the water and environment, and comprehend the different **scales** (spatial and temporal) and key **drivers** (e.g. climate change, population growth, urbanization, pollution) applicable to water and environmental engineering

ILOs: skills

Our graduate is able to:

1) Apply **key computational methods** (e.g. modelling, statistics, GIS) related to water and environmental engineering
2) Understand relevant **experimental methods and data analysis** processes, including the use of data archives
3) Comprehend **uncertainty and different orders of magnitude** related to the measurements, data analysis and modeling
4) Recognise and analyse the main components of water- and environment-related **planning, implementation and management processes, and use related basic project skills**

ILOs: identity

(i.e. general working-life skills)

Our graduate:

1) Is motivated and has a desire for **problem-solving**
2) Thinks in a **comprehensive and critical manner** about his/her work and field
3) Maintains a **multidisciplinary and -sectoral view** related to water and environmental engineering
4) Is able to work as a part of a team and has relevant skills for **interaction and communication**
5) Promotes a **sustainable and functioning society**

Assessing what you have learned

1) Go through the given programme level Learning Outcomes

2) Select three Learning Outcomes that you have learned most of

3) Select 1-2 Learning Outcomes that you have NOT learned so well

NOTE: write clearly as we'll collect this form!

	1-2 OUTCOMES YOU HAVE LEARNED MOST OF (write just their numbers)	**1-2 OUTCOMES YOU HAVE <u>NOT</u> LEARNED (write just their numbers)**
knowledge		
skills		
identity		

ILOs: knowledge

Our graduate is able to:

1) Recognise the **key components and management systems** in **water and environmental engineering**, and understand the relevance of **sustainability** for the field
2) Understand the principles of the **hydrological cycle** and movements of water in natural and built environments
3) Define and differentiate the main sections of **water and environmental services** and related infrastructure, including treatment of water and waste water as well as environmental risk analysis and life cycle assessment
4) Understand the key principles of **water and environmental quality**, and their relation to pollution, contamination and restoration
5) Identify the **societal context** relevant to the water and environmental engineering, and comprehend the different **scales** (spatial and temporal) and key **drivers** (e.g. climate change, population growth, urbanisation, pollution) applicable to water & environmental engineering.

Assessment results – the number of times students mentioned the learning outcome as one that s/he has learned most (GREEN) and least (RED): ILO1:4/2, ILO2:12/5, ILO3:7/2; ILO4: 6/2; ILO5: 8/6

ILOs: skills

Our graduate is able to:

1) Apply **key computational methods** (e.g. modelling, statistics, GIS) related to water and environmental engineering
2) Understand relevant **experimental methods** and **data analysis** processes, including the use of data archives
3) Comprehend **uncertainty and different orders of magnitude** related to the measurements, data analysis and modeling
4) Recognise and analyse the main components of water- and environment-related **planning, implementation and management processes, and use related basic project skills**

Assessment results – the number of times students mentioned the learning outcome as one that s/he has learned most (GREEN) and least (RED):
ILO1:11/1, ILO2:8/2, ILO3:7/4; ILO4: 4/11

ILOs: identity

Our graduate:

1) Is motivated and has desire for **problem-solving**
2) Thinks in **a comprehensive and critical manner** about his/her work and field
3) Maintains a **multidisciplinary and -sectoral view** related to water and environmental engineering
4) Is able to work as a part of a team and has relevant skills for **interaction and communication**
5) Promotes a **sustainable and functioning society**

Assessment results – the number of times students mentioned the learning outcome as one that s/he has learned most (GREEN) and least (RED):
ILO1:8/2, ILO2:9/2, ILO3:6/4; ILO4: 12/0; ILO5: 5/5

Aalto University

GROUP DISCUSSION

Any surprises? Other remarks?

Have you learned what you wanted to learn? Why / why not?

PROGRAMME

14:00- Synthesis: What is WAT?

14:20- Reflection: Assessing your own learning

14:50- Feedback: How does WAT work?

- Synthesis on your survey answers + reflections (15 min)
- Group discussion with your mentor & teachers: how did WAT work? (30 min)
- Open discussion (15 min)

15:50- Next steps: 2nd year, incl. exchange + Thesis

→ Akva & WAT 'vesikahvit' from 4pm onwards: all welcome!

Aalto University

Feedback on our Master's Programme

You are the ultimate experts of our WAT Master's Programme: thank you for sharing your views & visions on how to improve it!

WHY TO GIVE FEEDBACK?

Feedback is important for both you and us, as it:

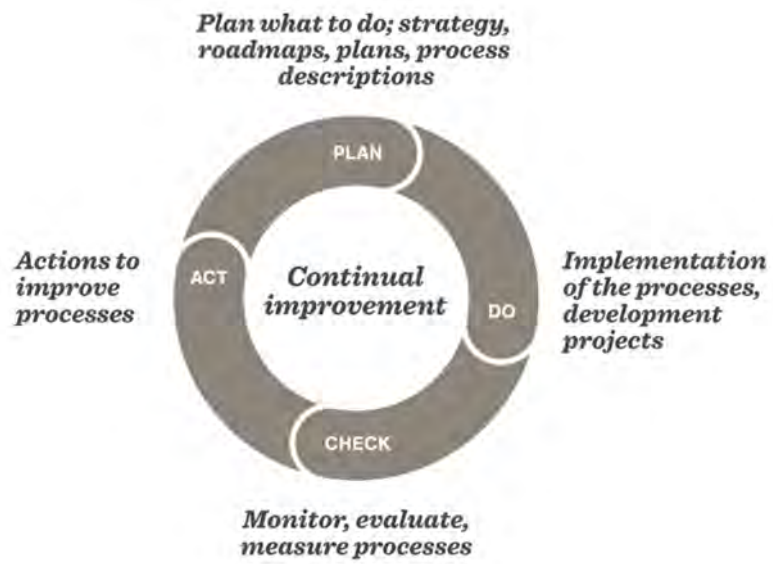
1) Helps you to look back and **reflect** what you have learned and what not - and why (thus links to portfolio process)

2) Provides teachers and Aalto leadership information (**feedback**) on how we succeeded in our teaching

   → Helps us to develop the programme

   → Direct link to Aalto's PDCA cycle

3) Benefits thus future students, as **ensures better courses & programme**!



PDCA = Plan-Do-Check-Act

WAT SURVEY 2019 – THANKS!

- Majority of you (18/22) responded: thank you!
- You provided very thorough and useful views on our WAT programme and courses: thank you!
- General feeling from the feedback **positive**: programme works, and provides you with a diversity of knowledge and skills from our field

→ You're well on your way to become WAT experts!

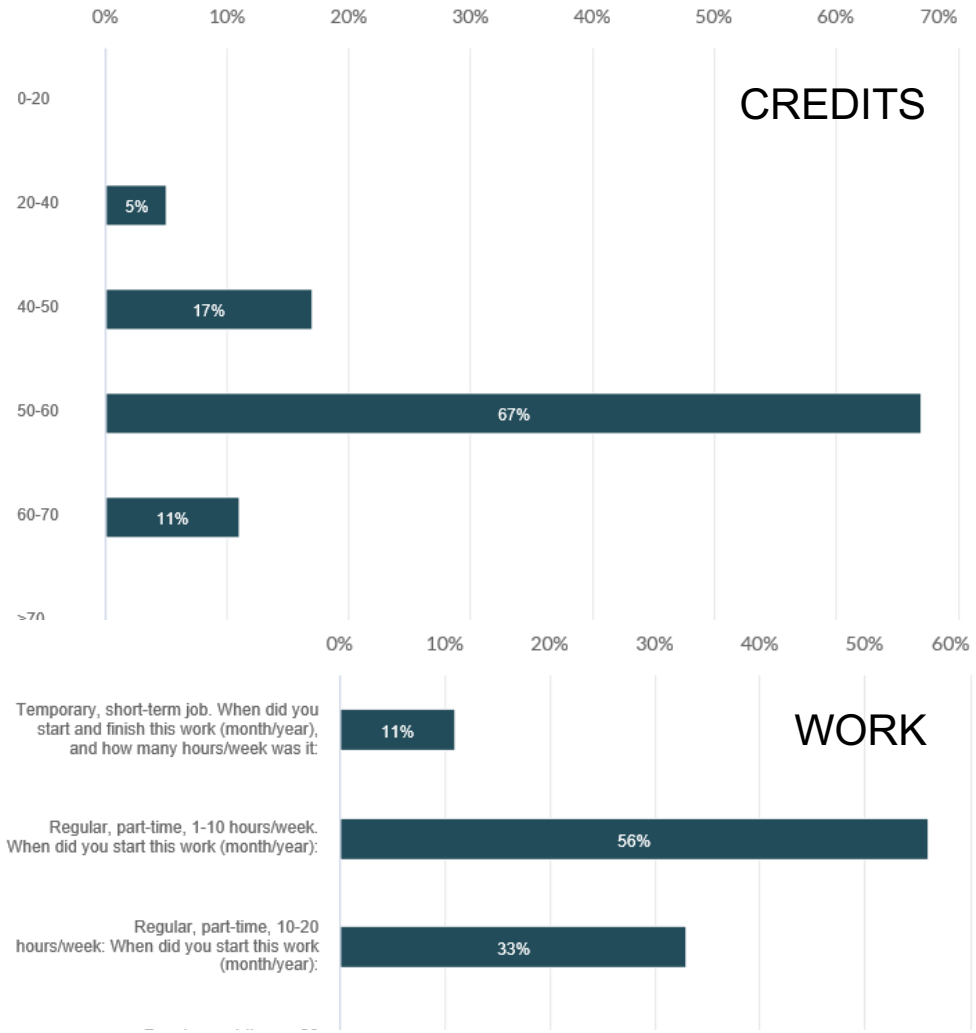
EXTRA: Our WAT Master's Programme was awarded in 2018 Aalto Education Excellence Award for its comprehensive approach and systematic way to collect feedback and develop the programme. For more, see: https://www.whatif.aalto.fi/wat_eng

WAT SURVEY 2019 - MAIN RESULTS

- 67% have gained more than 50 credits (as planned)

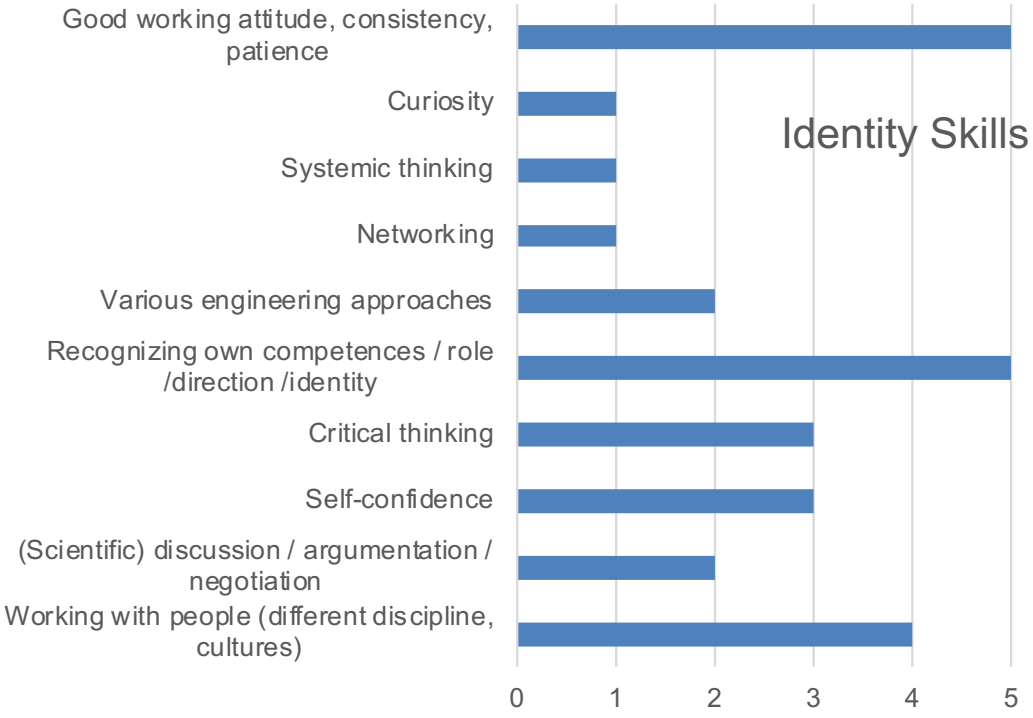
  → Well done!

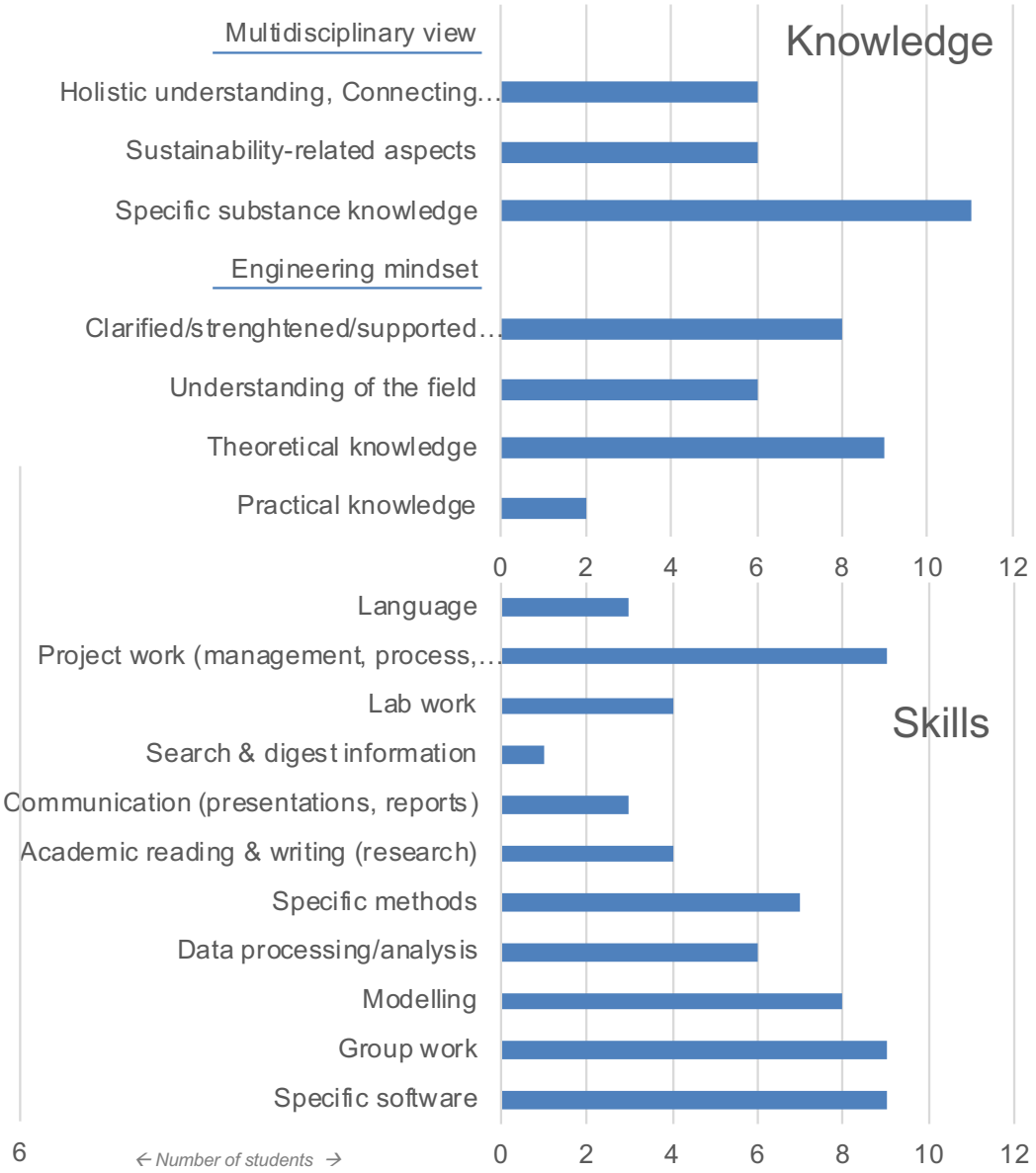
- 50% worked during studies
  - Working in the field (2/3) been beneficial, although hindered studies a bit
  - Takes time and energy, but provides skills and new viewpoints



You have gained diversity of knowledge and skills (as planned)

Partly lacking: business aspects, environmental engineering, in-depth + hands-on application of knowledge

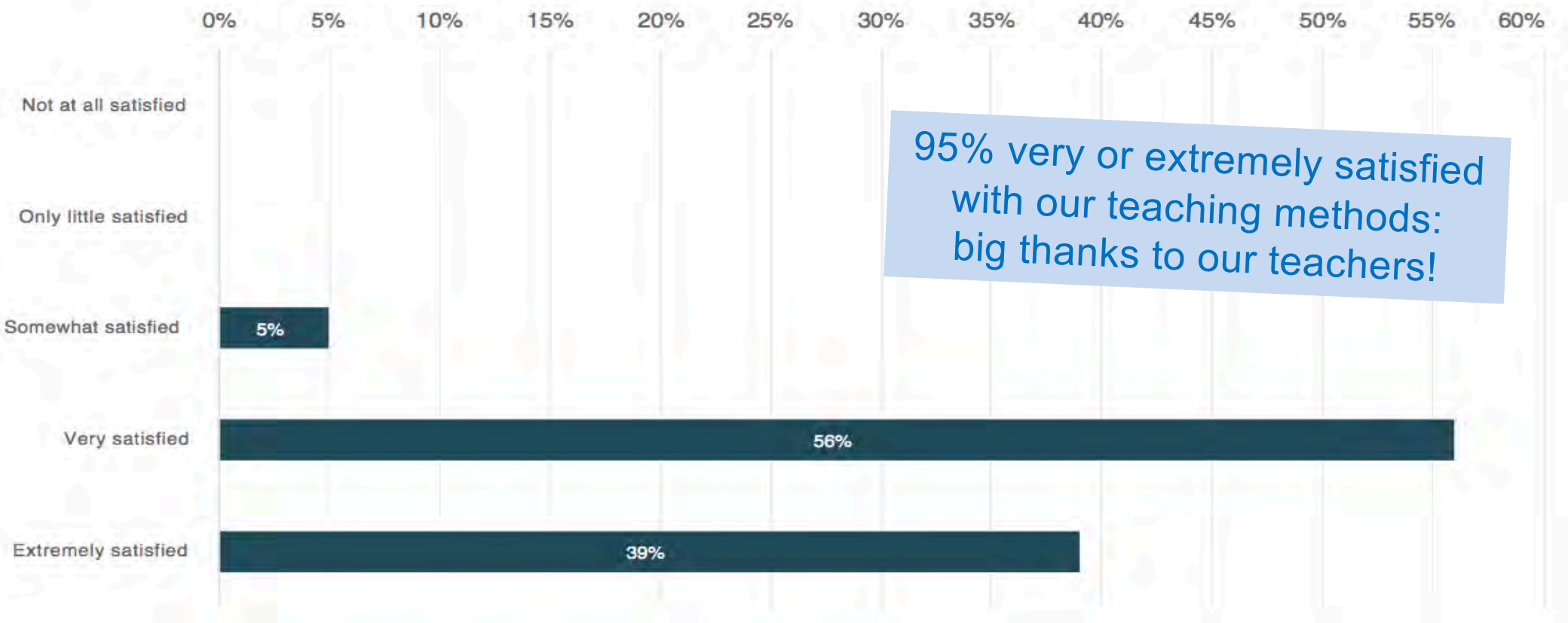




How satisfied you are with WAT?

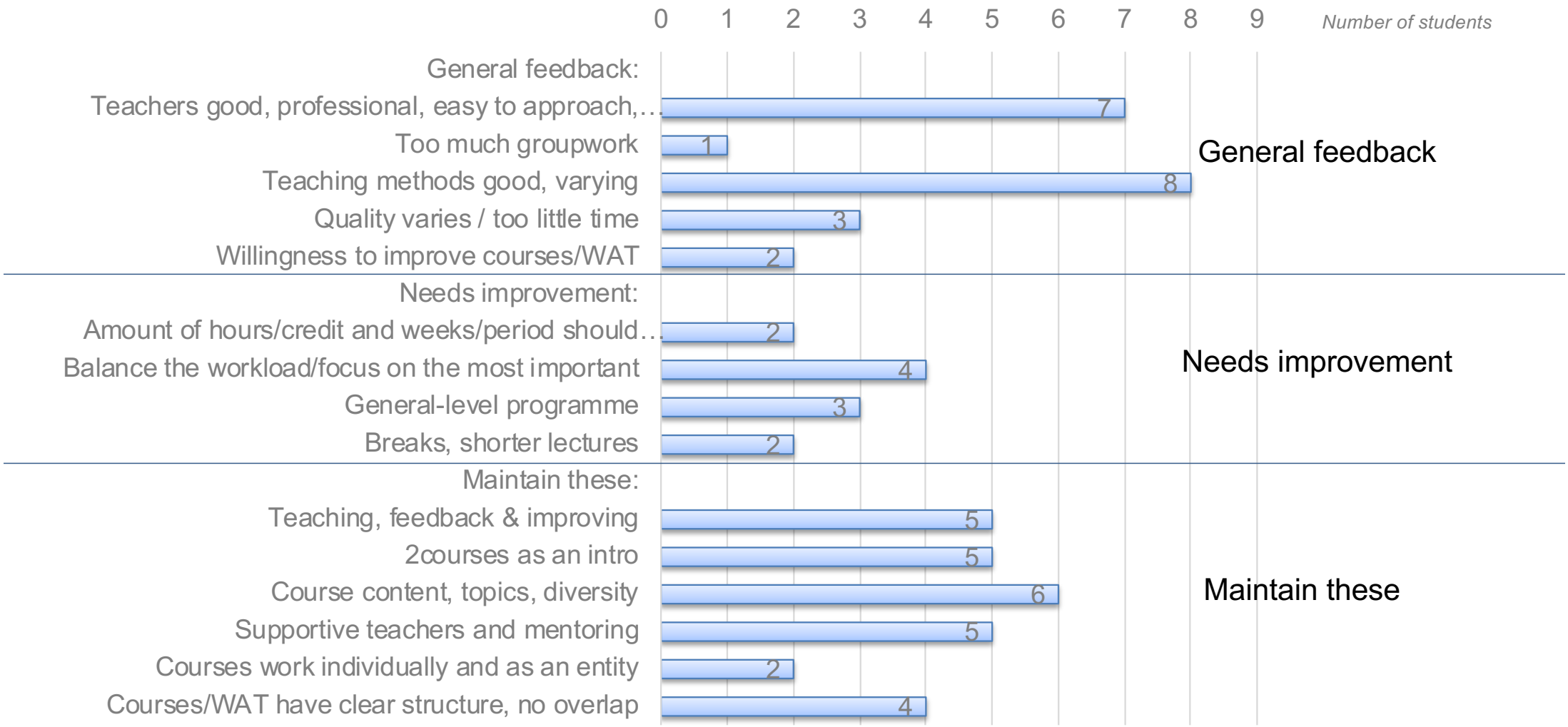
Almost 80% very or extremely satisfied with our Programme: great to hear!

How satisfied you are with our teachers and teaching methods?



95% very or extremely satisfied with our teaching methods: big thanks to our teachers!

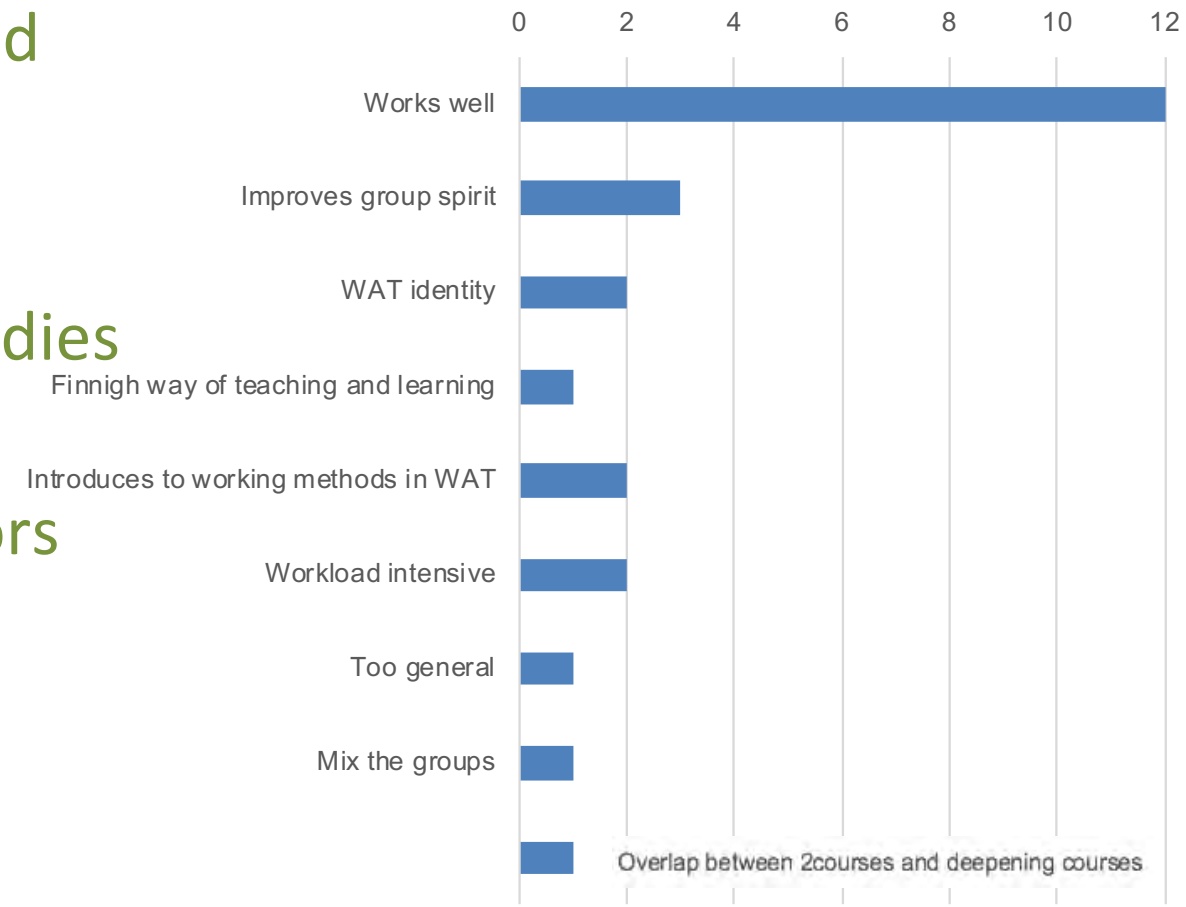
WAT programme & teaching: all satisfied and a great majority of respondents very/extremely satisfied with the programme (78%) and teaching (94%)



2courses?

2courses works well = a great majority would keep it as it is

- Intensive, but well-structured
- Introduces fellow students and improves group spirit
- Facilitates choosing your studies
- Introduces teaching and working methods + professors
- Too general and intensive
- Mix the groups
- Don’t repeat the same contents in advanced courses



Aalto University

Pair Discussion

How does this feel?

Anything surprising?

Questions, comments?

Aalto University

GROUP DISCUSSION WITH MENTORS & TEACHER

(S/HE IS THERE MAINLY TO LISTEN AND COMMENT)

WAT structure + 2courses

GROUP DISCUSSION WITH MENTORS & TEACHERS

The last part of our session discusses our Master's Programme and its general strengths and weaknesses

→ *You will be joined by our teachers, who are there to listen and also comment if needed*

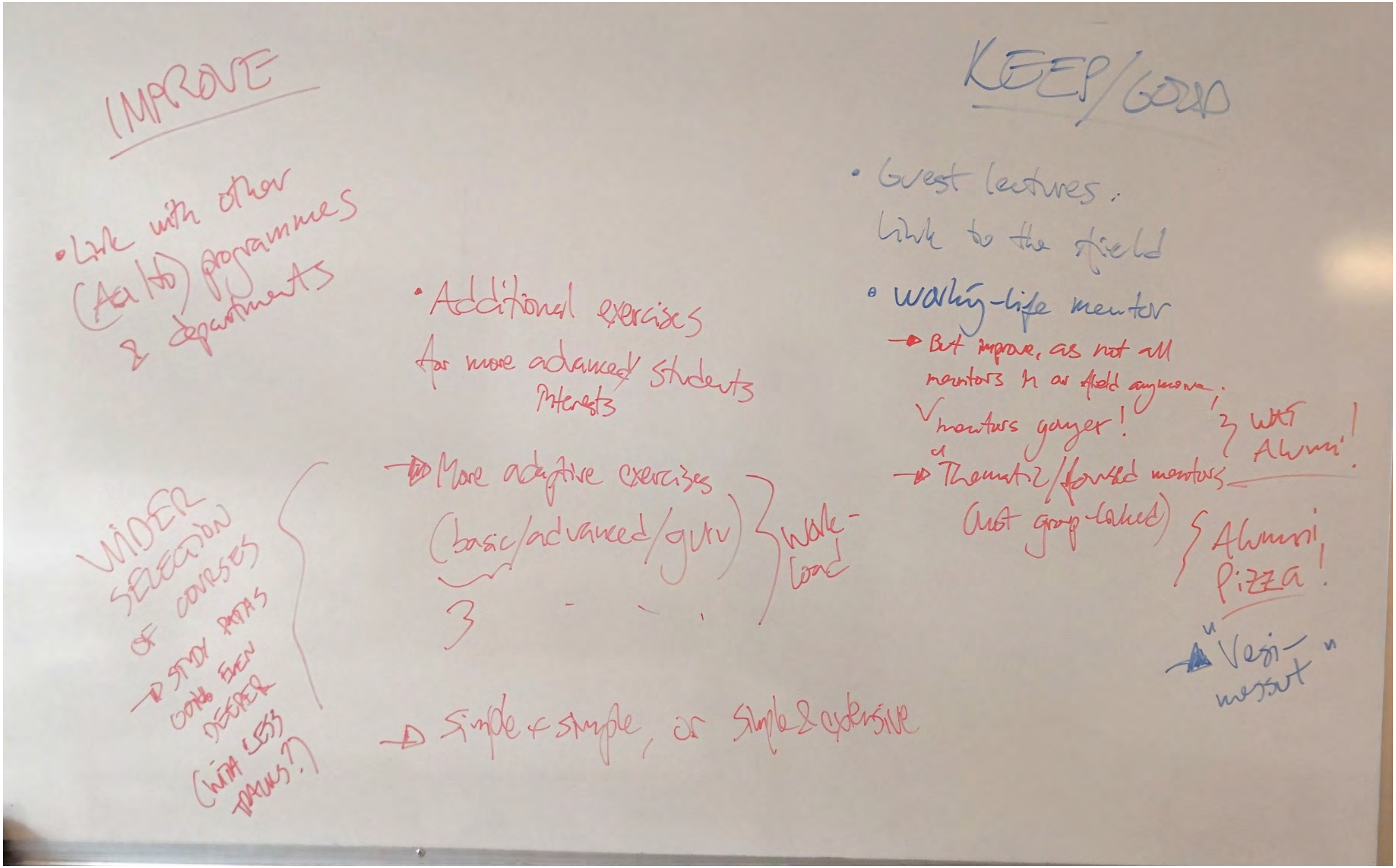
→ *But the idea is that you lead the discussion!*

WAT STRENGTHS & WEAKNESSES

A) What are the three best things in the programme? What to maintain?

B) What are the three things that require attention + development?

→ 30 minutes: make notes & prepare to present to others!


IMPROVE
• Link with other (Aalto) programmes & departments
• Additional exercises for more advanced students interests
→ More adaptive exercises (basic/advanced/guru)
work-load
WIDER SELECTION OF COURSES
→ STUDY PATHS GOING EVEN DEEPER (WITH LESS PATHS?)
→ Simple & simple, or simple & extensive
KEEP/GOOD
• Guest lectures: Link to the field
• working-life mentor
→ But improve, as not all mentors in our field anymore.
mentors younger!
→ Thematic/focused mentors (not group-based)
with Alumni!
Alumni, Pizza!
"Vesi-messut"

EXTRA: MAKING USE OF YOUR DIVERSITY?

You have very diverse backgrounds and expertise, which is both a richness and a challenge for learning & teaching

→ *How this affected your learning?*

→ *Any ideas on how to best make use of your diversity in our programme?*

DEVELOPING OUR PROGRAMME

Your feedback has been very valuable: thank you!

→ We'll discuss this with our 'opetiimi' next week,
but it seems overall things are working pretty well

→ Some things naturally require attention still

PROGRAMME

14:00- Synthesis: What is WAT?

14:20- Reflection: Assessing your own learning

14:50- Feedback: How does WAT work?

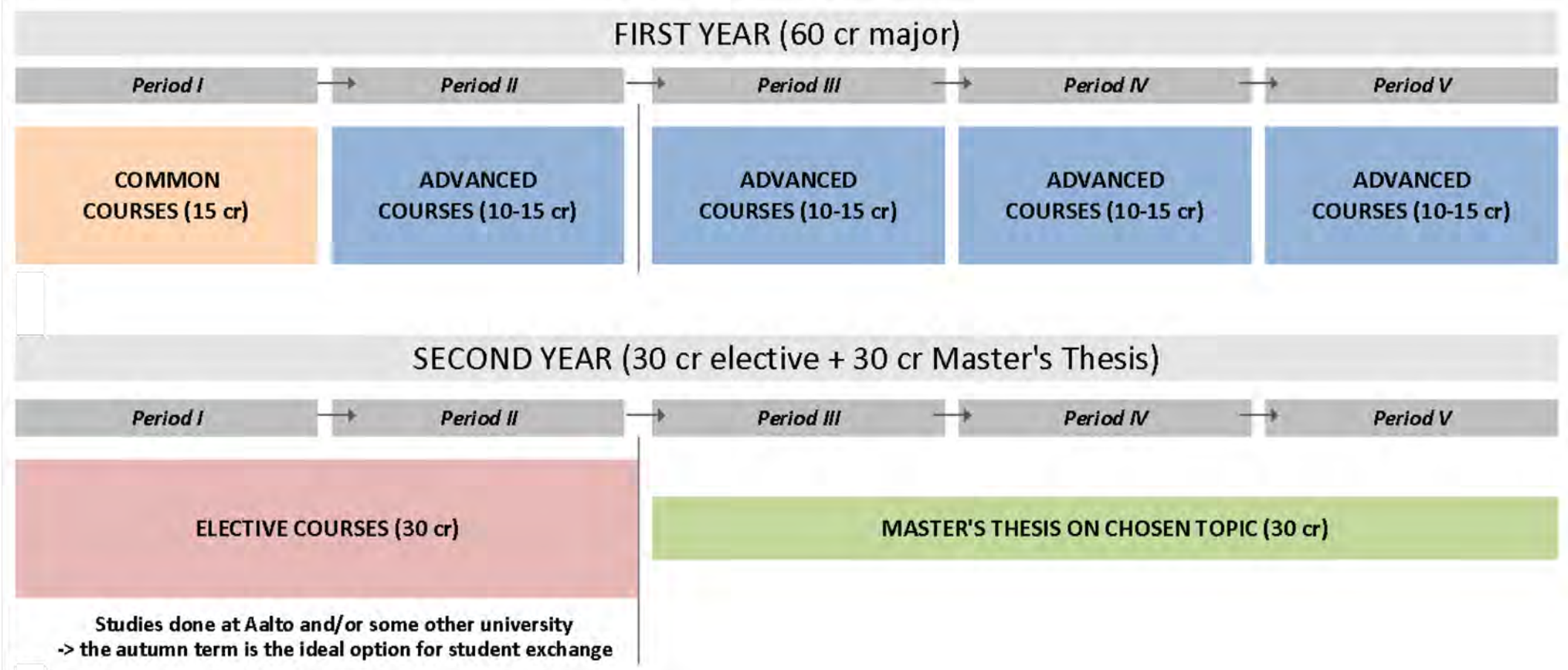
- Synthesis on your survey answers + reflections (15 min)
- Group discussion with your mentor & teachers: how did WAT work? (30 min)
- Open discussion (15 min)

15:50- Next steps: 2nd year, incl. exchange + Thesis

→ Akva & WAT 'vesikahvit' from 4pm onwards: all welcome!

Aalto University

WHAT NEXT?



Who is planning to leave for exchange?

Who is planning to take courses from e.g. University of Helsinki?

Who already has a Master's Thesis place, initially planned or even fixed?

Who has no idea about Master's Thesis?

MASTER'S THESIS

- PREMISE: It is part of your studies, not a working place

→ Provides a possibility for summative learning + creates a specialisation: think carefully its focus (use e.g. your portfolio)!

→ Supervised by our professors: accepts your plan

- Yet, WAT students have traditionally had ok chances of doing their Thesis to a company/organisation with salary

→ But requires activity (and also bit of luck) from you!

→ We will announce open positions through email

- If you haven't found a place by Spring 2020, contact Meeri and we'll think together what to do!

Master's Thesis Process

Compulsory parts of the process:

1. Listening to one Master's thesis seminar
2. Presenting own research plan in Pre-seminar
3. Attending Thesis Finalising session
4. Presenting final Thesis in Master's thesis seminar

→ Detailed information in Portolio page (MyCourses)
+ in our Master's Programme's Into pages

WAT ALUMNI SURVEY RESULTS

Summary of our WAT Alumni Survey 2017 available here: https://into.aalto.fi/display/enwat/Career+planning

Also check related Master's Thesis + articles:
https://aaltodoc.aalto.fi/handle/123456789/31604
https://www.mdpi.com/2071-1050/10/8/2605
http://bit.ly/KarvinenVehmasKeskinen


sustainability
MDPI
Article
Building a More Sustainable Society? A Case Study on the Role of Sustainable Development in the Education and Early Career of Water and Environmental Engineers


Muuttuvien työelämätaitojen sisällyttäminen tekniikan alan koulutukseen: tapaustutkimus Aalto-yliopiston vesi- ja ympäristötekniikan maisteriohjelmasta
11.3.2019

Main message: employment situation in our field is good, and the tasks & employees diverse

→ Do your Thesis on the topic that interests you most!

Questions, comments?

Aalto University

THANK YOU VERY MUCH FOR THE FIRST YEAR OF WAT MASTER'S PROGRAMME!

Let's continue discussion more informally over Water Coffee!

Background slides

Portfolio process?

Majority found it useful:

- 14/18: processing and reflecting own learning, recognizing own interest areas, benefits job applications, interesting to see other's ideas, mentoring and peer support beneficial

	0	1	2	3	4	5		Total	Average
Not at all	3	0	4	7	4	0	It was the best tool ever	18	2,5
	16,67%	0%	22,22%	38,89%	22,22%	0%			
Total	**3**	**0**	**4**	**7**	**4**	**0**		**18**	**2,5**

- 4/18: Time-consuming extra task, interests areas already clear

→ Wish: matching the mentors according to interest areas

Employment and career of Aalto University water and environmental engineering alumni

WAT ALUMNI SURVEY RESULTS 2017

MAA- JA VESITEKNIIKAN TUKI

Aalto University

Background

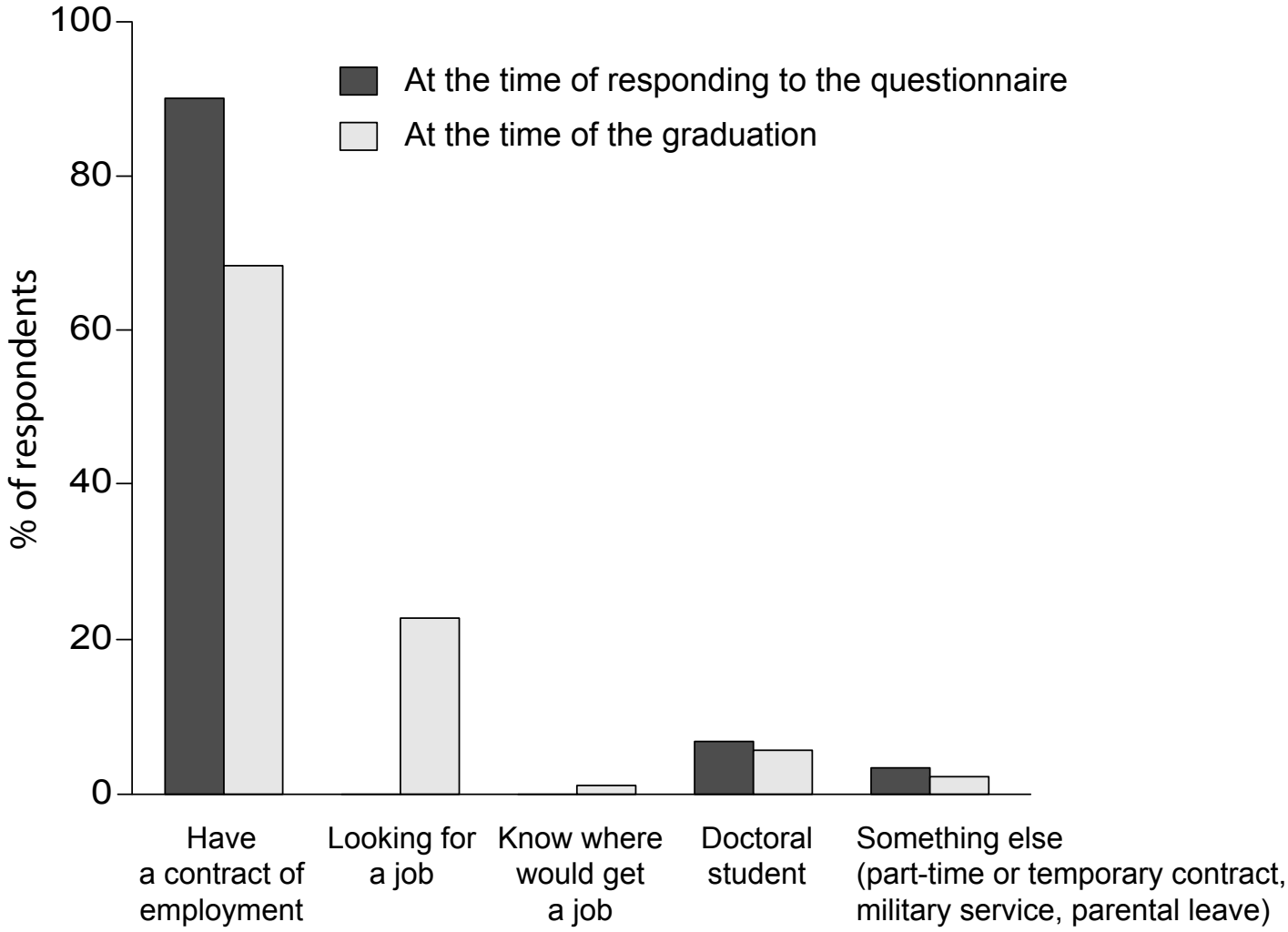
In 2007-2016, 191 water and environmental engineers graduated from Aalto University or TKK

- Majors: water resources & hydraulic engineering, water supply & sewerage engineering, environmental engineering, water & environmental engineering
- 176 questionnaire invitations were sent, 88 replied

Response rate 50

- 64 women and 24 men replied
- 32 respondents had studied water & environmental engineering, 28 water resources & hydraulic engineering, 15 water supply & sewerage engineering, 13 environmental engineering as their major

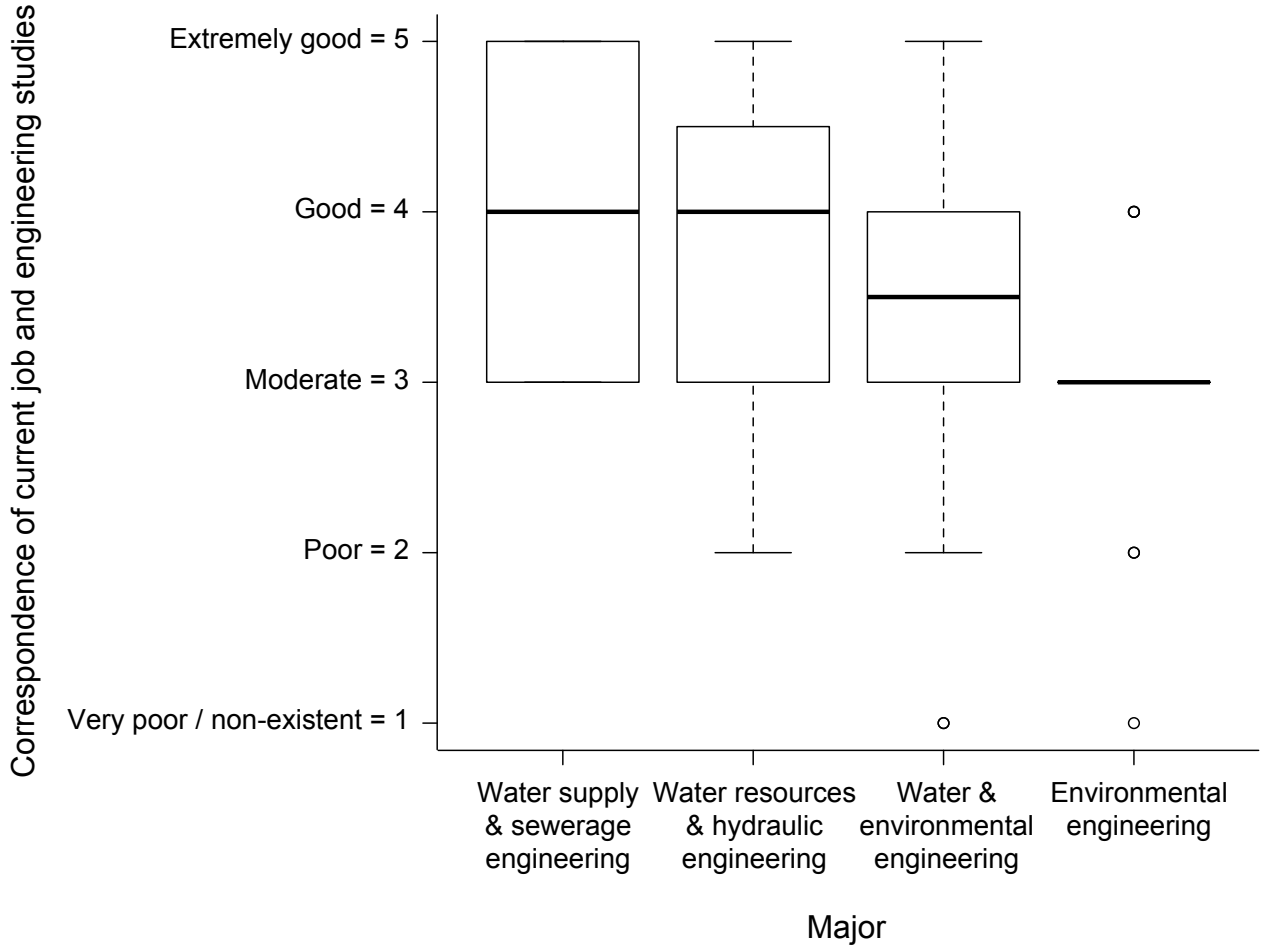
Employment


100
80
60
40
20
0
% of respondents
At the time of responding to the questionnaire
At the time of the graduation
Have a contract of employment
Looking for a job
Know where would get a job
Doctoral student
Something else (part-time or temporary contract, military service, parental leave)

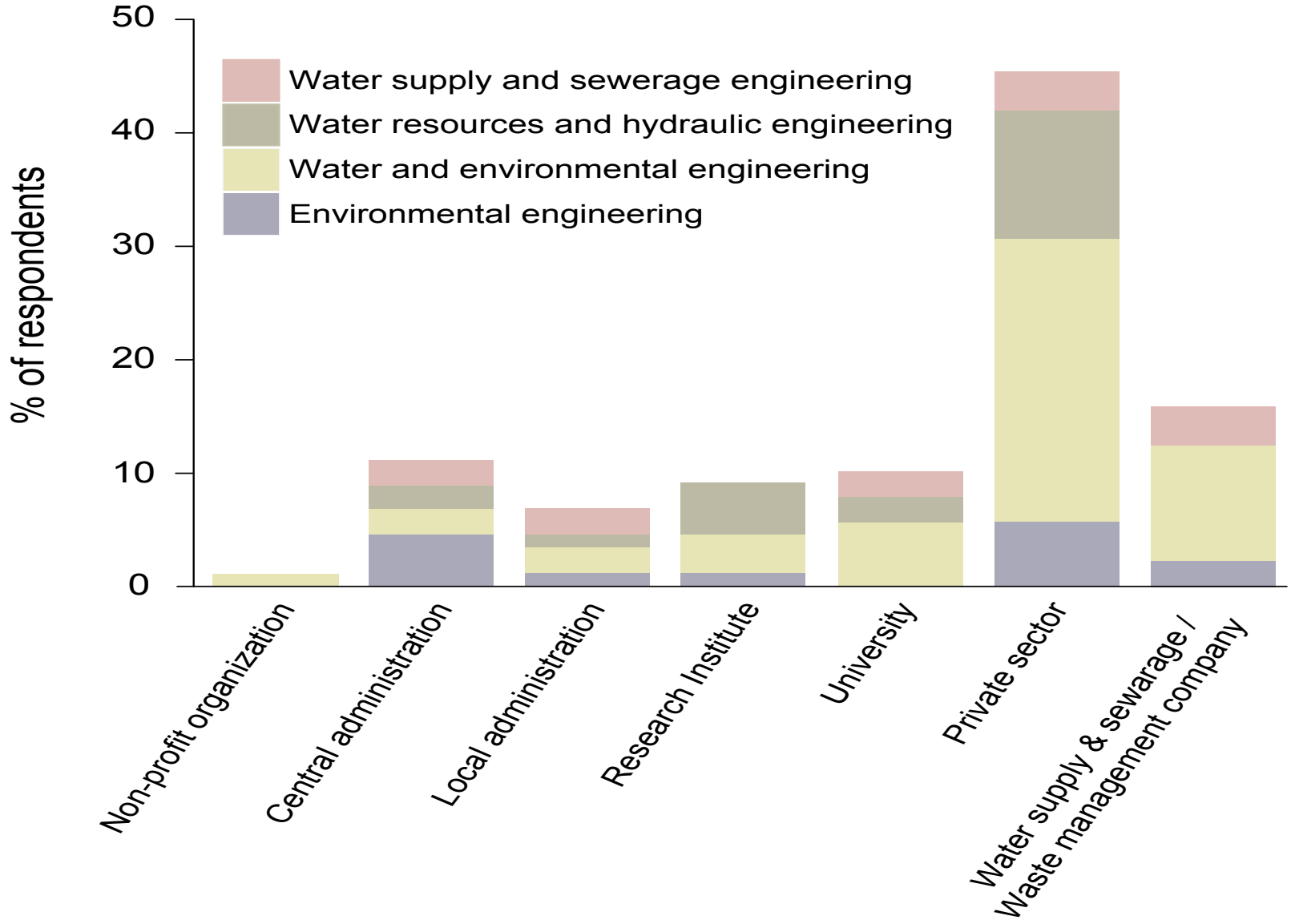
Employment, unemployment

- Employment situation is good, although several expressed their worries for the situation. A few had changed the field.
- 64% of the respondents have not been unemployed after graduation, 31% have been unemployed once, the rest two or three times.
- Over half of the respondents would choose the same field again.
  - Motivation for staying in the field: continuing interest, ideological matters, good and interesting job possibilities.
  - Motivation for leaving the field: restricted job possibilities, better employment prospects in other fields, there are so many interesting fields.

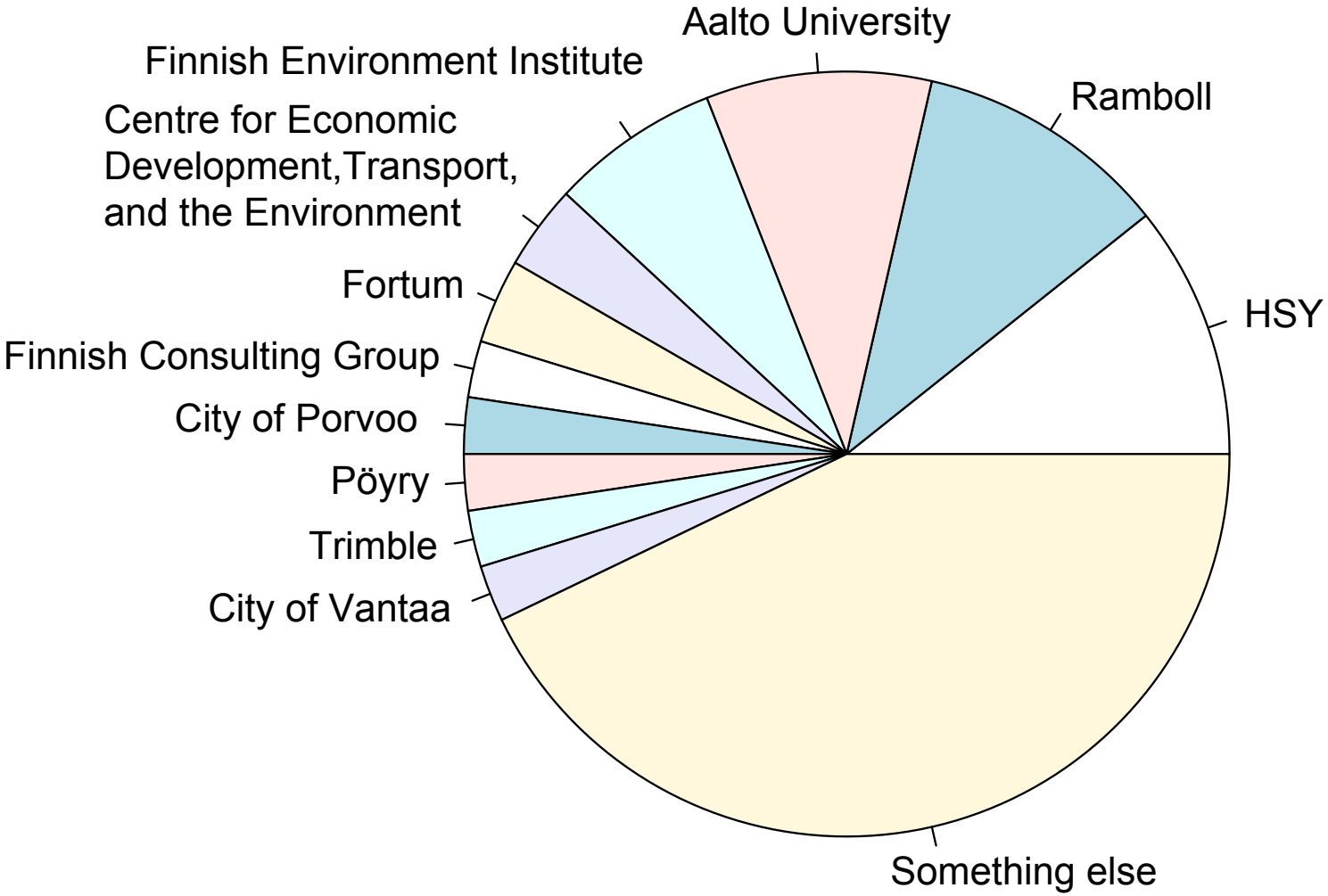
How well does the current job correspond to the engineering studies?



Employer sectors

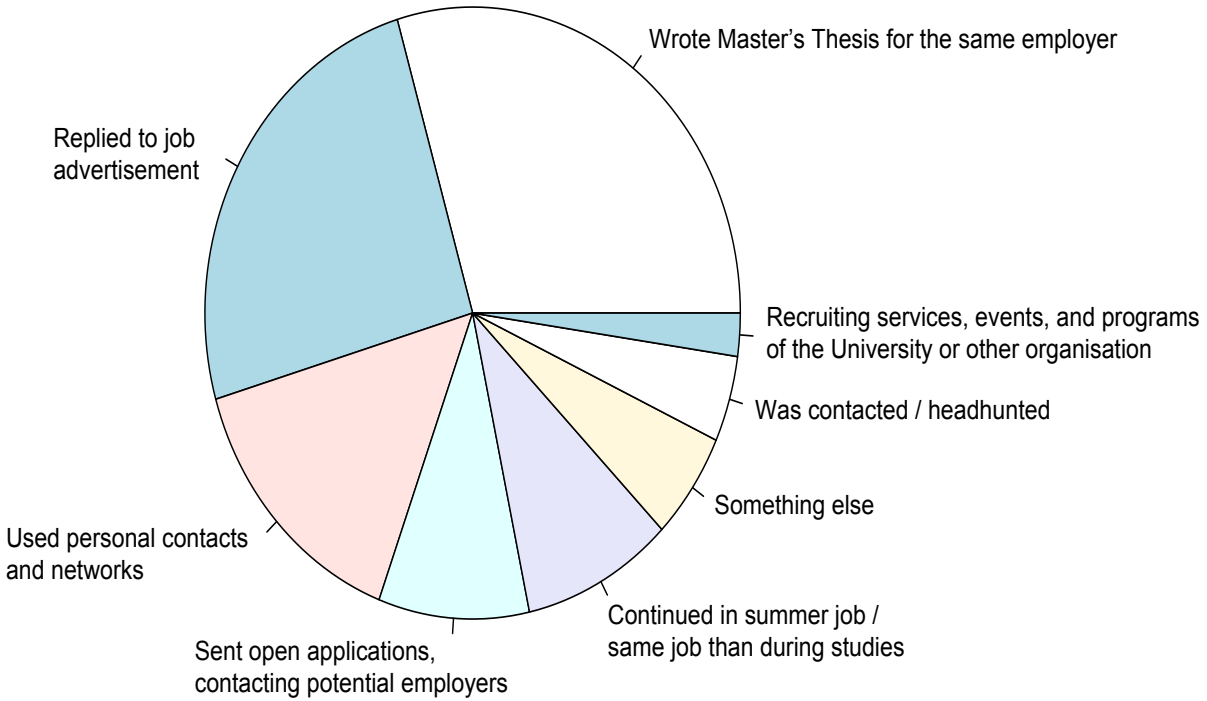


Employers

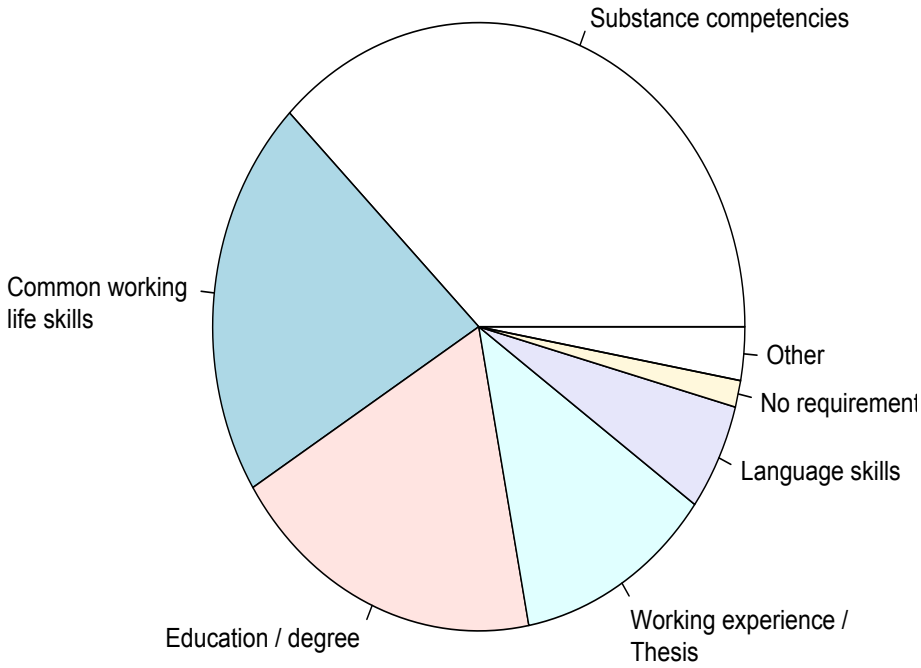

Aalto University
Finnish Environment Institute
Ramboll
Centre for Economic
Development,Transport,
and the Environment
Fortum
HSY
Finnish Consulting Group
City of Porvoo
Pöyry
Trimble
City of Vantaa
Something else

First job

How did you get your first job after graduation?

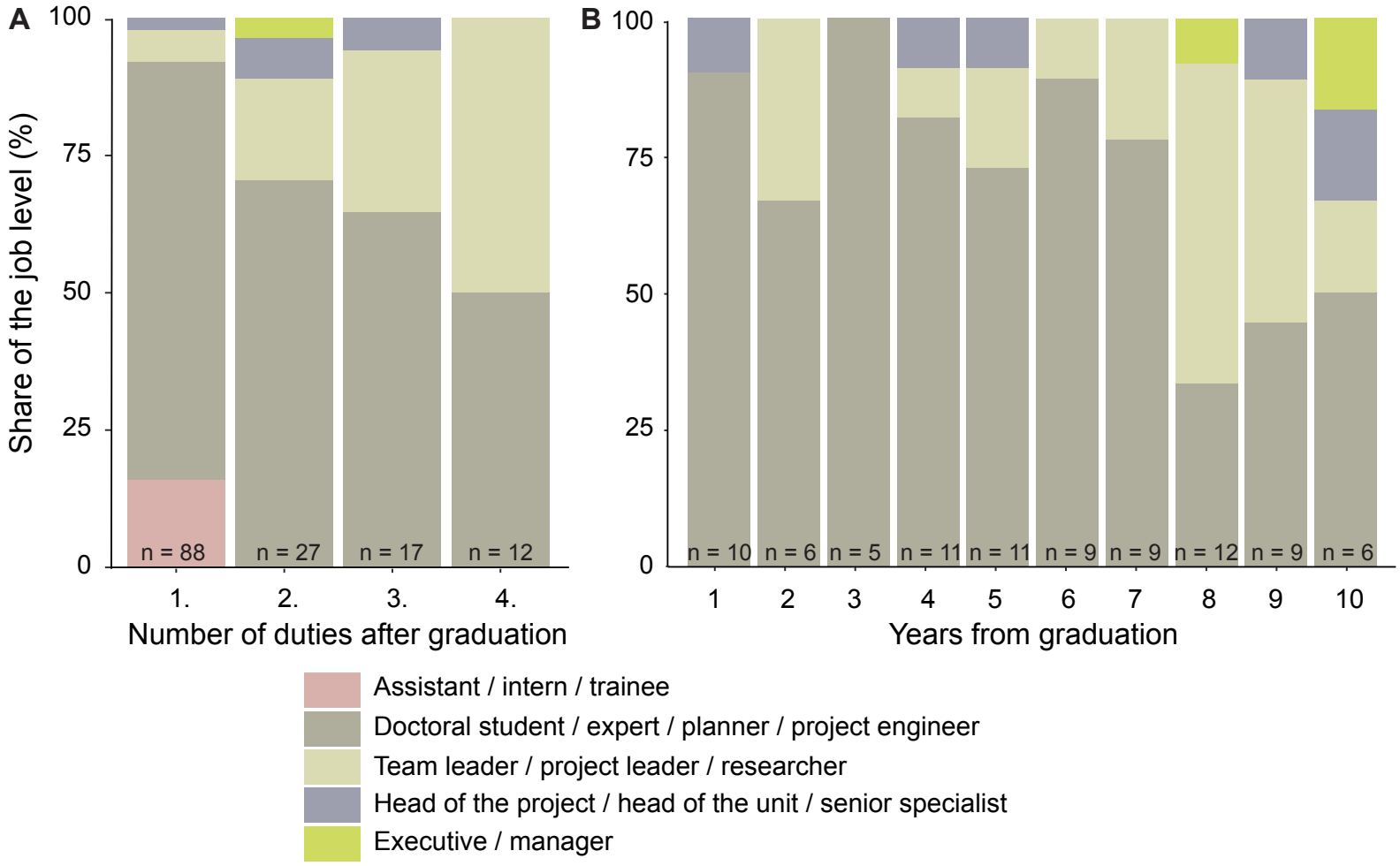


Requirements for the first job

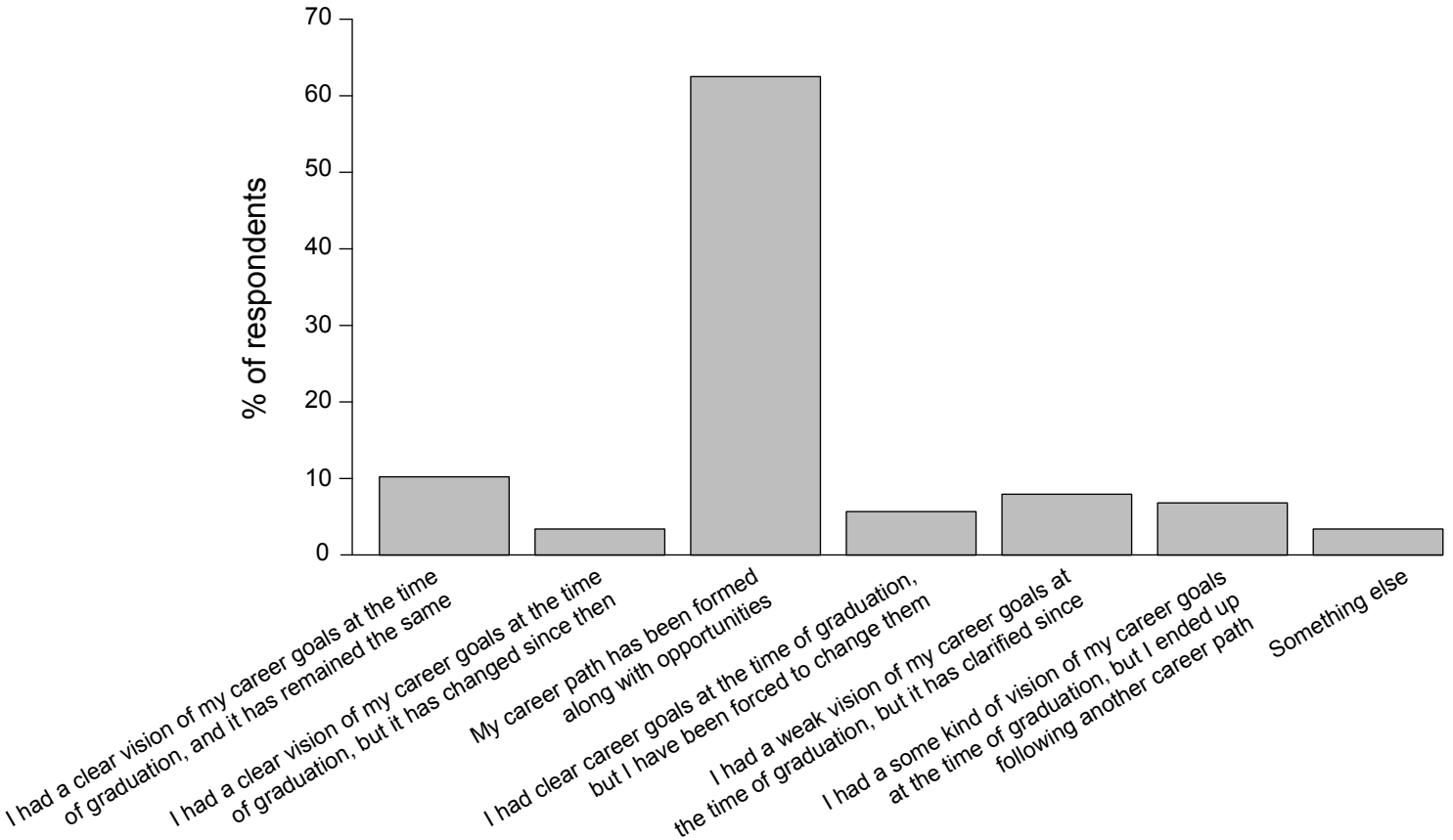


Karvinen, Vehmaa, Keskinen 2019.

Career path


A
B
Share of the job level (%)
100
75
50
25
0
n = 88
n = 27
n = 17
n = 12
1.
2.
3.
4.
Number of duties after graduation
n = 10
n = 6
n = 5
n = 11
n = 11
n = 9
n = 9
n = 12
n = 9
n = 6
1
2
3
4
5
6
7
8
9
10
Years from graduation
Assistant / intern / trainee
Doctoral student / expert / planner / project engineer
Team leader / project leader / researcher
Head of the project / head of the unit / senior specialist
Executive / manager

Career development



The central working life skills at different levels

Practical skills
Arrangement & coordination skills
Initiative & self-direction
Time management & prioritization

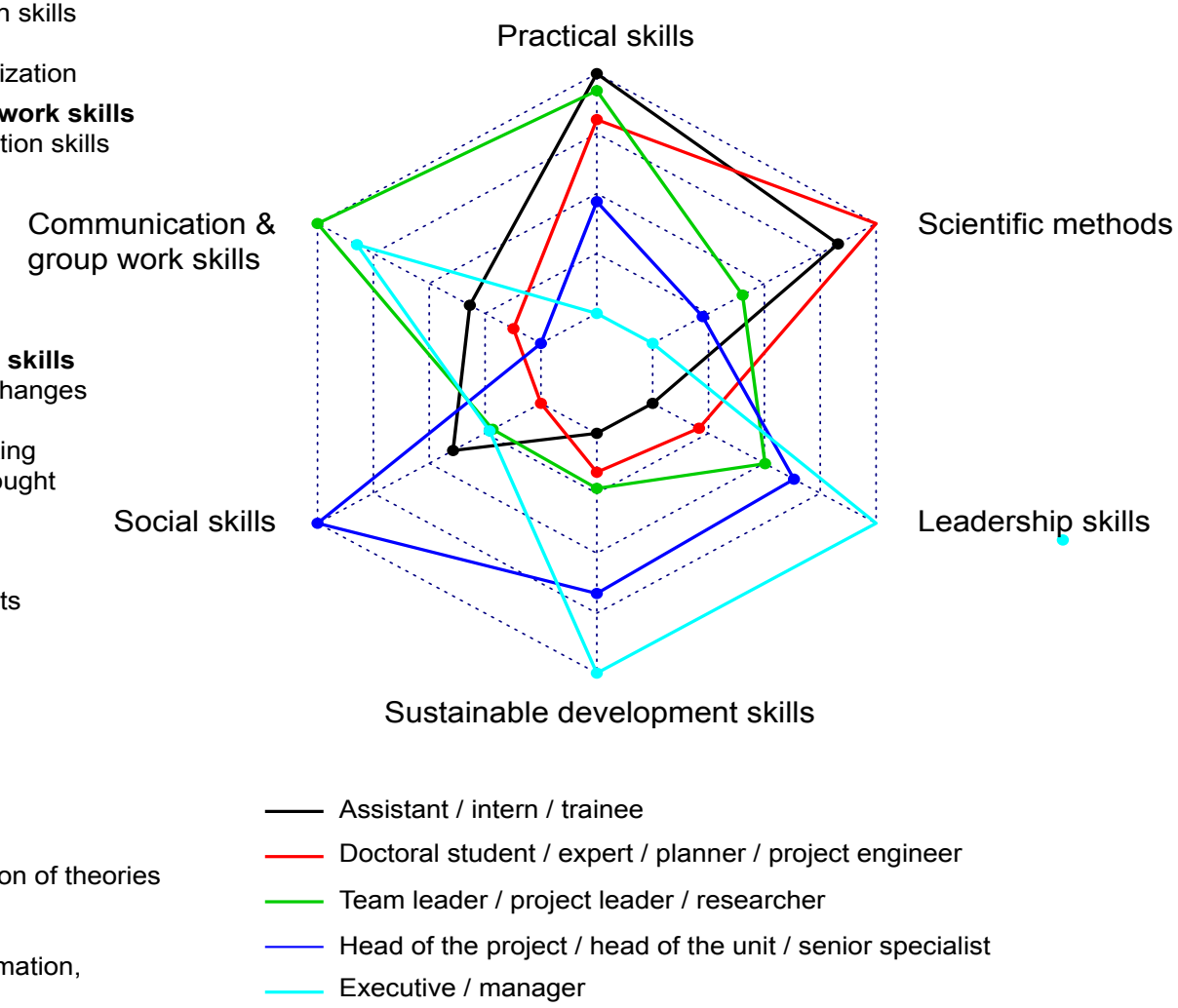
Communication & group work skills
Communication & presentation skills
Group work skills
Scientific writing

Social skills
Negotiation skills
Social skills

Sustainable development skills
Ability to make & execute changes
Creativity & flexibility
Ethical & value-based thinking
Future orientation & forethought
Systemic, wide-ranging, connective thinking
Transdiciplinarity, acting in multidiciplinary environments

Leadership skills
Leadership
Decision making & responsibility
Teaching & supervision

Scientific methods
Analytical & critical thinking
Comprehension & application of theories
Computational skills
Problem solving
Searching & updating information, active learning



The central knowledge at different levels

Solutions
Circular economy & waste management
Governance & legislation of own field
Life cycle thinking
Principles of business & economy
Social responsibility
Theories of own field

Challenges
Climate change
Cycling of phosphorus & nitrogen
Eutrophication & pollution
Global sustainable development challenges
Land-use change
Understanding significance of biodiversity

Practices & tools
Engineering knowledge (e.g. IT, Excel, GIS, programming)
Hydrology & hydraulics
Knowledge of environmental engineering practices
Knowledge of water supply & sewerage practices
Risk assessment

Other knowledge
Entrepreneurship
Knowledge of construction engineering pratices
Leadership
Knowledge of other fields (forestry, energy technology, understanding how society works)