Diffuse phosphorus input to surface waters
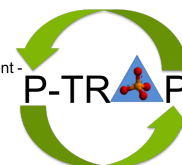- new concepts in removal, recycling and management -

Contract signed with ESRs

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Deliverable	5.7		
Delivery month Annex I	12		
Actual delivery month	12		
Lead participant: UU	Work package: 5	Nature: Other	Dissemination level: CO
Version: 1			

Table of contents

1. Executive summary

Within P-TRAP as an EU MSCA-ITN-ETN project, 11 Early Stage Researcher are employed and trained.

A highly interdisciplinary training program is offered to the ESRs, where they get acquainted with techniques to investigate the phosphorous (P) cylcle between agricultural areas and surface waters. They will learn to preserve P as a resource in agreement with the principles of a circular economy and in meeting the objectives of the EU Water Framework Directive. P-TRAP as a European H2020 project targets both problems and develops new methods and approaches to trap P in drained agricultural areas and in the sediments of eutrophic lakes.

The P-TRAP training program follows a holistic approach including disciplinary/interdisciplinary elements, individual/collective training, and theoretical/practical courses, all aiming to prepare the ESRs with key competences to tackle scientifically complex and societally relevant issues. Targeted competences in P-TRAP are the ability to: I) effectively and interactively use and develop tools such as innovative technologies, knowledge, and languages in an interdisciplinary way, II) act autonomously within the "big picture" of environmental sciences, III) function and interact synergistically within a socially heterogeneous group, and IV) responsibly conduct and manage a challenging research project within 3 years. The main training goal is to educate a generation of "cross–thinking" scientists that will be able to effectively develop and use novel measurement and modelling tools in an interdisciplinary and intersectoral context.

Based on the goals and objectives of P-TRAP and the individual ESR projects, the selected ESRs are expected to have several characteristics, talents and skills. Those were described in the advertisements, and formed the basis for the selection strategy. The individual projects were advertised widely, using different communication channels, to ensure a maximum of visibility and awareness. The advertisement started with the launch of the website in February 2019 and closed with the selection and commitment of the ESRs. The last position filled was the one of ESR6 at the UU.

In total the consortium received almost 650 applications by more than 400 individual applicants, from 66 countries. Approximately 20 % of the applications came from Europe, the majority was from Asia (56%) and Africa (23 %). The grouping follows the United Nations classifications http://www.un.org/depts/DGACM/RegionalGroups.shtml).

Regarding gender, with 57 % the number of applications was slightly higher by male. Among the ESRs that were employed by P-TRAP, 6 females have chosen out of 11. Most of the applications were formally eligible, but were – due to the educational background and required skills - not fitting to the project. The employed ESRs group is highly divers, come from 11 different countries, including Eastern and Western Europe, Africa, and Asia.

This deliverable, D5.7, reports on the recruitment strategy and procedure within P-TRAP, and the selected ESRs.

2. General recruitment strategy

Based on experiences and requirements of the consortium, a decentralized recruitment strategy had been chosen. Although P-TRAP officially started in March 2019, the recruitment procedure started with launching the website in February 2019 to ensure an efficient and timely recruitment. The aim was to recruit all ESRs ideally within the first six months of the project until September 2019.

The following recruitment strategy had been implemented:

- Each beneficiary was responsible for the advertisement of and the recruitment on its own ESR position, supported by general advertisements launched by the coordinator. All advertisements were redirected to the project website, which was kept up-to-date by the coordinator regarding the

positions. On the website a detailed description of the positions and requirements were given, also contact details of the respective supervisors. The advertisement procedure is described in detail in chapter 3.

For administrative and monitoring reasons, the applicants had to apply directly via the electronic submission system of the Human Resource (HR) department of Utrecht University, or via the electronic submission systems of those partners who have their own system available (EAWAG, DELTARES). The application channels and deadlines were clearly indicated in the advertisements. Applications via direct email to the supervisors were not encouraged, but accepted.

The coordinator collected all applications that came in via the electronic submission system of the Human Resource (HR) department of Utrecht University. For each ESR position an individual folder was created, with access only given to the responsible PIs and the coordinator. By implementing this procedure wide-spread applications which did not specifically address one of the positions were avoided. The applications were treated following the national and EU rules for protecting privacy. Data were deleted after the recruitment procedure was finished.

For monitoring reasons, the coordinator got access to the electronic submission systems of the Human Resources department of EAWAG. For DELTARES this option was not available, but the Human Resource department of DELTARES informed the coordinator on request about the progress and the gave an overview of applications and their implemented recruitment procedure.

Each beneficiary was responsible to ensure the implementation of an open, transparent and comparable procedure following the European Code of Conduct. To ensure that all beneficiaries have the necessary information of these procedures, the *"General Principles and Requirements for the Code of Conduct" (*http://ec.europa.eu/euraxess/index.cfm/rights/codeOfConduct) were provided by email (28 January 2019) and an overview was given during the Kickoff Meeting (13-14 March 2019, see Figure 1). The document is also available on the internal part of the P-TRAP website (10 March 2019).

Fig. 1: Recruitment - Do´s and Don´ts, and suggested strategy; discussed during the P-TRAP Kickoff Meeting

The beneficiaries were solely responsible for the compliance with the EU eligibility rules and the selection of the best candidate, but in case of questions they were supported by the coordinator and the EU National Contact Points. Due to the planned intense collaboration between some beneficiaries and the non-academic mentors, dedicated mentors were included in the selection procedure.

All applications that were received until the deadline of 1 May 2019 got full consideration. In the advertisements it had been mentioned, that the given deadlines in the job descriptions marked the start of the evaluation procedure followed by the selection procedure. Although the vacancy portals for individual positions were closed after the deadline, eligible applications received via email were taken in consideration until the positions were filled.

3. Advertisement procedure

The vacant positions were advertised widely – local, national, and international – to ensure a maximum of visibility and awareness, both individually and grouped into a general P-TRAP project advertisement. The advertisement started with the launch of the website in February 2019 and closed finally with the recruitment of the last ESR in September 2019.

The positions were advertised both individually by the participants or the coordinator for the whole project, using several platforms, e.g.:

- International scientific internet-based job platforms such as
  - EURAXESS (e.g. https://euraxess.ec.europa.eu/jobs/384116)
  - EGUjobs (https://www.egu.eu/jobs/2315/)
  - AcademicTransfer (https://www.academictransfer.com)
  - EarthWorks (http://www.earthworks-jobs.com/geoscience/utrecht19031.html)
- Project website (https://h2020-p-trap.eu/vacancies/)
- Subject-related mailing lists:
  - Individual project mailing lists of beneficiaries, e.g H2020 LANMARK project distribution list (18 partners)
- Social media platforms such as Twitter (e.g. #H2020_P-TRAP: https://twitter.com/h2020_PTRAP/status/1113426203636113408?s=09, #MSCAjobalert: https://twitter.com/search?q=%23MSCAjobalert%20p-trap&src=typd), ResearchGate (https://www.researchgate.net/project/P-TRAP), and LinkedIn (https://www.linkedin.com/feed/update/urn:li:activity:6514841142293598209/)
- Individual institutional websites or bulletin boards of the respective beneficiaries (Fig. 2)
- Recruitment poster - provided by the coordinator -, placed strategically at the host institutions, at conferences as e.g. the EGU2019 (https://meetingorganizer.copernicus.org/EGU2019/EGU2019-13576.pdf, Fig. 3, 4), and by interested colleagues
- Personal scientific networks of the consortium members

The advertisements of individual projects were standardized as much as possible to ensure, that all applicants will get the same amount of information. This included a

- Short description of the project
- Description of working conditions and entitlements, including career development prospects
- Short description of the selection process (selection criteria, selection committee, interview conditions, timeline, ...)
- Deadline for application
- Contact for applicants to get more information about the project

As the positions offered within P-TRAP are highly diverse, the responsible PIs formulated individual criteria for selection based on the direction of the ESR projects. The coordinator consolidated all vacancy descriptions and published them on the project website. To ensure that applicants are aware of the EU eligibility criteria those were also added to the text of advertisement.
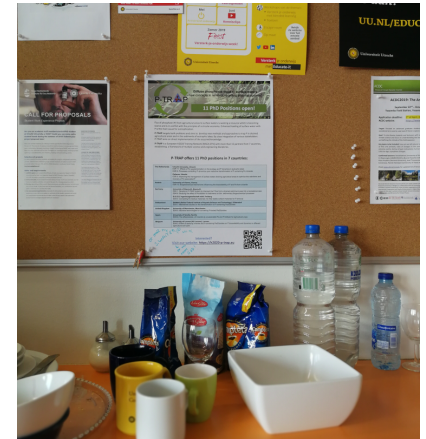

Fig. 2: Announcement at the IMAU bulletin board, Utrecht University
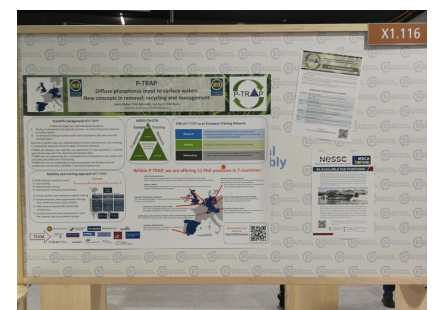

Fig. 3: P-TRAP recruitment poster

Fig. 4: Poster presentation of the project including advertisements at the EGU2019, https://meetingorganizer.copernicus.org/EGU2019/EGU2019-13576.pdf

For each position, a deadline was set for application, and eligible applications until this date received full consideration. The deadlines marked the start of the evaluation procedure followed by the selection procedure. Although the vacancy portals for individual positions were closed than, late eligible applications were taken into consideration until the positions were filled. In case no suitable candidates were found during the first round, the recruitment procedure could have been re-opened, but this was not necessary.

4. Selection and interview procedure

4.1 Selection criteria

The concept of P-TRAP is to combine different methods, methodologies and approaches to tackle two urgent interlinked global problems: the potential shortage of phosphate for producing agricultural fertilizers and the decline of surface water quality up excess of phosphate input. Due to I) the diversity of the ESR projects, II) the requested collaboration within an international consortium, and III) the proposed training programme within P-TRAP the ESRs are expected to have several characteristics, talents and skills respective to their individual project. This includes as well scientific as soft skills, such as:

a) Scientific skills, e.g.

- An excellent master's degree in e.g. geosciences and environmental sciences incl. microbiology, chemistry, ecology, mineralogy, soil sciences, agronomy, process/chemical/environmental engineering, water management,
- Strong background, experience, and proficiency in biogeochemical processes in aquatic and terrestrial environments, environmental chemistry, industrial/waste water treatment, plant physiology
- Experience in laboratory work, measurement techniques such as e.g. spectroscopy, general experimental techniques in aquatic/soil/plant sciences, and data analysis tools
- Experience in fieldwork
- Experience in geochemical / hydrological modelling
- Interest and skills in deterministic/diagenetic modelling and programming
- Computational skills, programming, and statistics

**b) Soft skills, e.g.**

- Interested and innovative, passionate, enthusiastic, and highly self-motivated to work with state-of-the-art environmental research
- Analytical thinking abilities
- Eager to develop multidisciplinary skills
- Excellent written and spoken English language skills
- Experience in scientific writing, such as publications, essays or equivalent in English
- Being independent, creative, and able to work collaboratively inside and outside the consortium
- Take responsibility for parts of the research project
- Willingness to travel abroad for secondments and measurement campaigns
- Willingness to present to an international research community
- Excellent team players

Applicants have to demonstrate ability, experience and potential of excellence. EU eligibility - being an Early Stage Researcher and fulfilling the mobility rule - and scientific eligibility were the primary selection criteria, followed by the promise of high training efficacy, and the expected return.

D5.7 – Contract signed with ESRs

A first evaluation of candidates was based on their:

- EU eligibility
- Application letter (e.g. quality of writing and content; reference to advertised position)
- CV (e.g. scientific discipline, general project relevant activities, skills in laboratory and analytical work; in data collection and interpretation)
- diplomas (grades)
- references

Candidates that found not suitable for the project were rejected by the responsible PI or by the HR departments on request of the responsible PIs. Eligible candidates were than ranked for the following procedure. The ranking followed a pre-defined classification of evaluation criteria.

4.2 Interview procedure

The PIs responsible for the recruitment ranked the eligible candidates with support by their selection committee, and shortlisted candidates were invited by email for a first-round interview. The first interviews were mostly held remotely by Skype, and if possible followed by a personal interview at the host location for the most promising candidates. Costs for the interviews were on request reimbursed by the host institutions.

The selection committees were composed of normally 2 to 4 researchers, including the main supervisor and e.g. a member of the research groups, and for some beneficiaries also a representative of the HR department. During interviews, the candidates were asked to present themselves, their background and their interest in the position. Following the interviews, the committees discussed the skills and matching of each candidate regarding the objectives of the positions and ranked them accordingly. The positions were offered to the candidate on the first position, in case a candidate waived the position it was offered to the candidate next on the list.

4.3 Timeline of the recruitment procedure

The consortium strove for finishing the recruitment within the first six months of the project. As this was very ambiguous, the advertisement procedure started already after the Grant Agreement had been signed by announcing the upcoming vacancies locally and in the personal networks. With the launch of the website (February 2019) the application procedure started officially as described above.

Although the project is of high relevance and positions were advertised widely, several positions attracted fewer applicants than expected and also the quality - including the eligibility - of applicants was beyond expectations. Finally, the consortium found 11 highly motivated and qualified ESRs, which started/will start between September 2019 and January 2020.

Table 1: Timeline of recruitment procedure

	Hosting beneficiary	Start evaluation 1st round	Interviews	Candidate selected	Proposed start of employment
ESR1	UBT	01-05-2019	May – June 2019	June 2019	01-09-2019
ESR2	KULeuven	01-05-2019	June 2019	July 2019	15.11.2019
ESR3	DELTARES	01-05-2019	May – June 2019	June 2019	15.10.2019
ESR4	GEOS	01-05-2019	July – August 2019	September 2019	01.11.2019
ESR5	UNIMAN	01-05-2019	June – October 2019	October 2019	01.11.2019
ESR6	UU	01-05-2019	June – September 2019	September 2019	01.12.2019
ESR7	EAWAG	01-05-2019	May – June 2019	June 2019	01.10.2019
ESR8	US	01-05-2019	August 2019	September 2019	1.10.2019
ESR9	UBT	01-05-2019	May – June 2019	June 2019	01.10.2019
ESR10	UNIVIE	01-05-2019	May – June 2019	June 2019	01.09.2019
ESR11	UU	01-05-2019	May – June 2019	June 2019	06.01.2020

5. Applicants and selected candidates
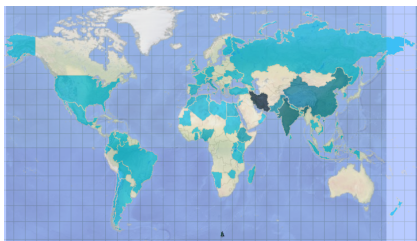
5.1 Statistics of applicants / applications

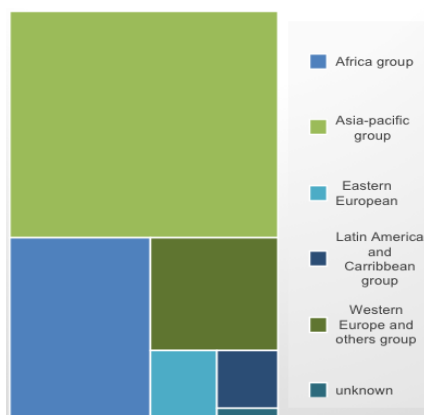**Fig. 5:** geographical overview of applicants countries (Map: geo.dianacht, https://geo.di-anacht.de/makemap/index.php), background: natural earth (http://www.naturalearthdata.com)

Fig. 6: Country groups of origin (applicants) http://www.un.org/depts/DGACM/RegionalGroups.shtml

Fig. 7: Main countries of origin (applicants)

The consortium received almost 650 applications by more than 400 individual applicants in total. The applicants originated from 66 countries (Fig. 5). Approximately 15 % came from Europe, the majority was from Asia (56%) and Africa (23 %) (Fig. 6), the grouping follows the United Nations classifications (http://www.un.org/depts/DGACM/RegionalGroups.shtml).

When considering the country of residence, more than 30 % of the individual applicants came from Europe, indicating international experience in their field of interests.

Although applications from more than 60 countries were received, a few countries dominated the picture, especially the number of applicants from the Asia-pacific group (Fig. 7). More the 50% of the applicants originated from in total 10 countries, and more than 2/3rd of them came from Iran, India, China or Pakistan. Only Italy as a Western European Country was represented within the top 10 countries of origin.

2/3rd of the applicants were clearly eligible, only 1/3rd could not be considered mainly due to not fulfilling the EU criteria of being an Early Stage Researcher (ESR) or incomplete documentation so that the eligibility could not be concluded (Fig. 8). Please note that as not for all applicants all information was given in the applications, as e.g. the country of origin, sex or age, the absolute numbers in the figures can differ.

The total number of applications differed significantly between the offered positions, also the number of eligible applications (Fig. 9). On an absolute level, most applications came in for the position in Switzerland, but also for Belgium, Spain and the Netherlands.

The number of positions to apply to was not restricted. However, most applicants applied for just one (77%) or two positions (10 %), only 8 % applied for more than three positions.

Regarding gender, the number of applications by male was slightly higher with 57 %. Among the ESRs that were employed by P-TRAP, 6 females have chosen out of 11. This picture differs within the country groups (Fig. 10), where the ratio male:female changed e.g. to 3:1 for the appl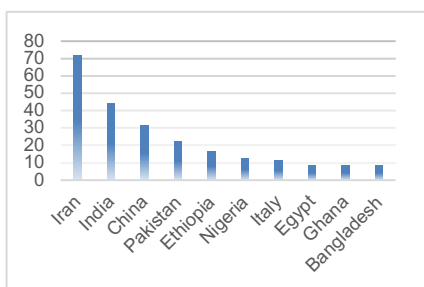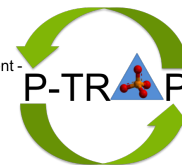icants from the Africa group or to 1:4 in the group of applicants from Eastern Europe. Relatively, the amount of ineligible applications was almost equally distributed between male and female.

As expected due to the EU eligibility rule regarding career stage, most applicants were between 26 to 30 years old (53 %) or 31 to 25 (23 %).

5.2 Selected candidates

As described above, P-TRAP is a highly complex project requiring candidates which are expected to have several characteristics, talents and skills. Although formally eligible, a high number of applicants did not show the necessary experience, educational background or required skills for the project and those applications could unfortunately not taken into account.

The majority of the more than 50 selected candidates for interview were still originating from Asia and Africa (45 %), but not as clearly dominating as in the overall group of applicants.

Regarding gender almost 60 % of the invited applicants were female, and also the gender ratio of the selected ESRs shows 6 female and 5 male.

Although the majority of applications were received from countries belonging to the Asia group, particularly India and Iran, this is not mirrored in the country distribution of the selected ESRs. The employed P-TRAP ESR group is highly divers, coming from 11 different countries. Half of the ESRs originates from Europe, particularly Western Europe, and the other half from the Asia and Africa groups. The gender ratio of the selected ESRs changed only slightly, 6 female and 5 male are selected.

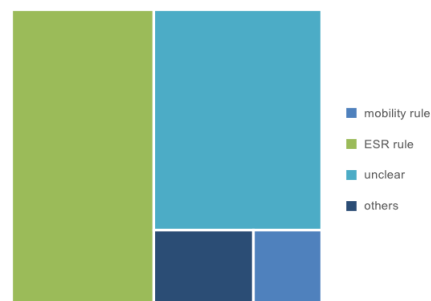An overview of selected ESRs is given in Table 2.

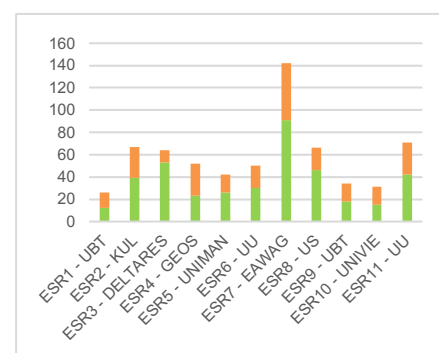**Fig. 8:** Reasons for ineligibility

Fig. 9: Number of total applications per position, green coloured columns indicates eligible applications, orange indicates ineligible or unclear applications. Please note: as applicants could apply for more than one position, the numbers can differ from numbers based on applicants.
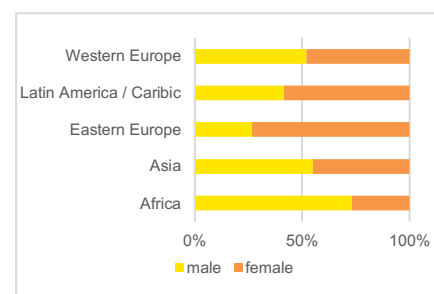
Table 2: Selected ESRs, their supervision and secondments

ESR	Host beneficiary	ESR Name	Country of Origin	Gender	Co-supervisor	Secondments
ESR 1	UBT	Elmira Akbari	Iran	Female	KULeuven	GEOS UNIMAN DELTARES
ESR 2	KULeuven	Rochelle Ioie Sara-canlao	Philippines	Female	UNIVIE	GEOTEAM UNIVIE EAWAG
ESR 3	DELTARES	Victoria Barcala	Italy / Uruguay	Female	UU	ARCADIS UU KULeuven
ESR 4	GEOS	Oleksandr Bolielyi	Ukraine	Male	UBT	AQUAMIN UU US
ESR 5	UNIMAN	Lordina Eshun	Ghana	Female	US	FERTIBER EAWAG US
ESR 6	UU	Minkai Ma	China	Male	EAWAG	AQUAMIN UNIVIE UBT
ESR 7	EAWAG	Ville Nenonen	Finland	Male	KULeuven	GEOS DELTARES KULeuven
ESR 8	US	Tolulupe Ayeyemi	Nigeria	Female	UNIMAN	GEOTEAM UNIVIE KULeuen
ESR 9	UBT	Karel As	Netherlands	Male	UU	WATERNET UNIMAN UU
ESR 10	UNIVIE	Rouven Metz	Germany	Male	UU	FERTIBER UU EAWAG
ESR 11	UU	Melanie Münch	Switzerland	Female	UBT	WATERNET UNIMAN UBT

Fig. 10: Gender distribution of applicants sorted by country groups
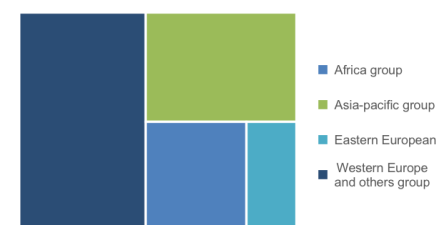
Fig. 11: Country groups of selected ESRs

6. History of the deliverable

Version	Author(s)	Date	Changes
1	Sylvia Walter	February 2019	Launch of the P-TRAP website
	Sylvia Walter	February 2019	Start of advertisement of positions on several platforms
	Sylvia Walter		Continuous update of recruitment process and progress by email and personal contact
	Sylvia Walter	Mai 2019	Start of evaluation of applications
	Sylvia Walter	October 2019	All ESRs recruited
	Sylvia Walter	January 2020	All ESRs officially started