

1. Relevance of the project (maximum 40 points)

1.1. The proposal's elements of "jointness"/integration, design and structure are tailored and effective for achieving the EMJMD aims and objectives.

This proposal is submitted as a continuation of the first version of the IMETE programme (Partnership agreement

number 2011-0172), which ran for 5 intakes. The new curriculum is now based on a common and integrated didactical sequence of (1) basic courses to introduce important concepts and to bring students to a same level of

knowledge, (2) advanced courses that familiarize students with environmental technology and (3) specialised

courses that treat various aspects of specific technologies (processes, design, operation,...) and applications thereof,

in detail. The partners of the IMETE consortium were specifically selected to deliver this didactical sequence. Also

the courses have been carefully selected to minimise repetition and overlap, but still add value on previously acquired knowledge. The selection of elective courses by each individual student should further support the build-up

of a strong competence profile and needs to be approved by the IMETE Joint Management Committee, which

ensures to avoid any repetition or overlap of courses within each individual curriculum. Therefore, students are also

guided by the secretariat of the programme coordinator and the lecturers during selection of elective courses. The list

of proposed courses are presented in annexes 2 and 3.

Conceptual introductory courses on environmental technology are provided at UCT Prague. The second and the third

semester include advanced courses. Some of these are followed by all students, whereas elective tracks allow

students to focus on ecotechnologies or advanced wastewater treatment technologies tracks in UNESCO-IHE, and

on air or soil at Ghent University. Courses focussing on transferrable skills run in parallel during the first year. The

course "Elective Project" (divided in two parts for administrative reasons) involve students working on a project

together with the industry. "Communication skills" is dedicated to all aspects related to project development and

communication, including literature review, project proposal, and oral and written presentation. Both of these

courses involve input and lecturers from the three partner institutes. In the fourth semester, students do thesis

research at any of the partner institutions or at an associated partner institution. To promote programme integration

also in the second year, the coordinator will stimulate cooperation between the consortium members and associated

partner institutes in defining thesis subjects.

Since all programme components are mutually recognised and based on a common design, all partners recognise the

programme as a whole. This is facilitated by the fact that all partner institutions use the ECTS system and signed the

Erasmus University Charter. Because current proposal is a continuation of the Erasmus Mundus Programme International Master in Environmental Technology and Engineering, the programme is accredited and a single joint

diploma is issued to graduates.

The elements of jointness are incorporated at three levels: (1) course level, (2) master research level and (3) management and administration level.

At the course level, several courses are taught jointly by two or three partners. For example, a year course on Communication and writing skills for engineers I and II is coordinated by UGent (xxxxxxxxx), but executed while students are located at UCT Prague (semester 1) and UNESCO-IHE (semester 2). Lecturers of all three partners are involved while giving lectures on scientific writing, proposal writing, ethical issues, advanced statistics

etc. Similarly, the Elective project I and II (jointly coordinated by xxxxxxxxx (UNESCO-IHE) and xxxxxxxxx (UCT Prague)) year course will be coordinated by UCT Prague, but also tutors of UNESCO-IHE and UGent will be involved in guiding the study groups that work on the case studies. Lecturers of all three partners as

well as several associated partners representatives will also participate in Seminars on Environmental Technologies,

which will take place at the start of the third semester.

Master research is jointly organised already in the current IMETE programme: although thesis research is performed

and defended at the different partner institutes, common procedures and evaluation criteria are used. Joint IMETE - International Master of Science in Environmental Technology and Engineering

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supervision of master research is encouraged. The theses are defended during a joint event, where lecturers of all

three partners are present in person or through video conferencing.

Jointness at the managerial level is demonstrated by the involvement of all three partners in the Joint Management

Committee, where all matters related to academic affairs, administrative and logistic matters and quality assurance

are jointly managed. Also a joint degree, i.e. one diploma signed by the rectors of all three partners, is delivered to

the students.

Importantly, during the 6 years of the execution of the current IMETE programme, the consortium developed direct

communication channels between their dedicated organisational units (international offices, student affairs offices).

This assures smooth transfer of information between the partners e.g. while organizing visa applications or transferring study results.

The joint nature of IMETE programme allows the application of best practices of the three institutions for each

single administrative or educational process involved. This involves harmonisation of administrative processes and

joint quality assurance for both course teaching and master research implementation. The ultimate outcome of this

harmonisation is the increase of quality at all three institutions. Importantly, both the academic and administrative

staff of the partners are exposed to the international environment which also leads to the application of the best

practices. The joint assurance quality control committee assures that high-quality education is offered to students

from third countries which makes the European education system more attractive for the best Master students

worldwide.

1.2. The proposal describes how the EMJMD is integrated within the degree catalogues of partners and defines the degree(s) intended to be delivered, especially the award of an EMJMD joint degree, if national legislation allows.

The three partners combined have an extended catalogue of courses offered in the field of Environmental Technology and Engineering. Each partner separately contributes its specific expertise.

Teaching at UTC Prague is normally in Czech language. This is why UCT had to implement dedicated English courses at the start of the IMETE programme. Most of these existing courses will now be adapted to move to the first semester in the new IMETE programme outlined in the current proposal, i.e., the required entry level will be lowered to accommodate incoming students by increasing the focus on introducing/rehearsing the basic concepts.

The current IMETE programme is accredited in the Czech Republic as No. N2842.

Most all courses of the second semester are existing courses of the accredited MSc programmes at UNESCO-IHE in

Environmental Sciences (<https://www.unesco-ihe.org/environmental-science> for the Ecotechnologies track) and

Urban Water and Sanitation (<https://www.unesco-ihe.org/urban-water-and-sanitation> for the Advanced Wastewater

Treatment Technologies track), respectively. IMETE students will participate to the courses (modules) together with

students from those programmes.

Communication and writing skills for Engineers Scientific Skills II and Elective Project II will be offered as new

courses. These courses are jointly organised by all partners throughout the first year.

The Faculty of Bioscience Engineering in UGent has a strong existing portfolio of programmes related to environmental technology. The courses of the optional tracks are courses of the Master of Science in

Environmental

Sanitation. Although courses of the common track are similar to existing courses, they are, as it stands now, all

organized specifically for IMETE because existing courses are given in a different semester (part of “Resource Recovery Processes and Engineering”, “Process Engineering”) or need adaptation (“Control Engineering”, where

prerequisites of the existing course in the Master of Bioscience Engineering were too high for the IMETE students).

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“Advances & Trends in Environmental Technology”, a summer school, is unique to the IMETE programme. A part

of “Resource Recovery Processes and Engineering” covering physico-chemical aspects and applications of resource

recovery is specific for the IMETE programme. In addition, students can select one or two courses from the mentioned and other study programmes of Ghent University.

The three HEIs of the consortium all operate according to the ECTS system, and recognise credits obtained at any of

the institutes.

The IMETE graduates will continue to receive one joint degree, signed by the three main partner institutions (see

annex 7).

1.3. The proposed EMJMD responds to clearly identified needs in the academic field.

A needs analysis was conducted by carefully reviewing key literature. During the last decades, worldwide industrialisation and urbanisation, linked to an exponential growth of the world population puts an

increasing

pressure on our planet and its ecosystems’ components (air, water, soil and all living creatures, including man). The

finite nature of our planet and its resources inevitably requires new modes of socio-economic development.

The key

role science and technology are playing and will play in the emergence of environmentally sustainable economic

development is currently underscored in the priorities of European higher education. Scientific and technological advances, particularly in the fields of energy, environment, water, natural resources, nanomaterials, biotechnology, complex systems and computation, are critical to the future well-being of humanity. The growing awareness of the impact of human activities on the environment has convinced most European governments of the need to include programmes for the protection of both nature and humans, either via pollution prevention or via pollution control, in their priority policies. Numerous EU directives have been developed to minimize air, water, soil and sediment pollution via integrated water management and sanitation of polluted sites (see ec.europa.eu/environment). Much attention also goes to designing industrial processes in such a way that the total impact on the environment by exploitation of natural resources and waste production is minimised (ec.europa.eu/environment/eco-innovation). The proposed IMETE programme aims to teach these innovative environmental technologies and engineering methods aimed at prevention, treatment and remediation of polluted environments in order to minimize their negative environmental impact, and thus to protect the European environment and population from these hazardous effects. European countries are used to adopt the most up-to-date innovations, which is also reflected in European legislation (e.g., Water Framework Directive and national legislation on soil remediation). To be able to further develop and apply environmental technologies in rapidly emerging markets, more people should be trained in this field. This should be done in an international environment, stimulating exchange of knowledge and experience with students and scientists from developing countries and countries in transition. Although Europe is still the world leader in this field, we may risk that innovative environmental technology is going to be developed in other continents, if we do not set ambitious and short term targets in this field, according to xxxxxxxxxx, Director-General of the European Commission's DG Environment¹. Therefore, further EU investments in science and education in the field of environmental technology is important. The international character of environmental problems and the need for global solutions are probably most clearly illustrated with the Paris climate agreement ([COP21](#)) and the Sustainable Development Goals ([SDG](#)). The IMETE partners not only are an example of European cooperation but via the UN and UNESCO, also a consortium that is

¹ European Network of the Heads of Environment Protection Agencies; Impressions of the EPA Network conference "Green Economy: Opportunities for Growth, Jobs and Innovation in Europe"; <http://epanet.pbe.eea.europa.eu/ad-hoc-meetings>

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well placed to train students to address international environmental challenges. Environmental management currently also attracts growing concern in developing countries and countries in transition². Most environmental problems in these countries are related to a scarcity of clean freshwater resources. However, attention given to other aspects of environmental management, e.g. soil and atmosphere protection,

reduction of greenhouse gas emissions, waste management and recycling, and use of clean technologies, also started to grow significantly. On the one hand, this is driven by the growing awareness that general environmental protection is needed to be able to protect water resources. On the other hand, it is driven by global change, population growth and ongoing urbanisation starting to have visible effects on ecosystems, food production and human health in these countries. Moreover, increasing scarcity of natural resources, leading to increased energy prices and commodities, can be seen as an economic stimulus. Moreover, several European countries do not have the most advanced in-situ and ex-situ remediation technologies available yet. Furthermore, innovative environmental technologies still need to be investigated, developed and upgraded from the bench to the full scale to treat water, gasses, solids, soils and sediments polluted with recalcitrant and hazardous contaminants. This requires expertise from several disciplines, e.g. Environmental Technology, Environmental Engineering, Chemistry, Biochemistry, Microbiology, Soil Sciences and Civil Engineering. Such multi-disciplinarity requires the training of a new generation of professionals at the MSc level, with an intersectorial formation by lecturers and scholars from different research fields. This cannot be achieved by a “training through education” approach solely, as researchers from different areas have very different backgrounds, research approaches and methodologies. This gives an added value if they work on different tasks, but can complicate the collaboration if they have to co-work on the same topics as is often the case with environmental pollution. There is certainly a significant need for an educational curriculum at MSc level that supports the transfer of knowledge in this multidisciplinary field. The proposed IMETE EMJMD programme aims to form a group of environmental engineers with a broad scientific basis, that are able to analyse and solve multidisciplinary environmental problems related to the deterioration of our environment, with a particular focus on prevention and control of water, air, solid waste, soil and sediment pollution. They are educated to provide adequate and state-of-the-art environmental technology and engineering solutions to tackle complex, multidisciplinary environmental issues, such as today’s global environmental pollution problems.

National level needs analysis – the Netherlands

The Netherlands has recently created an Enterprise policy with Top Sectors³. These Top Sectors address trade and industry, and are aimed at strengthening the position in the international arena. Environmental Technology is addressed among others in the Top Sectors Energy and Top Sector Water. In the top sector approach, industry, science and government work together to tackle environmental problems in an international context. IMETE could contribute to this unique form of collaboration (golden triangle/triple helix) since it is designed to promote innovation, to attract talent (human capital) and to ensure a solid position for the sectors in the international context.

Moreover, the Top Sectors are in great need for personnel with highly developed technical skills

National level needs analysis – Belgium

The Flemish Community has explicitly stated that “environment is a driver for economical development”. The government in 2004 established the MIP (Milieu-innovatieplatform; platform for innovation of environmental

technology). By joining and coordinating governmental competences and instruments, the ministers aimed to improve the chances of Flemish Environmental Technology to expand their markets and enhance innovation. The

platform aims to join all relevant stakeholders including companies and research institutions to effectuate mutual

2 Environmental Engineering Science (2016) Special issue on environmental engineering science in the 21st

century. Mary Ann

Liebert, Inc, New York, USA.

3 Enterprise policy and Dutch top sectors (<http://topsectoren.nl/english>)

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collaborations and synergies. It goes without saying that an international environmental technology master program,

attracting students from all over the world, is a big asset to contribute to these goals, especially as it is partly located

in Belgium.

National level needs analysis – Czech Republic

The Czech government has recently approved “The state program of environmental education and awareness for the

years 2016-2025”. The need to create new study programmes focused on environmental protection is specified in

Measure 3.3.2 of the program. This measure is included within the goal International cooperation and networking

which aims at the capacity building of Czech educational institutions focused on environmental protection through

active international networking. Moreover, active promotion of Czech education is required. IMETE fully corresponds to these goals through networking with top educational institutions and industrial partners

worldwide

and through reaching high quality international students.

The International Master of Science in Environmental Technology and Engineering (IMETE) programme aims to:

- Train people to apply and develop environmental technologies and engineering techniques, with a strong focus on multidisciplinary and problem-based technology development;

- Offer the students a wide range of environmental technology solutions in an international environment;

- Promote networking and exchange of knowledge and experience in the field of environmental technology and engineering between students of all nationalities, in particular also with students from developing

- countries and countries in transition from complementary study programmes, expected to take up prominent

- positions in the environmental protection sector or regulatory decision-making in their home countries after graduation;

- Support companies to gain international competitiveness in global markets in the area of green innovation

- and technology, by networking and removing some of the remaining barriers in Europe for knowledge distribution⁴.

- Promote interaction between IMETE students, governments and the professional sector through involvement

- of scholars and guest lecturers, job fairs and the organisation of a summer school.

Upon graduation, the International Master of Science in Environmental Technology and Engineering should be

qualified for a professional career in the following fields:

- Private sector: worldwide environmental technology applications (Best Available Technologies) and consulting in the domains of treatment of wastewater and waste gas, soil and sediment remediation, solid waste management, and development and application of clean technologies.

- Research: applied research at universities or research institutions, or in-company research.
- Public sector: environmental technology and engineering applications and consulting in local and regional administrations and different types of regulations (e.g. implementation of the European Directives) or local governance as environmental experts defining and implementing environmental policy for sustainable development, in European and other developed as well as developing countries and countries in transition. This will be realised through involvement of scholars and associated partners from these markets, offering placements and research topics in these markets and intense networking between IMETE students and students from developing countries and countries in transition from similar programmes at the partner institutes. In that way the IMETE EMJMD will facilitate export of European environmental technologies to rapidly emerging markets.

4 Sudi Apak and Erhan Atay (2015) Global competitiveness in the EU through green innovation technologies and knowledge production.

Procedia - Social and Behavioral Sciences 181: 207 – 217.

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A programme with the same content and end qualifications is not offered in the three countries, and IMETE therefore widens the scope of MSc programmes in this field for European and non-European students. Financial support by the EC was required for the establishment of the IMETE (2011-2017) programme.

Without EU

financial support it would not have been possible to jointly develop this integrated European programme.

The EU

funding was also instrumental in attracting self-paying students. Continental European institutions still face significant difficulties in attracting self supported international students from developed countries. It takes many

years to build up a high profile in a way that these students start to select continental European Universities over a

university in Australia, United Kingdom or USA. In the first five years, IMETE has had some success in attracting

self paying students, at between 2 to 10 per year. The intake of self payers, however, has been very variable (2, 10, 4,

6, 9 and 4 for 2011 to 2016, respectively. It certainly is not yet at a level for the programme to be self sustainable,

which would require an intake of at least 12 students per year. The EU financial support will also be used to further

develop relations with companies in the sector, and explore options for financial support for MSc research from

selected companies.

1.4. The proposal defines how the EMJMD aims to increase the attractiveness of the European Higher Education Area, and to foster excellence, innovation and competitiveness in terms of academic fields/subjects targeted.

The main academic subjects on which the EMJMD proposal IMETE is built to include sciences, i.e.

mathematics,

chemistry and physics, and applied sciences, i.e. engineering and technology. These subjects are the building blocks

on which an applied technology and engineering oriented program is designed, aimed at educating professionals that

are capable of understanding environmental issues and challenges both conceptually and quantitatively, and that are

able to design technological solutions for these issues, accounting not only for technical feasibility, but also for the

wider context, including economic feasibility, implications on society, social acceptability, ethical aspects and longer

term consequences. To meet these demands, the programme was designed to achieve the following learning outcomes.

A graduate of IMETE

General competences

- has the competence to recognize, analyse and clearly define and express a complex environmental issue;
- can position an environmental issue in a dynamic societal (governmental, juridical, economical, technological) and scientific perspective, both at the local and global scale and inspired by a context of sustainable development;
- is capable of autonomously researching relevant information on specific environmental problems, designing and carrying out research to solve the problem, reporting it and formulating recommendations for remediation and for further research;
- is capable of in depth academic research relevant for the solution and prevention of environmental problems based on acquired scientific knowledge and methodological know-how and competences;
- is used to collaborate in a multidisciplinary setting. Has the social and communicative skills, both in written as orally, to work in a team;
- can communicate both in an academic context as to the general public about environmental issues and their solutions, can take a scientifically and ethically justified position, and defend this in a discussion;
- has an open, creative and critical mind and attitude in his/her reflection on environmental issues and the current contribution of environmental scientists;
- is trained to take an autonomous role as environmental professional, e.g., as researcher, advisor and/or coworker in academic, governmental or private profit and non-profit organisations.

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Specific competencies

- has an advanced knowledge at the academic level of the chemical, physical, biological, and microbiological processes in natural and contaminated environments with respect to both fundamental aspects and application, and considering both current developments and evolutions on the medium and longer term;
- can autonomously integrate and deepen theoretical and practical knowledge of chemical physical and biological measuring techniques to detect contamination and its consequences in order to further develop and/or implement innovative concepts;
- masters system complexity with the support of quantitative methods. Has the knowledge, insight and experience required to evaluate results critically;
- can work in a structured way according to a plan, can formulate goals and aims, and guard the progress;
- has an attitude of acting ethically, professionally and with social responsibility, with attention to technical, economical, human and sustainability aspects.

The IMETE educational programme has a clear added value in comparison to existing master courses. Many of the

existing international courses taught in English mainly focus on environmental sciences in general, with emphasis on environmental chemistry, biology, ecology and toxicology, integrated management and environmental economics.

These programs train people to understand and manage the biogeochemical fate and effects of pollutants in the

environment, mainly aimed at building capacity in regulatory decision-making. However, specialists in the field of

technologies and engineering techniques for pollution prevention and remediation are also needed, but underrepresented

in the currently offered MSc curricula. At an international level, the market remains in short supply of young engineers. This applies to all fields of engineering in general, but also to environmental engineers in particular. Some international study programmes already deal with this to some extent. However, these are not

primary focussed on environmental technologies, which are presented in a general qualitative way at an introductory

level, and do not use a quantitative technological engineering approach as proposed in the IMETE EMJMD.

IMETE is currently the only Erasmus Mundus programme in the category Environmental Engineering. In Europe

only 6 inter-university or joint MSc studies are offered in the field of Environmental Engineering and taught in English with a two year duration.⁵ These programs are offered by universities with a lower ranking on the Times

World University ranking than the University of Ghent⁶. Moreover, when the curriculum of those programs is compared with IMETE important differences are identified. For instance, the curriculum of the international Master's Degree Program in "Environmental Resources Engineering" by the University of Bologna deviates from

IMETE's curriculum because it has much more Geology oriented courses and less courses related to treatment

technologies (water, air, soil).

There are also some Erasmus+ master programmes related to the environment, but most of them have a different

focus, i.e. ecology (EMAE - European Master in Applied Ecology), mining (EMMEP - Erasmus Mundus Minerals and Environmental Programme), energy (ME3 - European joint Masters in Management and Engineering of Environment and Energy) or policy and management (MESPOM - Master of Science in Environmental Sciences,

Policy and Management). The Joint European Master Programme in Environmental Studies (JEMES) is the EMJMD

that most closely resembles the IMETE programme. However, when studying the offered curriculum and scope as

presented on the website, there are significant differences with IMETE:

- IMETE offers a primary focus on technology and at the same time introduces the students to a wide range of

- optional study fields;

- IMETE combines three important disciplines that have been traditionally studied separately: environmental

- science, bioprocess technology and industrial process design, linked by their common relationship with pollution prevention and control;

- IMETE is designed to prepare highly-qualified researchers and professionals able to develop and implement

⁵ www.mastersportal.eu

⁶ www.timeshighereducation.com

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integrated solutions to environmental problems.

The IMETE consortium has specific collaborations with the environmental technology sector in European and third

countries where the students can perform their research work. Associate partners from the professional field include

well known internationally operating European companies such as Veolia CZ and NL (wastewater and waste treatment), Envisan, French Geological Survey (BRGM) and Colas Environnement (soil and groundwater remediation companies), Attero (waste treatment and resource recovery), United Experts (Environmental Technology consultancy). Also international associations have joined the initiative - e.g. activities of the European

Biogas Association (EBA) involve environmental topics related to waste management, resource recovery and

renewable energy. EBA encompasses over 36 national and regional associations across the EU-28. As part of the Circular Economy Package as issued by the European Commission, such activities are receiving increasing attention from policy makers, industry and science alike.

Existing international master programmes in the field of environmental technology and engineering at the partner institutes, i.e. Environmental Science, Water Management and Governance, Urban Water and Sanitation and Water Science and Engineering at UNESCO-IHE and Environmental Sanitation at Ghent University, focus on training students from developing countries and countries in transition. Most of these programmes primarily focus on water management, because availability of clean water is currently a main concern in developing countries.

However, attention given to other aspects (soil, solid waste, waste gas,...) of environmental management is currently growing, but not addressed sufficiently in the curricula. This justifies the need for an international Master programme organised across countries which not only focuses on technology for water management, but also on other environmental technologies and important complementary study fields, such as life cycle analysis and application of clean technologies, solid waste management and abatement of air, soil and sediment pollution.

Apart from offering an MSc program with different learning objectives and end-competences, the IMETE EMJMD

is also unique in offering a multicultural didactic environment:

- IMETE is offered by three complementary higher education entities, each with a different role, learning profile, governmental status and student focus;
- keeping the full, diverse group of international students together as one cohort during three of the four semesters contributes to international networking and exchange of knowledge and experience amongst the IMETE students themselves;
- the intermingling of IMETE students with students from developing countries and countries in transition enrolled in the regular study programmes during their stay at UNESCO-IHE and UGent allows the IMETE consortium to promote networking between IMETE students and students from developing countries and countries in transition. This is an important aim distinguishing the IMETE programme from other existing programmes;
- students attending the existing programmes focused on developing countries and countries in transition are

requested to return back to their home country upon completion of the study programme as a precondition for receiving a scholarship. These students often fill vacancies in governmental environment agencies after graduation, because not many companies applying and developing environmental technologies are based in their home countries. In that way, they become involved in regulatory decision-making and consulting in rapidly emerging markets, whereas a major part of the IMETE graduates will be employed by European companies applying and developing environmental technologies in these markets. Thus, alumni from the regular programs will call on the IMETE alumni when implementing pollution prevention and control measures. Therefore, interaction between IMETE students and students from the complementary programmes at the partner institutes will be intensively promoted.

The relevance and importance of the IMETE programme for worldwide sustainable development guarantees a

supply for the increasing and continued need of its alumni in the labour market. Environmental technology and

engineering is – more than other disciplines – based on international cooperation in business and research. IMETE

graduates will be especially attractive for employers because the programme establishes very close, effective and

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clear links between education, research and innovation, i.e. the three sides of the knowledge triangle. This is reflected in the fact that significant study time is dedicated to innovation management and entrepreneurial skills, and

to project work aimed at stimulating creative and multidisciplinary thinking with active involvement of the nonacademic

partners in the student supervision. The programme contributes to providing European environmental companies with the human resources they need to expand their activities within Europe and worldwide.

The new IMETE programme spreads benefits in a wider European context by a number of new associate partners

(companies in France, Belgium, the Netherlands and Czech Republic).

The competitiveness of environmental engineering and technology in Europe will be strengthened by educating and

training of multidisciplinary graduates that will strengthen European companies. Offering a high quality international programme in Environmental Engineering and Technology will prevent ambitious and highly qualified

international students to study outside Europe (USA, Australia, Asian countries such as Singapore, Korea and China,

etc.).

1.5. The proposed EMJMD consortium is highly relevant with regard to internationalisation in higher education and has been designed to maximise the benefits of student and staff mobility.

Environmental issues are trans-boundary and are, in the context of sustainability, fundamentally of global importance. The solution of environmental issues calls for worldwide efforts to secure a sustainable subsistence of

humanity itself. Societal awareness is currently increasing because of global issues that are increasingly evident.

Yet, sufficiently adequate response of humanity to environmental degradation and climate change may come too

late. Therefore, the need for adequate professionals in the field of environmental engineering and technology has

never been so urgent. The IMETE EMJMD trains these professionals that are capable of contributing to solving

environmental issues across the world, to transferring the best available technology anywhere in the world where it

is needed. Europe should not lack truly international programmes in environmental technology and engineering.

These provide to European companies the human resources they need to develop their activities in environmental

remediation, and to expand them world wide. Only this way can these companies contribute worldwide to reversing

the disastrous effects of careless economic development on the environment and ultimately on the quality of life

itself.

Through IMETE, participants acquire an advanced engineering training in a joint program set up by three strong

European institutions in the field. It exposes students from all over the world to the latest and most advanced

technologies in Europe. Through strong links with associated partners all over the world, students will have a truly

global learning experience.

Besides scientific and technical skills, students will also acquire an increased sense of initiative and techniques for

creative problem solving while their sense of entrepreneurship, self-empowerment and self-esteem is stimulated.

They will have learnt to work both independently and in diverse groups through multidisciplinary project work as

part of the network seminars and a course focusing on entrepreneurship and innovation management in the second semester. While being prepared for their master dissertation, they will learn to set up a business model to generate sustainable products, services and processes (“Industrial resource management and cleaner production”). During their Master dissertation research they will set up their own methodology in order to meet their defined objectives and will create a valorisation strategy, while working under the supervision of a non-academic and/or academic supervisor in one of the associated partner institutions. The student can include an internship in the curriculum and thus obtains a valuable first-hand working experience, applying obtained knowledge and skills in practice. IMETE will also enhance the intercultural awareness and foreign language skills of its students. Students reside in three different European countries, where two languages are spoken (Dutch and Czech). Many of the courses included in the IMETE curriculum are also open to and followed by students of the home institute. This allows for intercultural exchange not only within the multinational IMETE student group but also between the IMETE students and students of the host institute. The language of instruction is English, but other foreign language courses are offered as elective courses. In Prague, a Czech language course is offered that can be taken as an optional course within the curriculum. At Ghent University, the renowned University Language Centre offers courses in a wide range of European languages (evening classes, 8 levels) and also courses targeting specifically (scientific) writing skills, which can be of interest to all students, also the native English students. These courses are taught in the evening at very favorable rates for students. For example, a 30 hr Dutch language course costs € 50. In the programme, the knowledge of English language will also be evaluated at the start and end of the programme to measure improvement.

Where academic and non-academic staff is concerned, IMETE will generate a broader understanding of educational systems, practices, and policies across the countries involved. The IMETE programme fosters collaboration between the three partners because of joint involvement in several of the courses (“Elective project”, “Communication and writing skills for environmental engineers”, “Advances & Trends in Environmental Technology”, “Summer Internship”, and co-supervising master dissertations). The involvement of different partners in student master dissertation research is a very effective catalyst to initiate and enhance collaboration in research. Interactions between the partners generate not only opportunities for personal, professional and career development of staff involved. It also contributes to exchanging experiences, which may stimulate modernisation of the educational systems, with increased adoption of innovative long distance learning tools, and an enhanced focus on the active involvement of non-academic stakeholders, entrepreneurial skills development, creative problem-solving and multidisciplinary, innovative technology development.

The international exchange between the different educational and non-educational partners of the programme will

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also result in improved language competences and greater understanding and responsiveness to social, linguistic and cultural diversity among all staff members involved. Staff at the partner institutes will acquire greater understanding of connections between formal and non-formal education, vocational training and the labour market through close interaction with the non-academic sector, e.g. in the organisation of the internships, through involvement in network seminars and through the joint supervision of Master Dissertation research by supervisors from the academic and non-academic partners.

2. Quality of the project design and implementation (maximum 20 points)

2.1. The proposal defines the academic programme and the learning outcomes and details how the excellent academic content will be offered.

This Joint Erasmus Mundus programme will address these needs by educating a new generation of environmental scientist and engineers that can provide adequate and state-of-the-art environmental technology and engineering solutions to tackle complex, multidisciplinary environmental issues.

Successful graduates will have acquired a comprehensive knowledge of:

- the nature and severity of environmental pollution;
- the way polluted water, waste, gas, soils and sediments can be treated;
- the way ecosystems and the atmosphere can be protected from pollution;
- the way to prevent environmental pollution through resource management and application of re-use technologies.

They will be able to develop, design and apply technologies for the prevention and remediation of environmental pollution.

In addition, they should be capable of:

- searching scientific information;
- conducting scientific research in the field of environmental technology and engineering;
- reporting their findings by means of scientific reports and papers;
- communicating effectively in English and transferring knowledge to both the scientific and non-scientific world

through oral presentations and media communications.

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Learning Outcomes

The International Master of Science in Environmental Technology and Engineering (IMETE) therefore aims to train

students to apply and develop environmental technologies and engineering techniques to address global environmental pollution problems. A strong focus is laid on multidisciplinary and problem-based technology development in an international context.

All three partners are part of renowned institutes that have a good reputation for high standards of academic quality,

both in terms of research and education. To ensure maintenance of their own academic excellence, Ghent, Prague

and Delft need not only to be critical at their own science, but also at the science from their partners.

Early 2008, the fourteen Dutch universities signed the “Basiskwalificatie Onderwijs/University Teaching Qualification” (BKO/UTQ) agreement. Lecturers with a nationally acknowledged UTQ certificate are qualified for

academic teaching by all participating institutions. In IHE Delft, all lecturers are required to acquire a UTQ as proof

of didactic competence for lecturers in academic education (till date almost all the IHE lecturers involved in the

IMETE programme hold such qualification). The teaching approach is based on the principles from the UTQ programme: Developing teaching, implementing teaching, testing & assessment, organization of education, evaluating teaching and professionalization⁷.

The teaching is 'learner-centered', '(inter)active' and 'research based' and each teaching method and form of assessment used complies with the principles of this approach as outlined in teaching and assessment quality norms.

Students also participate as learners and researchers in ongoing research projects, especially during the Thesis

Research Part. The teaching and assessment methods employed within the modules stimulate and evaluate the students' development of critical thinking, creative problem solving and independent attitude.

To ensure intensive interaction between the individual students and teaching staff a high staff/student ratio is

maintained. Furthermore, students work in small groups in order to enhance the learning effect of brainstorming,

discussion, feedback, teamwork, communication etc. Academically educated professionals will only remain successful, if they are able to renew and expand their knowledge and skills on their own initiative and into new

directions under their own guidance. The example set by the Institute's staff and the active, learner-centered educational approach encourage the students' openness to and capability of 'lifelong learning' throughout the curriculum.

More explicit attention will go to the implementation of the Problem-based learning (PBL) approach in teaching.

This involves methods of learning and teaching that allow students to focus on how and what they will learn. An

unfamiliar problem, situation or task is presented to the students by the lecturer or industrial tutor, and students are

required to determine for themselves how they will go about solving the problem. This usually occurs through small

group work and allows students to utilise their prior knowledge in the topic area and identify the gaps in their

knowledge as they attempt to solve the problem. PBL is a student-centred approach to learning that encourages

students to be self-directed, interdependent and independent as they attempt to solve the set problem. Such approach

will be mainly implemented in the Elective project courses as well as the Scientific communication and writing for

engineers course. As the students are introduced during the first year to basic courses to introduce important

concepts and advanced courses that familiarize students with environmental technology there will be a gradual

acquisition of the knowledge that could be already applied to the problem they have to solve. Such approach allows

the development of a wide range of abilities: knowledge creation; team-working; presentation; information literacy;

ICT; problem-solving; creativity; and project management.

The three partner institutes offer learning platforms that allow to support the learning process with innovative ICT

based tools and methods. For example, UNESCO-IHE offers also high-quality education support through its Virtual

Learning Environment "eCampusXL", based on the free open source product Moodle

([https://ecampusxl.unescoihe.](https://ecampusxl.unescoihe.org/)

org/). This platform fully supports all its educational offerings including regular MSc courses, short courses,

online course modules as well as tailor made courses and collaborative activities in small student projects. It allows (registered) participants anytime and anywhere in the world - but also in Delft - to learn at their own convenience, and immediately apply their newly acquired knowledge in their working environment. UCT Prague uses a similar platform also based on moodle (<http://moodle.vscht.cz/?lang=cs>), whereas University Ghent uses a platform based on claroline (<http://minerva.ugent.be>).

7 Pathirana et al. (2012) On teaching styles of water educators and the impact of didactic training. *Hydrol. Earth Syst. Sci.*, 16, 3677–3688

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2.2. The proposal describes a set of internal and external evaluation methods of the EMJMD, how they will be put into practice and used to monitor, upgrade and improve the quality of the course. Activities related to internal and external project evaluation are already in practice for the current IMETE programme. Quality Assurance (QA) takes place both at global (programme) level and at local (partner) level. QA

covers individual lectures, lecturers, how well the learning objectives of each course is integrated by the students,

composition of the programme, difficulties arising from mobility, and facilities provided by the consortium to host students.

Local quality assurance is done by each partner university individually and deals with individual courses and lecturers. All participating institutions have placed their programme under the pedagogical responsibility of a

qualified faculty member. This person is ultimately responsible for ensuring the quality of the courses and for

proposing changes when problems occur, and can be assisted by a secretariat and local quality assurance committee.

Students are asked to fill out an anonymous questionnaire to evaluate both the lectures and the lecturers of each

course at the end of each semester. Lecturers are asked for a response on the formal evaluation by the responsible

faculty member. If some aspects of a course are not positively evaluated by the students, the local quality assurance

committee may invite the lecturer to a meeting, where the issues are raised and remedial actions are proposed in joint

consultation. The next year, the progress is checked through the new evaluations. The QA Committee is entitled to

propose measures to the Joint Management Committee if problems would sustain.

A global programme evaluation was conducted at the end of the ongoing IMETE programme. Based on the feedback, the programme was significantly revised (see study guide of the present proposal). Such evaluation will be

again conducted at the end of the first cohort and it will be used to discover and remediate any difficulties arising

specifically from the mobility, such as differences in teaching and examination practices, practical problems, etc.

The students will also be invited to assess the added value offered by the mobility. This evaluation will be organised

by the IMETE secretariat. For that, the students will be requested to complete a digital anonymous evaluation form.

The Joint QA Committee will not only evaluate the quality of courses aimed at amelioration of the programme, but

also continuously evaluate added values of IMETE compared to other programmes, advise on professional relevance of course contents. The Joint QA Committee will advise on the way envisaged learning outcomes, acquired competencies and professional outcomes are effectively acquired by the students. Representatives of the professional sector (e.g., associated members) who are a member of the Joint QA Committee will actively contribute to this evaluation. The Joint Quality Assurance Committee will propose measures if aspects of the programme are not positively evaluated. Results of evaluations and proposed measures are communicated to the Joint Management Committee that decides upon taking measures. Quality is a standard agenda item for the IMETE Joint Management Committee meetings, which take place at least 2-3 times per year. External quality assurance is based on accreditation by national authorities similar to other master courses offered in the respective countries, with mutual recognition by the other institutions. In Belgium and the Netherlands, this accreditation is based on an assessment organized by an external accreditation organisation, Nederlands Vlaamse Accreditatie Organisatie (NVAO). The assessment committee typically consists of five to six persons, amongst them three to four experts from the field, one expert in education and one student. Of the experts in the field, preferably one should be from industry and the others should have a more academic background. The evaluation is done on the basis of a self-evaluation report, student evaluations of courses and teachers as well as quality checks of a selection of master theses. During a 2.5 day on site visit, the assessment committee meets students, teaching staff and other staff, and visits the educational and research facilities. Aspects such as internationalisation and involvement of professional sectors are also discussed. A positive evaluation is a condition for accreditation to be awarded by NVAO, the accreditation organisation for Flanders and the Netherlands. Accreditation of the IMETE programme at UCT Prague will follow a similar procedure with the Akreditační komise Česká republika/Accreditation Commission, Czech Republic (ACCR), which is based on the same model as NVAO. To allow the external evaluation to be completely independent, associated members do not participate. However, they contribute to quality assurance by being a member of the IMETE Joint Quality Assurance Committee.

Based on the comments received from the students and quality Assurance committee report of the former IMETE

8 Learning objectives define and describe about what and at what level of demonstration learning is to be mastered. Assessments test during or at the end of the learning process the process of mastering the learning content. Learning activities facilitate the active process of mastering and demonstration. Assessments should address the learning objectives and the learning activities should focus at the learning objectives as well. The type of assessment should fit with the learning activities.

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programme, this new version of the IMETE programme has been reorganized for providing a better didactical sequence. A fundamental change is that the entrance level has been increased. In the previous version of IMETE, a

first semester at UNESCO-IHE was aimed to create the same level of knowledge on basic topics such as chemistry and microbiology. This semester proved to be too general and basic for the majority of IMETE students and as such did not meet their expectations. The current version of the programme therefore immediately starts with the more specific environmental technology courses of UCT Prague, however adapted to the level of the starting students. To this aim, sufficient time will be included to study basic aspects where they are needed to understand the technological concepts. As such, the current version of IMETE can fully benefit from the key expertise of UNESCO-IHE on various water treatment related courses.

2.3. The proposal defines how the student mobility is organised and is instrumental to the course objectives, and presents a draft strategy/planning for an effective involvement of scholars/guest lecturers

The following mobility scheme is proposed (see annex 3) :

- Semester 1, Year 1 starting at UCT Prague where the students will attend basic courses to introduce important concepts and to bring students to a same level of knowledge and advanced courses that familiarize students with environmental technology.

- Semester 2, Year 1, at UNESCO-IHE Delft, the students will attend specialized courses on water treatment technologies. Two specialization tracks are offered, the first one being focussed on the implementation of eco-technologies for natural passive water treatment technologies and the second tracks focus on the implementation, design and modelling of advanced wastewater treatment technologies. All courses are run in the same building and there is strong collaboration between staff of both tracks, so same-year students can meet and exchange on a daily basis.

- While staying in Delft, the students will continue to acquire transferable skills when participating to the elective project course and Scientific and Writing skills for Engineers courses. Those two courses are like a theme that continues in the first and second semester of the year 1.

- Between year 1 and 2, the students will be offered the opportunity to do an internship at one of our industrial partners to further finetune their awareness of the industrial world in Environmental Technology and Engineering

- Semester 1, Year 2, the Seminar on Environmental Technology and Advanced courses on Process Engineering and Control Engineering will strengthen the Engineering background of the student and this knowledge will be implemented for Resource recovery bioengineering. Also the student will be able to select one out of two specialization tracks. The first is focused on waste gas treatment technologies and the second is focused on the soil remediation technologies. Additional elective course (7 ECTS) will be offered to the IMETE students. Those courses will have to be selected from the Ugent selected offer.

- Semester 2, Year 2, Finally, based on a careful choice of the preferred engineering field, the students will have the opportunity to do their Master thesis with one academic host institution or be hosted by an industrial partner. Students at the MSc research stage work in the partners' institutes, or else in internationally recognized partner institutes like universities, while the supervisor always comes from one of the three partner institutes.

Students from the same cohort are always studying in the same building or on the campus, while students from different cohorts study in different locations. There is occasional overlap, like at the time of graduation (all students are in Ghent then), and the students who do their thesis research in UNESCO-IHE will meet their younger peers when the latter follow courses.

In addition to the integration in the curriculum of basic courses to introduce important concepts and to bring students

to a same level of knowledge, UNESCO-IHE is now proposing to the enrolled MSc students to study on-line

preparation courses before starting the academic year in Delft. Those preparation courses are meant to remind to the

students the basic knowledge required prior to starting the programme. UNESCO-IHE will offer Statistics, Mathematics, Chemistry and Biology preparation courses from July 2017 onwards .

Through Erasmus+, the IMETE Consortium will be able to invite leading scholars active in the field of Environmental Technology and Engineering to contribute to the programme. These internationally renowned

academics will provide additional seminars on specialist subjects that would not otherwise be available within

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Europe. Furthermore students will be able to seek guidance and learn from some of the world's most respected

academics in the field of project management.

IMETE students will also benefit from guest lecturers from industry practitioners. This enables students to experience strategic project management in practice. Guest lectures will include participants from IMETE associated

industrial partners.

IMETE scholars must:

- Spend a minimum of two weeks at least at one of the IMETE partner institutions (in the application scholars

can indicate the period of the visit they are applying for, however, the period granted and the exact dates of the visits will be agreed with the IMETE Consortium, according to the necessities of the institution chosen as Home University).

- Commit themselves to actively participate in the masters course activities and perform teaching/research/student tutoring activities at the partner institution (through teaching of specific classes, leading and participating in seminars or workshops, monitoring and tutoring student research/project activities, participating in thesis reviews, preparing new teaching courses, etc.)

- Contribute, after their visiting scholar activities, to the promotion and dissemination of the Erasmus Mundus

Programme in general, and the IMETE programme concerned in particular, in their higher education institution and in the country of origin

A call for scholars will be open on the IMETE website and the selection criteria (i.e. Scientific excellence, Prior relevant knowledge and experience, Working plan during the visit, Proven knowledge of the language of instruction,

others) as well as the weight of each criteria will be clearly indicated.

2.4. The proposal explains in detail all relevant information provided to the students/academic staff prior to course enrolment, and the services offered in terms of support for accommodation, language training, administrative formalities (e.g. visa support), and insurance

The detailed selection and admission procedure has already been agreed between the educational partners and is

described in the Consortium Agreement in the attachment. To be academically admissible, candidates must have at

least a bachelor degree (minimum 180 ECTS credits) in engineering or science (physics, chemistry, biology, mathematics, earth science, materials science) including 15 ECTS in mathematics and/or physics and 10 ECTS pure

or applied chemistry or an equivalent level from a recognized university or engineering college. Students also need

to prove a proficiency in English which exists, depending on nationality, of a proof of at least one year (60 ECTS

successfully completed) comprehensive English-based instruction at a HEI, a TOEFL internet based test with a

minimum score of 86 or an IELTS test with a minimum overall band score of 6.5.

Candidates apply online through a tailor made IMETE standard application form using an online tool developed by

UNESCO-IHE for all programmes offered in Delft. Application for the programme and Erasmus+ scholarship (if submitted timely) is done simultaneously through one and the same document. The coordination secretariat collects the application files and the online applications are available to the other educational partners 24/7 through a secured wiki platform. A Joint Selection Committee (JSC) will evaluate the candidates online through a secured wiki platform, using a set of standardised criteria (see details reported in the draft Consortium Agreement, Article 7.2). The candidates are ranked and the top-candidates are interviewed through Skype or telephone, particularly on the motivation, language abilities and learning attitude of the candidates. The JMC makes a final ranking and submits the top candidates for Erasmus+: Erasmus Mundus and other scholarships. The coordination secretariat communicates to all funding agencies and to the applicants the results of the evaluation and ranking. Support is given to academically admitted students who were not awarded an Erasmus+ scholarship to apply for funding at the governmental and funding agencies where the educational partners are preferred partners of. The Consortium strives towards balanced geographical origin of students and gender balanced participation. To reach this, promotional material includes information on facilities for students/scholars with disabilities or special needs (including childcare facilities) and a balanced geographic distribution of this promotional material is targeted.

When these measures would not yet result in balanced gender participation, preference is given to the IMETE - International Master of Science in Environmental Technology and Engineering

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underrepresented gender during selection of candidates when candidates of different genders would submit application files of similar quality. In that way, balanced gender participation can be obtained, meanwhile also

avoiding positive discrimination.

Students enrol at UNESCO-IHE with a set of legalised documents, receive official letters of admission and enrolment (and, if applicable scholarship) and are supported in travel, housing, visa and other arrangements by the

coordination secretariat and the local secretariats. The participation costs for students with an Erasmus+ scholarship

is subtracted from the scholarship provided by the EACEA grant, self-sponsoring students pay the tuition fee to

UNESCO-IHE University. After enrolment at UNESCO-IHE, students are also enrolled at the partner institutes.

Participation costs are forwarded by UNESCO-IHE to the partner institutes in accordance with the Consortium Agreement.

All students sign a Student Agreement with the consortium (represented by the Coordinator) that states their rights

and obligations as a student of IMETE. An example agreement is attached in annex 5 of the draft Consortium agreement. The agreement defines the joint course implementation rules and mechanisms as well as the mutual

rights, obligations and responsibilities of the two parties concerning academic, administrative and financial aspects

of the student's participation in the IMETE programme. The Coordinator, UNESCO-IHE, has built up extensive experience with issuing and implementing Student Agreements in the context of existing EMJMDs. It stipulates the

conditions to be awarded the degree and successfully complete the programme, the obligation of all partners to

provide to the student all support and facilities, the obligations of the student in terms of presence and obliging to the rules and regulations of the consortium, as well as of each of the partner institutes, conditions for suspension, withdrawal, or exclusion, rules in force as to failing exams, absences, liability, complaint procedures for students, student representation in the management, financial procedures and regulations related to payment of the Erasmus+ scholarships, if applicable, etc.

The Student Agreement stipulates that the coordinator and partner institutes will:

- award the joint diploma “International Master of Science in Environmental Technology and Engineering” upon successful completion of the study programme by the student
- take necessary measures for preparation, implementation and operation of the programme
- provide to the students all facilities, that are specified in the IMETE proposal
- assist the student to fulfil administrative formalities
- provide logistic support to the student.

It stipulates that the student will:

- respect the discipline, imposed by the IMETE partners concerning courses, tasks, working hours, rules in force and any other legal provisions. In case of non-compliance, the coordinator reserves the right to temporarily suspend the scholarship and, after hearing the beneficiary and consultation of the IMETE partners, to terminate the agreement and payment of the grant.
- inform the coordinator as quickly as possible if he/she withdraws from the IMETE programme.

The ‘rules in force’ are specified as:

- Failure for exams: If a student fails exams, one re-sit will be allowed in each academic year for each course.

If the student also fails this re-sit, he/she can be allowed to follow an “individually adapted programme” during the subsequent academic year. Such individually adapted programme will need to be approved by the

IMETE Board. Students who fail to progress after a semester may lose their scholarship (if awarded) upon decision of the programme committee. Students leaving the programme receive a certificate stating the courses they earned credits for.

- Absence: the students are strongly advised to attend as much as possible all lectures and practical exercises.

Some assignments and practical exercises are obligatory to pass a course. The lecturer will inform the students at the start of each course. In case of non-voluntary absence (e.g. due to prolonged illness), the student must provide a legal proof of absence (e.g., certificate of a doctor) to the lecturer involved. In case of voluntary absence, the student must apply in advance for approval at the IMETE secretariat. The coordinator

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will decide upon approval after consulting involved lecturers. The student always has to motivate absence, as much as possible supported by evidence, and contact lecturers to make the necessary agreements to fulfil obligatory parts of the programme at a later moment. In case of absence without approval or prolonged absence (>two weeks), the scholarship can be temporarily suspended or terminated. This decision will be taken by the coordinator, after consulting the programme committee.

- Study programme: the study programme is specified and the agreement stipulates that, although the students

can apply for conducting thesis research at any partner institute in the last year, the final decision about the distribution of students among the consortium partners and associated partners is a right of the coordinator.

- Financial arrangements: for the student grant, the coordinator undertakes to finance eligible expenditure and

scholarships in accordance with the financing rules established by the European Commission. The beneficiary agrees that his/her registration fee is directly paid from the available EC scholarship. The Erasmus Mundus contribution will be paid by monthly instalment on a European bank account, to be specified by the beneficiary.

● **Liability:** each party shall exonerate the other from any civil liability for damages suffered by him or his staff as a result of performance of the agreement, provided such damages are not the result of serious and deliberate misconduct on the part of the other party or his staff. The coordinator shall indemnify the EC and their staff against any legal action to recover damages sustained by third parties, including project staff, as a result of performance of the agreement, provided such damages are not the result of serious and deliberate misconduct on the part of the other party or his staff.

● **Jurisdiction clause:** where no amicable agreement can be reached, the courts of The Netherlands shall have sole jurisdiction in any disputes between the contracting parties concerning the agreement. The law, applicable to the agreement, is the law of the coordinator's country (i.e. The Netherlands).

● The student shall supply immediately any information, required to execute the agreement. Amendments to the agreement may be made only by codicil signed on behalf of each of the parties by the signatories to the agreement.

All EMJMD students will be insured with an international Health Insurance company AON (<https://www.aonstudentinsurance.com>) fulfilling the legal requirements for health insurance coverage. This affiliation provides health insurance in 27 EU countries and the EEA/EFTA countries through the European Health

Insurance Card (EHIC) system. The comprehensive insurance covers the full range of the minimum requirements set

out by the EU such as the third-party liability or permanent invalidity. The insurance scheme also covers the pregnancy related costs of female participants. Additionally, the insurance also covers the international travel costs

of EMJMD students who need to travel home in case of family emergency. Currently, the Flood Risk Management

Master (<http://www.floodriskmaster.org/>) students are insured with this company and in general, the services

provided are quite satisfactory. The cost of this insurance (480 € per year) is included in the participation costs of the

programme and the EMJMD students do not need to pay for it.

The coordinating secretariat of IMETE is the first point of contact for all students. The secretariat is run by a team

that has extensive experience in international and joint master programmes (see UNESCO-IHE offers <https://www.unesco-ihe.org/msc-programmes>). The secretariat guides and supports the student before, during and

after the application, from the first sign of interest and questions up to potential enrolment, scholarship management

and throughout the two year programme up to the graduation. The secretariat also manages the alumni network. Both

the coordinating and the central secretariat, supported by the faculty's and university's international relations offices

support the students in the visa applications, obtaining local residence permits and global and local health, liability

and travel insurance, enrolment, search for accommodation and any other issues that come with starting a master

programme in a new country and a new language.

Also, all educational partners of the Consortium have a long history in international relations and have an international office (on central and/or faculty and/or department level), qualified staff and facilities dedicated to the

welcoming and supporting of international students and scholars. These departments and staff offer welcoming

activities and stay-abroad preparation. The following list is an example of the available services, and by no means

exhaustive. For more location-specific information on services and facilities offered by the partner institutes, we

refer to the websites of the partners. Services offered at all partners include:

- housing (University halls of residence, or private market if the student wishes);
- welcome days/week - introduction activities and sessions to familiarize the student with country, city, university, department, faculty, programme;
- international student and alumni association;
- individual counselling and dedicated student advisors;

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- social and medical services for financial and administrative problems and ensure emotional wellbeing;
- job services and career planning, assistance for Internship placement;
- services for students travelling with spouse and/or children, pregnant students or students with special needs;
- student canteens with affordable and healthy meals, including special dietary menus;
- medical services both physical and mental health;
- sport facilities;
- buddy and mentor systems with second-year students;
- student representation in faculty committees and IMETE Joint Management Committee;
- access to libraries, electronic journals and information databases;
- up-to-date broadband computer networks, internet access, Wi-Fi, special offers for reduced prices on software and hardware, computer rooms;
- job events and assistance to select a topic and apply for PhD scholarships,.

All above-mentioned facilities and services are available at each partner university. Relevant services are also

available to visiting scholars and (guest) lecturers. Housing is guaranteed for visiting academic staff. They have

access to all restaurants, libraries, sports facilities and many of the above-mentioned services.

The language of instruction is English, but other foreign language courses are offered as elective courses.

UCT

Prague offers a basic course in Czech as elective course. Language courses can be followed in all partner institutes,

outside of the curriculum, at very favourable rates for students. For example, € 50 is charged to students for a 1

semester 30 hr Dutch language course at the University Language Centre of Ghent University. In the programme, the

knowledge of English language will also be evaluated at the start and end of the programme to measure

improvement. At the Summer Course, additional evaluation of the English language will be implemented by an

English language teacher who will also participate in part of the course, and individual advice will be formulated

towards the student on how to improve language skills if necessary.

2.5. The proposal clearly outlines the course rules, student rights and obligations concerning the academic, administrative and financial aspects of EMJMD implementation

A comprehensive EMJMD Student Agreement (or contract) will be issued, which is to be signed by both parties

(students and consortium members) upon student enrollment. The agreement defines the joint course implementation

rules and mechanisms as well as the mutual rights, obligations and responsibilities of the two parties for what

concerns the academic, administrative and financial aspects of the student's participation in the IMETE programme.

The coordinator, UNESCO-IHE, has already built up extensive experience with the issuing and implementation of

Student Agreements in the context of running EMJMDs. The Student Agreement stipulates that the coordinator and

partner institutes will:

- award the joint diploma “International Master of Science in Environmental Technology and Engineering” upon successful completion of the study programme by the student;
- take necessary measures for preparation, implementation and operation of the programme;
- provide to the students all facilities, that are specified in the IMETE proposal;
- assist the student to fulfil administrative formalities;
- provide logistic support to the student.

It stipulates that the student will:

- respect the discipline, imposed by the IMETE partners concerning courses, tasks, working hours, rules in force and any other legal provisions. In case of non-compliance, the coordinator reserves the right to temporarily suspend the scholarship and, after hearing the beneficiary and consultation of the IMETE partners, to terminate the agreement and payment of the grant;
- inform the coordinator as quickly as possible if he/she withdraws from the IMETE programme.

The ‘rules in force’ are specified as:

- Failure for exams: If a student fails exams, one re-sit will be allowed in each academic year for each course.

If the student also fails this re-sit, he/she can be allowed to follow an “individually adapted programme” during the subsequent academic year. Such individually adapted programme will need to be approved by the

IMETE Board. Students who fail to progress after a semester may lose their scholarship (if awarded) upon decision of the programme committee. Students leaving the programme receive a certificate stating the courses they earned credits for.

- Absence: the students are strongly advised to attend as much as possible all lectures and practical exercises.

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Some assignments and practical exercises are obligatory to pass a course. The lecturer will inform the students at the start of each course. In case of non-voluntary absence (e.g. due to illness), the student must provide a legal proof of absence (e.g., certificate of a doctor) to the lecturer involved. In case of voluntary absence, the student must apply in advance for approval at the IMETE secretariat. The coordinator will decide upon approval after consulting involved lecturers. The student always has to motivate absence, as much as possible supported by evidence, and contact lecturers to make the necessary agreements to fulfil obligatory parts of the programme at a later moment. In case of absence without approval or prolonged absence (>two weeks), the scholarship can be temporarily suspended or terminated. This decision will be taken by the coordinator, after consulting the programme committee.

- Study programme: the study programme is specified and the agreement stipulates that, although the students

can apply for conducting thesis research at any partner institute in the last year, the final decision about the distribution of students among the consortium partners and associated partners is a right of the coordinator.

- Financial arrangements: for the student grant, the coordinator undertakes to finance eligible expenditure and

scholarships in accordance with the financing rules established by the European Commission. The beneficiary agrees that his/her registration fee is directly paid from the available EC scholarship. The Erasmus Mundus contribution will be paid by monthly instalment on a European bank account, to be specified by the beneficiary.

- Liability: each party shall exonerate the other from any civil liability for damages suffered by him or his staff as a result of performance of the agreement, provided such damages are not the result of serious and deliberate misconduct on the part of the other party or his staff. The coordinator shall indemnify the EC and their staff against any legal action to recover damages sustained by third parties, including project staff, as a result of performance of the agreement, provided such damages are not the result of serious and deliberate misconduct on the part of the other party or his staff.

- Jurisdiction clause: where no amicable agreement can be reached, the courts of the Netherlands shall have

sole jurisdiction in any disputes between the contracting parties concerning the agreement. The law, applicable to the agreement, is the law of the coordinator’s country (i.e. the Netherlands).

The student shall supply immediately any information, required to execute the agreement. Amendments to the agreement may be made only by codicil signed on behalf of each of the parties by the signatories to the agreement.

2.6. The proposal describes the envisaged activities/facilities to ensure the effective integration/networking of the EMJMD students within their socio-cultural and professional environment

As mentioned above, the IMETE programme mainly aims at promoting networking and exchange of knowledge and experience in the field of environmental technology and engineering between students of different nationalities, in particular also with students from developing countries and countries in transition following similar programmes at UNESCO-IHE and UGent. In addition, part of the courses at UCT Prague and UGent are also taken from existing national programmes focusing on students of their home country, complemented with Erasmus exchange students (e.g. Master of Bioscience Engineering at Ghent University). This will promote networking between the IMETE students and other students enrolled at the partner institutions.

Networking with other students at the partner institutes will be promoted by:

- mixing students from the different programmes when conducting group work in the courses conducted at UNESCO-IHE and UGent;
- organising activities open to students from different programmes;
- setting up a buddy system in Prague: each international student gets a local student as buddy upon arrival.

This system will not only contribute to networking between local and IMETE students, but also facilitate day-to-day issues and promote social integration of IMETE students.

To promote networking amongst IMETE students themselves, the full group of IMETE students is kept together as a cohort during the first year and the first semester of the second year. Other networking activities for IMETE students include:

- the summer school (“Advances & Trends in Environmental Technology” between the first and the second year;
- career fairs organised at the different partner institutes.
- UNESCO-IHE organizes every year an Alumni Day : the main goal of this day is that alumni worldwide IMETE - International Master of Science in Environmental Technology and Engineering

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celebrate it with their peers by organizing an event. Examples of events are alumni gatherings, lectures, workshops, email actions, an online forum and picture exchanges.

- After graduation, UNESCO-IHE's former students (including IMETE students) are welcomed into the alumni community (<https://www.unesco-ihe.org/alumni>). The Institute recognizes alumni as its greatest ambassadors and takes special pride in the vital role they play in implementing and spreading the knowledge they acquired during their studies.

Students are exposed to the professional sector on different occasions. Scholars (e.g. from associated partner institutes) can apply and will be actively invited to assist in selected courses, bringing the students into contact with practical experience related to the application of environmental technologies in other countries, with a particular focus on developing countries and countries in transition. Several international universities are also involved as associated partner institutes to stimulate students to gain international experience also during thesis research.

Moreover, professional associations (European Biogas Association and the International Water Association) involved as associated partners will promote IMETE amongst their members and stimulate interaction with the professional sector. This interaction is also stimulated by the involvement of guest lecturers from companies acting as associated member (e.g. at UCT Prague, Abitec staff member involved in the whole Environmental Engineering course, Czech Hydrometeorological Institute staff member involved in the whole Atmosphere protection Technology Colas Environnement, ASIO and Veolia involved case studies, elective project) in selected courses, as well as visits to these companies.

Professional sectors and scholars are involved in:

- guest lectures within courses: experts from professional sectors, including the associated consortium members, discuss specific cases and share their experience with the students;
- excursions to industrial projects (e.g. wastewater treatment plants and treatment plants for polluted soils and sediments): these are organised in close collaboration with companies and network organisations active in the field of environmental remediation and pollution prevention;
- summer school: because external participants are also invited to attend the summer school, and field trips and guest lecturers are involved, interaction between the IMETE students, the professional sector and governments is promoted. The summer school also aims at increasing the familiarity of professional sectors and governments with the IMETE programme and its students/alumni;
- placement/internships: non-educational actors will offer work placement possibilities.
- master dissertation research: is often part of research projects in close cooperation with companies, (non) governmental organisations and local administrations. These projects are often co-financed by the noneducational actors involved.

2.7. The proposal clearly outlines the interaction between the EMJMD and non-educational actors in course implementation

Professional sectors are involved in:

- guest lectures within courses (e.g., 6 guest lecturers are involved in first semester for the courses that will be held in Prague): experts from professional sectors, including the associated consortium members, discuss specific cases and share their experience with the students.
- excursions to industrial projects (e.g. wastewater treatment plants and treatment plants for polluted soils and sediments): these are organised in close collaboration with companies and network organisations active in the field of environmental remediation and pollution prevention (e.g., an international field trip offered by UNESCO-IHE).
- summer school: because external participants are also invited to attend the summer school, and field trips and guest lecturers are involved, interaction between the IMETE students, the professional sector and governments is promoted. The summer school also aims at increasing the familiarity of professional sectors and governments with the IMETE programme and its students/alumni.
- placement/internships: non-educational actors will offer work placement possibilities as mentioned in the commitment letter received from the associated partners (elective at UNESCO-IHE, 7 ECTS, up to 6 weeks).
- thesis research: is often part of research projects in close cooperation with companies, (non) governmental organisations and local administrations. These projects are often cofinanced by the non-educational actors

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involved.

To assure interaction with the professional sectors, the internal Joint Quality Assurance Committee also includes two representatives of the professional sector (e.g., associated members) employing graduates of the IMETE programme.

This committee will not only evaluate and compare the quality of modules and courses between the participating

institutes aimed at amelioration of the programme, but also:

- continuously evaluate added values of the IMETE programme as compared to other international and national programmes;

- advise on professional relevance of course contents, and give suggestions for improved interactions with the professional sector;

- advise on the way envisaged learning outcomes, acquired competencies and professional outcomes are effectively acquired by the students.

Networking and interaction between (graduated) students and professional sectors is also promoted through the

establishment of an IMETE alumni association (<http://www.imete.ugent.be/index.asp?p=2337&a=2298>), which

could be integrated in one of the existing alumni associations of the partner institutions (e.g. UNESCO-IHE) and/or

the EMA (Erasmus Mundus Students and Alumni Association). This association will also function as a platform for

IMETE alumni to stay in contact and share professional experience with fellow students and IMETE teaching staff.

Also the consortium will create a discussion group on LinkedIn where the IMETE alumni will be invited to join and

therefore the IMETE consortium as well as the IMETE alumni could stay in close contact by using a professional

social media. Furthermore, IMETE students will be stimulated to attend career fairs, where companies present

themselves and their job vacancies. These are organised by the partner institutes as well as by national employment

organisations active in the countries of the partners. Students who wish to continue their studies aimed at reaching a

PhD degree will receive assistance to select a topic and apply for PhD scholarships. IMETE consortium is currently

involved in different European Joint PhD programmes such as the ABWET

(<http://www.internationaldoctorate.unicas.it/abwet/>) or SuPERW (<http://www.superw.ugent.be/>) and it is expected

that similar similar Joint PhD programmes funded by EU involving IMETE beneficiaries will be developed and therefore offer PhD positions opportunities for the IMETE students.

Although a strong interaction with the non-educational sector exists, the IMETE programme does not depend

on any commitment made by specific (non-educational) actors. If actors would be not able to keep their commitments for some reason, their contribution can be replaced by a contribution of an alternative actor.

3. Quality of the project team and the cooperation arrangements (maximum 20 points)

3.1. The proposal clearly shows the fields of expertise of the involved partners/staff and how they are complementary and of added value for the EMJMD implementation. Where applicable, the proposal describes how existing cooperation agreements have been enhanced to meet the EMJMD's objectives.

IMETE is offered by three higher education entities, which all have a strong track record in environmental technology and engineering, but have complementary strengths in subdomains:

- Didactics: Conceptual and introductory courses with a strong (bio)chemistry component at UCT Prague, advanced and specialised courses at UNESCO-IHE and at UGent, with focus on water in UNESCO-IHE and

with focus on soil, air, waste and resource recovery at UGent.

● Institute objective: Water education (IHE), (Bio)chemical technology (UCTP) and Applied biosciences (UGent).

● Institute organisation: MSc degree awarding category 2 institute (UNESCO-IHE) and two large public universities (ICTP and UGent), offering one joint diploma.

● Primary student population: Developing countries and countries in transition (UNESCO-IHE), Eastern Europe, Russia and East Asia (UCTP) and Europe (UGent).

In order to expose all IMETE students to these different institutional settings, it was opted for a single mobility path

and to have all students moving as a cohort from UCT Prague over UNESCO-IHE to UGent (see annex 3). This also

has significant networking and social cohesion advantages as for instance the IMETE students visiting UNESCOIHE

will be attending courses together with other students from other programmes.

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The lecturers involved in the IMETE programme are internationally recognised experts in the field of environmental

technology and engineering. Key lecturers at ICTP are mainly experienced in environmental microbiology (xxxxxxxxxx, xxxxxxxxxxx), soil

remediation (mainly related to organic pollutants, xxxxxxxxxxx and xxxxxxxxxxx), atmosphere protection technology (xxxxxxxxxx) and wastewater treatment (xxxxxxxxxx, xxxxxxxxxxx, xxxxxxxxxxx). The research experience of the lecturers at UNESCO-IHE

mainly focuses on Industrial Resource Management and Cleaner Production by xxxxxxxxxxx, Advanced Wastewater Treatment Technologies xxxxxxxxxxx, Ecotechnologies with a training on constructed wetlands by xxxxxxxxxxx and ecological engineering.

Key lecturers at UGent cover a wide range of expertises: soil and sediment management and treatment (mainly

related to inorganic pollutants, xxxxxxxxxxx, environmental fate

and management of heavy metals and metalloids xxxxxxxxxxx, waste gas treatment xxxxxxxxxxx, biotechnology, environmental microbiology,

microbial re-use technology, treatment of wastewater and groundwater xxxxxxxxxxx, resource recovery from waste water and biomass xxxxxxxxxxx. This is complemented by expertise of other lecturers in

lots of other related domains, enabling UGent to offer a wide range of elective specialisation courses to support the

IMETE students to acquire specialised competences in the area of their interest. The three partner institutes have

initiated the IMETE programme in 2011, and have received five years of Erasmus Mundus funding. Important changes are proposed to the programme based on the feedback from the previous years. For several students, the first

semester at UNESCO-IHE was considered to be too general, providing general and rather introductory environmental sciences courses. In order to more rapidly focus on environmental technology, students in the new

programme will start in UCT Prague, and essentially start with these technology oriented courses which previously

came in the second semester, but which will be adapted to :

● introduce and expand on general fundamental concepts where they are needed to conceptually understand the technology;

● focus on an overview and a broad conceptual understanding of the technology as to provide the basis for the specialised courses in the second and third semester;

● introduce more basic quantitative aspects as to prepare the students better for the quantitative engineering approach introduced in the subsequent semesters.

In the revised IMETE programme, IHE Delft will now provide advanced courses in its specialisation, i.e. water. Students can choose between two tracks, an “Ecotechnologies ” track and an “Advanced Wastewater Treatment Technologies” track. As before, UGent provides advanced courses in the third semester. An issue with the first version of the IMETE programme was that many students proved not sufficiently prepared for "Basics of Control Engineering and Process Engineering", especially with respect to required mathematical skills. Process engineering and process control now will be split in two separate courses. This allows to dedicate more time for exercise and training, whereas at the same time, an increased focus on quantitative aspects in the courses of the first semester will prepare the students better towards quantitative approaches. The focus on new and emerging trends of resource reuse and pollution prevention is enhanced by introducing a major course on “Resource Recovery Processes and Engineering”. In addition, students choose one out of two specialisation tracks on either “Air” or “Soil”. This will overcome a drawback in the previous version of the programme, where a large slot of optional courses was offered. This proved to be problematic from an organisational point of view, where very relevant optional courses in practice would overlap frequently and thus could not be chosen together. Two broadening courses strongly focussed on developing transferable skills are offered as year courses during the first year, “Elective project” (led by UCT-Prague) and “Communication and writing skills for environmental engineers” (led by UNESCO-IHE). In “Elective project”, students will develop an application of environmental technology, provided by companies. They will visit a company in one of the partner countries (e.g. a wastewater treatment, a soil remediation project or soil recycling center, treatment facilities of plants, solid waste processing facility) and need to qualitatively and quantitatively document and study the case. In a joint group work, they need to apply theoretical knowledge on the study case with attention to the technology and the economics of the processes.

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A very strong component of the first IMETE programme, the summer school, is obviously maintained but is rebranded to “Seminars on Environmental Technology”. This programme component aims to provide the students with a congress-like experience through a professional three day seminar on a selected environmental technology topic including excursion. This seminar is open to third parties. As such, the students are exposed to professionals from industry, government and research institutes. Finally, as before, the fourth semester is dedicated to master dissertation research, which students perform at one of the main partner institutes or (partly) at one of the associated partner institutes. Scholars and guest lecturers are involved in different aspects of the programme. Scholars are invited to assist in selected courses, bringing the students into contact with their country specific practical experience related to the application of environmental technologies, with a particular focus on developing countries and countries in

transition. Guest lecturers of companies (e.g. Envisan, Colas Environnement) are involved to discuss specific cases, approach a topic from the particular viewpoint and focus of the company and share their experience with students.

3.2. The proposal describes the institutional commitment of each partner, specifies their role and tasks in the EMJMD implementation, and outlines the working mechanisms of the governing bodies and management tools in place

The IMETE programme will be managed by a Joint Management Committee (JMC), which is in charge of the academic and financial management of the programme and ultimately responsible for the Quality Assurance. The

JMC meets at least 2-3 times a year, typically by videoconference. Once a year, the representatives of Associated

Partners will be invited to join the JMC meeting. The Coordinator presides over the JMC and is in charge of coordinating the programme and taking all actions necessary for a good functioning of the Consortium and for the

fulfilment of the contractual agreement with the EACEA.

The Joint Management Committee assures quality overall at Consortium level, the local quality assurance is done by

each partner university individually and deals with individual courses and lecturers. To ensure the quality of individual lectures, the JMC will be assisted by local Education Quality Assurance Committees. To ensure the quality of the entire programme, the JMC will be assisted by the joint Programme Steering Committee. This committee includes students and alumni (one per (graduated) cohort) and representatives from industry ($\frac{1}{3}$ of the

total committee member number) and evaluates the added value of the programme compared to other programmes,

advises on professional relevance of course contents and on the way intended learning outcomes, competencies and

professional outcomes are actually acquired by the students.

A joint examination and Dissertation committee advises the local institutional examination commission on the

success/failure of the student for individual courses organized in the respective university. It also decides on reexaminations.

The evaluation of interested candidates is done by a joint Selection committee who also selects the scholarship grantees according to the mutually agreed procedures and admission and evaluation criteria.

The financial and administrative coordination is organized at the IMETE technical secretariat, located at UNESCOIHE.

One full-time staff member is made available for this. Local secretariats at UGent and UCT Prague assist the students with operational matters and local support.

Students are encouraged to raise feedback and issues with an appropriate member of staff at the earliest opportunity,

as complaints that are dealt with informally at an early stage have the best chance of being resolved effectively. Any

such complaints however are to be transmitted to the Management Board in order to take effective measures to

prevent regularly arising issues. Where informal procedures have failed to resolve the problem, students may bring a

complaint under the Student Grievance Procedure as described in the Consortium Agreement.

Within IMETE joint examination methods and mechanisms will be applied between the Consortium partners to

assess the students' achievements. This is also described in detail in the Consortium Agreement in annex.

Recognition of study periods coincides with the use of the ECTS mechanism that is already applied in all educational partners. Common admission criteria are defined, students compose a curriculum of at least 120 ECTS

and all students and courses, including the Internship, Master Dissertation and Summer School, are evaluated based

on common criteria and values and common examination tools (e.g. written exams, oral exams, project work, seminars, ...). For each individual course, the examination criteria of the individual teacher and the institute where

the course is followed do apply. Marks are given according to the ECTS system and communicated to the coordination secretariat that converts all marks to the UNESCO-IHE scoring table of zero to 10 in order to be able to

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produce the final degree. For the conversion, the JMC has previously agreed on a conversion table.

The Dissertation has to be defended in accordance with local institutional regulations of the institute of the main

promoter. However, the Consortium has been able to develop and applied a common set of criteria and evaluation

methods for the dissertation.

Approval of the final result is necessary from all partners prior to issuing the final degree. IMETE graduates will

receive a joint diploma and diploma supplement, produced at UNESCO-IHE, based on a model devised by the

European Commission, the Council of Europe and UNESCO/CEPES. An example of the joint diploma and supplement used during the last years can be found in annex 7. Besides information on the nature, context and

content of the degree programme and the evaluation and ECTS system, it also contains a full transcript of courses

and credits obtained by the student.

An overview of the tasks of the different consortium members, and also the associated partners, is presented in the

table below. Financial and administrative coordination⁹ is organised at the IMETE secretariat, located at UNESCOIHE.

Different administrative IHE services are made available for these activities. One dedicated person is in charge

of all financial aspects of the programme. He/she manages the central IMETE account and is responsible for all

payments, including distribution of allowances amongst students and payment of enrolment fees to the partner

institutes. The Fellowship and Admission Officer will coordinate the selection of scholarship applications and is the

unique contact point for the students in case of (financial) problems or questions and guides students through

application procedures. He/she will provide all necessary documents for visa applications and assistance in obtaining

a residence permit, as well as information on all administrative procedures, health insurance and liability. This

person will be easily available for students and scholars residing in Ghent or Prague through e-mail, telephone and

through a social networking platform which is created for the IMETE programme on the internet. Main promotion/marketing activities, particularly maintenance of the website and advertisements in journals, will also be

coordinated by the IHE Communication Office. However, all partners will contribute to promote IMETE within own

networks and alumni associations.

UGent, UNESCO-IHE and UCTP will assist the students in finding accommodation in Ghent, Delft and Prague, respectively. They will also give local support to students with special needs and organise leisure and social networking activities, as well as academic coaching and mentor systems to facilitate day-to-day issues.

Cooperation

within the consortium is formalised through an EMJMD agreement among the participating institutions, which stipulates all specific arrangements between the coordinator and the cooperating institutions. This includes the specific role of each partner institution. This agreement is approved by all faculties and university boards involved.

An IMETE Joint Management Committee ultimately responsible for academic supervision and evaluation of the programme and final approval of programme components and the programme as a whole will be established. This

board has the following minimum composition:

- the chairperson of the Joint Management Committee, who is provided by the coordinating institution
- the staff member of the coordinating institution who is in charge of all administrative and financial aspects of the course
- one person of each consortium partner institute who is responsible for the management of the programme within the institution.

Persons who are allowed and invited by the Joint Management Committee to become a member are:

- legal representatives and members of education committees, administration and internationalisation offices

of the partner institutes

- representative(s) of the Erasmus Mundus programme
- two student representatives, to be elected by the students participating in the programme;
- an academic representative from outside the consortium partner institutions (e.g. from the universities involved as associated members)
- a representative of the non-academic associated members or institutes granting additional scholarships.

In practice, there will be an intensive cooperation among the partner institutions through Joint Management Committee meetings twice a year to follow up on procedures, suggested modifications, rules, etc. related to the

IMETE programme. These meetings will take place by video conferences to reduce operational costs of the

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Coordination activities include e.g. hosting the secretariat, organising a unique contact point for students, hosting the website, organising meetings and application and selection procedures for students and scholars, coordinating quality assurance and accreditation procedures, coordinating work placement, and organising insurance

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programme. Additionally, daily contacts between the secretariat and members of the Joint Management Committee

should ensure a smooth running of the mobility flows. Close existing cooperation in education and research between

the participating institutions will continue to exist in the IMETE programme.

Next to the Joint Management Committee, a Quality Assurance Committee will be established. This Committee has

a similar composition as the Joint Management Committee, but also contains staff members of the partner institutions who are in charge of quality control and assurance of courses and educational programmes. In addition, it

contains two representatives of the professional sector (e.g., associated members) who should ensure that the output

generated by the IMETE programme is in accordance to the actual needs of the professional sector.

The management of the programme will be in the hands of the Joint Management Committee and its supporting

committees as described in Annex 4. The roles have been (or will further be) defined in the Consortium Agreement.

With supporting and associated partners, the basis is the letter of intent which will further lead to specific agreements

after confirmation of funding. The students and associated partners are represented in these bodies by being part of

the Programme Steering and the Quality Assurance committee.

As mentioned in the consortium agreement (Annex 1), the co-ordinating institution of the consortium is UNESCOIHE.

It hosts the *consortium's secretariat*. The consortium agrees to distribute the administrative work between the

partners. Each partner will be in charge of a certain assignment, according to prior experience and local capacities as

follows:

UNESCO-IHE:

- To coordinate the programme, prepare meetings and secure follow up, represent consortium towards Brussels (including reporting), coordinate selection of students; set up and maintain programme website, coordinate selection of third country guest lecturers.

- To keep record of students transcripts and issue and register the final degree.

- To be responsible for the financial management of the Masters programme.

- Coordination of quality assurance / continuous improvement of the course (including evaluation, setting up

Advisory Board and preparing reports on QA and student performance).

- Coordination of promotion and marketing, including creation of appropriate materials (leaflets, adds), participation in fairs, etc.

- Coordination of Curriculum content and delivery, including monitoring of balanced use of different teaching

and learning methods.

UGent:

- To keep record of students transcripts and issue and register the final degree.

- Coordination of quality assurance / continuous improvement of the course (including evaluation, setting up

Advisory Board and preparing reports on QA and student performance).

- Coordination of Curriculum content and delivery, including monitoring of balanced use of different teaching

and learning methods.

- Participating in selection of students and guest lecturers for programme-specific curricular elements.

- Providing administrative and academic support to the programme and its students.

UCTPrague:

- To keep record of students transcripts and issue and register the final degree.

- Coordination of quality assurance / continuous improvement of the course (including evaluation, setting up

Advisory Board and preparing reports on QA and student performance).

- Coordination of Curriculum content and delivery, including monitoring of balanced use of different teaching

and learning methods.

- Participating in selection of students and guest lecturers for programme-specific curricular elements.

- Providing administrative and academic support to the programme and its students.

Associated partners of the consortium will provide contributions to the programme through:

- Dissemination and promotion of the course

- Awareness raising for the importance of training in the field

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- Guest lecturing on selected subjects, either during course modules or in organized workshops

- Hosting and co-supervision of MSc students to perform relevant research during their thesis

- Counselling for future career and work placements

- Steering the programme towards optimized learning objectives based on the current and future needs for

skills and competences in the field

- Providing available data on real cases of Environmental Technologies and Engineering
- Helping in organising and disseminating case studies.

Each of the educational partners

- organises complementary and elective courses,
- ensures that students also receive training in language and complementary skills,
- commits to delivering together the joint master degree,
- ensures that the degree remains accredited according to national laws,
- hosts students for dissertation research,
- participates actively in the evaluation and selection of candidates,
- is represented in each of the sub-committees of the Management Board,
- contributes to the activities and strategies relating promotion, sustainability, outreach, internship and master

dissertation opportunities, administrative support to students and scholars and connecting the program to academic, research and industry networks

More specifically, several of the courses are organised jointly between educational and non-academic partners, but

under the supervision of one academic partner. The elective project courses that will be run over the first year is

jointly organized by the three main HEI partners in partnership with the industrial partners committed to provide

study cases that will be used to train students to apply theoretical knowledge to solve specific problems in the field

of wastewater treatment, atmosphere protection technology, and waste management and treatment. The students will

elaborate a projects based on real cases proposed by the industrial partners of IMETE. During the first part of the

course (EP I), students will be guided to collect all necessary data describing the real case, perform literature survey

on the problem and propose several alternative technical solutions. The solutions will be presented to the teachers

and representatives of the industrial partners and the most promising one will be selected for further detail elaboration. Students will continue working on the case studies developed during Elective Project I (EP I) when

arriving in Delft. They will further elaborate on the technical solution proposed during EP I, i.e. the students will

work out the technical details and evaluate economical aspects of the solution. The outcome will be presented to the

teachers and to the representatives of the industrial partners involved in the case study.

UNESCO-IHE, as coordinator, additionally:

- handles financial management of the consortia's funds (also payment of scholarships to students and tuition

fees to partners) and reports to the JMC,

- organises the preparatory programme, board and sub-committee meetings,
- is responsible for the programme's website and correctly functioning of eCampus,
- launches the applications globally and collects all e-copy applications,
- ensures all students are correctly insured.

Supporting partners

- host students for dissertation research,
- provide internship opportunities,
- provide case study material,
- organise site visits,
- contribute to project supervision,
- promote interaction with partner of industry and research,
- promote the IMETE programme,

- identify possible candidate-students.

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The associated partners, additionally to the supporting partners,

- are also participating in the Joint Quality Assurance committee,
- provide guest lectures in courses or project work,
- play an active role in the sustainability strategy.

3.3. The proposal describes, *inter alia*, the joint criteria, principles and requirements for student application, selection and admission requirements, student examination and performance evaluation

To enter the programme, candidates must have at least a Bachelor degree (minimum 180 ECTS credits) in pure or applied sciences (e.g., chemistry, biology, geology, civil or agricultural engineering, environmental or agricultural sciences, etc.) or an equivalent level from a recognised university or Engineering College, or several years of related professional experience. Sufficient academic knowledge of mathematics, physics and chemistry is an absolute requirement, as well as sufficient knowledge of English (proven by a TOEFL score of at least 570 (paper-based) or 87 (internet-based), or a IELTS overall band score of 6.5 and a minimum score of 6 on the writing part, or ESOL

Cambridge English: Advanced (CAE), or proof of at least one year - 60 ECTS (finished successfully) - of comprehensive English-based instruction in either USA, Australia, New Zealand, United Kingdom, Republic of

Ireland or Canada). Further details regarding the English language requirements for MSc Programme are available

from IHE website <https://www.unesco-ihe.org/english-language-requirements> as well as from the IMETE website

<http://www.imete.ugent.be/>

Students apply through a common electronic application platform, which is available in English at the IMETE website. The student willing to apply for the new IMETE programme will be redirected to UNESCO-IHE web platform where any student willing to apply for an MSc programme should register and submit the required application documents (<https://www.unesco-ihe.org/user/login>).

A joint selection committee composed of three academic members of the IMETE Joint Management Committee

makes a final ranking based on the application files. Finally, the Joint Management Committee selects eligible

candidates after hearing the joint selection committee.

The selection of grantees is a competitive process based on academic scores, reputation of the school or institute

where the student has previously studied (international league tables), language skills, country of origin (to promote

geographical balance), recommendation letters, interest, motivation and background, winning of prizes, details of

completed course and project work, previous professional experience, and the interviews. The consortium will strive

towards balanced geographical origin of students and balanced gender participation. To reach this, promotional

material will include information on facilities for students/scholars with disabilities or special needs (including

childcare facilities) and a balanced geographic distribution of this promotional material is targeted. When these

measures would not yet result in balanced gender participation, preference will be given to the under-represented

gender during selection of candidates when candidates of different genders would submit application files of similar quality. In that way, balanced gender participation can be obtained, meanwhile also avoiding positive discrimination.

A list of selected scholarship students and reserve candidates is forwarded to the EU for approval under the conditions set up by the EACEA. After approval, the coordinator contacts selected students to start registration and mobility arrangements.

Recognition of study periods coincides with the use of ECTS mechanisms as all participating institutions are employing the ECTS system. The proposed programme, therefore, logically follows the ECTS requirements:

- all individual courses and components are defined by credits including workload and contact hours
- the total workload is 120 credits
- the programme is based on a predefined set of learning outcomes
- common admission criteria are defined
- students are evaluated by using a common set of examination tools.

Evaluation of the programme components is based on common criteria and values and common examination tools.

The Management Board defines and issues a common framework for examination, related to the specified learning

outcomes for each individual course, as well as for the whole programme. The final grading for a programme component is based on the grading of activities during the academic year (practical exercises, portfolios, project

work, participation to discussions, internships) and on a written or oral examination at the end of the programme

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component. Evaluation criteria and the weight of the different components in assessing the final score are clearly

communicated to the students through the ECTS information file, which is publicly available through the web.

The institution offering a programme component and hosting the student organises the examination of this component. Approval of the final result is necessary from all partners prior to issuing the final degree. For each

individual course, the examination criteria of the individual teacher and the institute where the course is followed do

apply. Marks are given according to the ECTS system and communicated to the secretariat that records the master

file of each student. The student is awarded a credit if he/she passes based on the final grading according to criteria

that are clearly defined in advance and communicated through the ECTS file and instructions of the lecturer.

Although the master dissertation may be performed and defended at any of the main partner institutes, common

requirements and a common evaluation procedure has been agreed upon by the main partner institutes.

The

dissertation is defended before an examination committee appointed by the Management Board. It consists of two

jury members with specific expertise in the research field of the dissertation, a chair, a secretary and two observers

from each of the complementary partner institutes. Before the defence, promoters and jury members must submit an

evaluation form where they grade the various quality aspects of the written work. The promotor also grades the

performance of the student during the research activities. The presence of observers, which usually participate

through video conferencing, guarantees that each of the partner institutes is represented as to guarantee that students are fairly and equally evaluated between each of the partner institutes. During the oral defence, the student presents

his/her work in 10 minutes, and is questioned by the jury members during 15 minutes. After this, the entire examination committee provides additional grading on the presentation and the questioning parts of the oral defence.

To assist in the evaluation, a common evaluation form is used in each of the three partner institutes, where all evaluation criteria are listed and where the weight of the different evaluation criteria is mentioned. Based on the

form, a final grading is calculated, which is evaluated by the entire examination committee and eventually adjusted

upwards or downwards after discussion where all elements are considered. Immediately after the decision of the

examination committee, overall feedback on the master dissertation is provided by the chair of the examination committee.

For the partners involved in IMETE, it is already standard procedure to deliver and use diploma supplements for all

graduates. A joint diploma supplement, based on a model devised by the European Commission, the Council of

Europe and UNESCO/CEPES is issued to successful students who obtain the joint degree and forms an integral part

of this degree. The supplement provides information aimed at improving the international transparency and the fair

recognition of diplomas for academic and career purposes. Besides information on the nature, context and content of

the degree programme and the evaluation and ECTS system, it also contains a full transcript of courses and credits

obtained by the student, specializing at which institute this was done. The diploma supplement is edited according to

the prevailing format in the diploma awarding institutes into a commonly approved format, which is in accordance

with the legislation of the countries of the partner institutes.

3.4. The proposal explains how the student participation costs have been calculated, and provides a description on how the financial resources including complementary funding will be mobilised, allocated and managed within the partnership.

Each partner will dedicate own resources to the EMJMD implementation:

- UNESCO-IHE: The administrative assistance for IMETE programme relies on the staff of difference services at

the institute level, on the services of the central secretariat for student administration and on the administrative

staff of the faculty for academic issues such as exam registration. UNESCO-IHE is well know institute for several post-graduate programme dedicated to training in the water sector. One staff member will be employed

part-time from the IMETE budget. This staff member is, however, co-financed by the UNESCO-IHE and other programmes, and therefore full-time available for administrative enquiries of the IMETE students. Two lecturers are full-time available for enquiries of the IMETE students related to the general contents of the programme. Each individual lecturer is available for the IMETE students to answer questions related to his/her

own course.

- UCTP and Ugent : The administrative assistance for IMETE relies on the services of the staff of the International Relations departments at institution level and on the administrative staff of the institution for

academic issues such as student administration and exam registration. Two staff members per institute are fulltime

available for enquiries of the IMETE student related to the general contents of the programme. Each lecturer is available for the IMETE students to answer questions related to his/her own course.

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Financial and administrative coordination is organised at different administrative level of UNESCO-IHE (Delft).

One staff member in charge of all financial aspects of the course is made available for this. Another staff member

will coordinates the selection of scholarship applications and is the unique contact point for the students in case of

financial problems. The coordinator receives all incoming money (EU grant, scholarships and tuition fees of students

without scholarship) on a central account. The monthly allowances for scholarships students are transferred each

month from this central account to the personal bank accounts of the students. The fixed contributions to travel,

installation and other type of costs for scholarship students are transferred to the students' accounts in two yearly

instalments (at the end of the registration process). In a similar way, the weekly living allowances are paid to the

scholars involved in the programme. The contribution of the scholarship to the IMETE participation costs is not

transferred to the student's bank account, but is kept on the central IMETE account. It is restricted to the tuition fee,

which covers also the insurance and social security costs. A student agreement (see annex 5 of the draft consortium

agreement) is made in which the costs covered by the tuition fee are clearly indicated. Subsequently, the fees

requested by the consortium partner institutions to enrol visiting students at their institution are paid from this

account. These enrolment fees cover all operational expenses related to the course programme at UGent and UCTP,

but the enrolment fee paid to enrol students at UNESCO-IHE does not cover all operational expenses at UNESCOIHE

or at UGent, as already mentioned above. Therefore, other items paid from the central account are:

- additional operational expenses related to the study programme at UGent and UNESCO-IHE (e.g., organisation

of practical exercises, excursions and the summer school)

- staff and operational costs related to course coordination at UNESCO-IHE (secretary, organisation of welcome

activities and board meetings, hospitality and advertising...).

Excess budget still remaining after payment of all these items at the end of the year may be used to grant additional

scholarships (e.g. tuition fee waiver for selected students), thereby contributing to a higher number of students

enrolled and hence the sustainability of the programme. All partner institutions will be encouraged to find cofinances

for their thesis research (e.g., from companies or research projects involved). In that way, operational expenses related to thesis research can be gradually lowered, contributing to sustainability of the

programme when

EU funding ends. All partner institutes will be requested to report to the management board about these cofinances

to ensure that lowering the IMETE budget spent on thesis research does not have an impact on the quality of the MSc theses.

The IMETE budget is managed according to the specific European rules and general financial regulations of UNESCO-IHE as private institution. Financial transactions are clearly earmarked, registered, saved in the Profit

electronic accounting system and audited. Proof is collected. The secretariat of the coordinating institute is responsible for an open accounting system to the partners allowing full transparency of money flows and internal and external control.

Whether scholarship students are actively participating in the programme is monitored by their attendance in lectures

and practical exercises, and their presence on exams by the respective partner institutions. The partner institutions

are requested to report the presence of “ghost students”, which do not actively participate as agreed within the

Student Agreement, to the coordinator. The coordinator will subsequently stop payment of the scholarship to the

respective student after adequate warning. The student’s obligations concerning his/her attendance to the course

activities and academic performance, as well as the consequences for not respecting these obligations, will be

defined in the Student Agreement (Annex 5).

The student participation cost is fixed by the governing board of each institution. Obviously the running costs of

each partner are different because the three HEI are working in three different organizational environments. As IHE

is a private HEI, the tuition fees are significantly higher compared to UCT Prague and UGent to cover the a significant part of the running cost of the institute. The tuition fee is a contribution to cover UNESCO-IHE expenditure of education such as teaching, course development, education support overheads and the costs directly

related to the participants paid by IHE. Approximately 75% of the total average costs for the education of an individual MSc student is covered with the full tuition fee rate and 25% is covered from IHE's base funding.

Stichting IHE Delft is a not for profit foundation under Dutch laws. At UNESCO-IHE the tuition fee therefore covers the attendance of the IMETE selected courses as well as the use of a laptop for each MSc student with

24-hour internet access in all rooms in UNESCO-IHE hostels in Delft. Additional fee includes the costs of the insurance

that will be covered from the participation costs budget.

The EU lump sum for the consortium management will be also used to invite scholars and guest lecturers, a significant amount will be reserved to financially contribute to the organization cost of the summerschool that will

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be held at UGent. UNESCO-IHE's base funding will also be used to cover administration staff time dedicated to the

administrative and financial management of the IMETE programme.

Table 1 : IMETE incomes and expenditures

Annex 1-Full proposal.pdf - Adobe Acrobat Reader DC

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be held at UGent. UNESCO-IHE's base funding will also be used to cover administration staff time dedicated to the administrative and financial management of the IMETE programme.

Table 1 : IMETE incomes and expenditures

	UNESCO-IHE Delft	Ugent Gent	ICT Prague	Total
Participation costs for 3 intakes of 2 years First 18 months (90 ECTS):				
Tuition fee per semester	€ 6 300,00	€ 2 800,00	€ 2 500,00	
Total student number	84	84	84	
Total student number Partner participants	69	69	69	
Total student number Programme participants	15	15	15	
Last 6 months (Thesis, 30 ECTS)				
Student number (1/3 per partner)	28	28	28	
Insurance (for a total of 84 students) / 480 € per year	€ 80 640,00			
Total participation costs (tuition fees) for the three cohorts	€ 691 936,00	€ 313 600,00	€ 280 000,00	
Total participation costs (tuition fees + insurance cost) for the three cohorts	€ 772 576,00	€ 313 600,00	€ 280 000,00	€ 1 366 176,00
Maximum contribution by EC (15x9000 + 69x18000)	€ 459 000,00	€ 459 000,00	€ 459 000,00	€ 1 377 000,00
Balance Participation costs				€ 10 824,00
Management costs per cohort (intake)				
Coordination costs (staff time)	€ 25 000,00			
Summerschool (600€/student)		€ 16 800,00		
Cost for inviting guest lecturers	€ 2 000,00			
Scholars	€ 15 600,00			
Mobility of lecturers between partners	€ 8 000,00			
Meeting/workshop costs	€ 2 500,00			

Annex 1-Full proposal.pdf - Adobe Acrobat Reader DC

Total participation costs (tuition fees) for the three cohorts	€ 691 936,00	€ 313 600,00	€ 280 000,00	
Total participation costs (tuition fees + insurance cost) for the three cohorts	€ 772 576,00	€ 313 600,00	€ 280 000,00	€ 1 366 176,00
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Management costs per cohort (intake)				
Coordination costs (staff time)	€ 25 000,00			
Summerschool (600€/student)		€ 16 800,00		
Cost for inviting guest lecturers	€ 2 000,00			
Scholars	€ 15 600,00			
Mobility of lecturers between partners	€ 8 000,00			
Meeting/workshop costs	€ 2 500,00			
Marketing and promotion	€ 1 000,00			
Total Management costs per cohort	€ 54 100,00	€ 16 800,00		
Preparation costs first year	€ 20 000,00			
Total management costs for three cohorts including preparation costs	€ 182 300,00	€ 50 400,00		
Maximum contribution by EC	€ 170 000,00			
Balance Management costs				-€ 62 700,00
Total participation and management costs for three course editions (total five years)				
	€ 954 876,00	€ 364 000,00	€ 280 000,00	€ 1 598 876,00
Maximum contribution by EC	€ 629 000,00	€ 459 000,00	€ 459 000,00	€ 1 547 000,00
Balance	-€ 325 876,00	€ 95 000,00	€ 179 000,00	-€ 51 876,00
Contribution to the students' travel and installation costs	€ 513 000,00			
Living allowance for the students (fellowship)	€ 2 016 000,00			
Grant Total	€ 3 158 000,00	€ 459 000,00	€ 459 000,00	€ 4 076 000,00

Table 1 displays the expected incomes and expenditures by only considering if we can get funded for all the

requested scholarships as indicated in the EMJMD Grant request file. The insurance costs as well as the tuition fee will be taken from the participation costs budget. The insurance cost for each participants being 480€ per year. When comparing the income and expenses, a positive balance (i.e. about 11,000€) is observed for the participation costs and this amount will be used to grant additional scholarships or for tuition fee waiver for few selected self-paying students. In contrast, a negative balance (i.e. about 63,000€) regarding the management costs is observed due to cost of the UNESCO-IHE management staff involved in the programme. The deficit will be compensated by UNESCOIHE base funding.

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4. Impact and dissemination (maximum 20 points)

4.1. The proposal offers a convincing mid/long-term development/sustainability strategy and makes realistic projections beyond the EU funding period, and the ways to mobilise other funding sources for scholarships and self-funded students

The relevance and importance of the IMETE programme for worldwide sustainable development guarantees a continued need for IMETE alumni in the labour market. This forms a sound basis to continue to offer the IMETE degree upon termination of the EU funding period.

The enrolment projection is based on the number of students received in the previous years, but will need to be adjusted according to the number of applications received in the coming 5 years. In 2011 - 2017, IMETE attracted 18 to 27 students per cohort of which 2 to 10 were self-payers (6 on average). The variation in the number

of self-payers is mainly given by the year-to-year policy changes by the non-EU national funding agencies such as

Consejo Nacional de Ciencia y Tecnología (CONACYT, Mexico) or Comisión Nacional de Investigación Científica

y Tecnológica (CONICYT, Chile) has funded the study of significant number of students. There was not a clear trend in the number of self-payers (see A1.3) which implies that similar numbers of students can be expected in the

coming years, but more stable number of self-payers must be secured. According to our budget calculation, 15

students with external money sources must be attracted per year after the EU funding has stopped. In view of the

number of self-payers received so far, this scenario is clearly realistic if IMETE could get funded for three more

intakes by EU.

To obtain more stable inflow of self-paying students, activity of some associated partners of IMETE will be instrumental: e.g. The European Cooperation Center of the Ton Duc Thang university (Ho Chi Minh City, Vietnam)

agreed to help with students recruitment in Vietnam (see TDT Commitment Letter). We expect at least two extra

students per year from Vietnam in the coming years.

As IMETE previously received significant number of students from Latin America (mainly from Mexico and Chile), we agreed with UNAM, the largest university in Latin America, on their help with IMETE promotion and self-payers attraction in Mexico. Similarly, Pontificia Universidad Católica de Valparaíso (PUCV) committed itself

to help with students recruitment. With this help, we expect at least three students per year from Latin America.

Important role in student recruitment will play the Ghent University Global Campus in Korea

(www.ghent.ac.kr). Aggressive advertisement in South Korea will be done through this facility, which should yield

several self-paying students per year.

Additional funding from other sources will still be sought. UNESCO-IHE has very good experience with Bill & Melinda Gates Foundation as 30 MSc scholarships in their Sanitary Engineering programme are funded by BMGT (see www.unesco-ihe.org/scholarships-available-masters-sanitary-engineering). UNESCO-IHE has been

able to attract sponsors among large companies that support their Urban Water and Sanitation programme. Also

UGent receives funding from industries that support thesis research on the topics proposed by these industries (see

...). IMETE will build on the experience of its partners and actively seek this kind of co-funding.

Moreover, the IMETE consortium will develop an active funding acquisition strategy to seek for (co-)funding for scholarships from national governments, international organisations (UNESCO, UNDP), private sector (e.g.

large multinational enterprises) and donor organisations (e.g. European Investment Bank, World Bank, Asian Development Bank, African Development Bank). UNESCO-IHE is familiar with applications for fellowships from

international organisations, the private sector and donor organisation and will include IMETE in its application

package when applying for fellowships from these donors. Thus far, the overall success rate for application of

external fellowships by UNESCO-IHE is 15-20%, although this rate may vary in view of the evolution in number of

applications compared to the fixed budget allocations of these donors.

There are several ways to reduce the expenses of the IMETE programme when the programme will be running well, comprising cost reduction and acquisition of alternative funding sources. As mentioned already above,

all partner institutions will be encouraged to find co-finances for their thesis research (e.g., from companies and

research projects involved). In that way, operational expenses related to thesis research can be gradually lowered

without having an impact on the taught part and the overall quality of the offered education. Costs related to general

coordination and board meetings can also decrease once administrative procedures are well established.

Increased

integration of the courses in national and international programmes already existing at the partner institutions, as

well as integration of the IMETE secretariat and quality assurance committee in one of the similar secretariats and

committees which already exist at UNESCO-IHE for other programmes are envisaged to contribute to this cost

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reduction required upon termination of the financial support from the EC. In that way, staff employment at the

secretariat can be reduced. Costs for advertising could be lowered a bit when the programme becomes well-known.

In that way, the costs should have been reduced significantly after 5 years. However, in general it can be said that

the combination of cost reduction and active acquisition strategy for funding new scholarships will contribute to the

long-term sustainability of the programme.

In the five years when IMETE was supported by the EU funding, we established a sound academic programme with

a stable network of active academic and industrial associated partners. We also established good communication and administrative channels between the three core partners. IMETE was already quite successful in attracting self-funded students, as demonstrated by the fact that it is currently running without EU support for new students. However, additional years are still required to develop full sustainability based on stable inflow of students with own funding. Please note, that when IMETE was established, the EU aimed to ensure easier access to additional 5-year funding for already running EMJMD programmes and IMETE adjusted its policy to it. Therefore, additional funding is important for further continuation of the programme.

4.2. The proposal explains how the EMJMD will generate impact at institutional level (faculty/university), and how it enhances the internationalisation strategy of the consortium partners towards relevant stakeholders at national/European/international level. International exchange of students and lecturers will lead to the further development of teaching and language skills among the lecturers, and stimulate international research collaboration at the highest level of excellence. IMETE is also expected to contribute to promoting the integration of innovative teaching methods such as webbased learning tools which stimulate international cooperation and exchange. Several courses offered by UNESCOIHE can already be attended on line (<https://www.unesco-ihe.org/online-courses>). IMETE will also stimulate closer cooperation with non-academic partners, small, medium and large enterprises and governmental agencies, and an active involvement of these entities in the development of course curricula. The strong focus on innovation on top of research and education will stimulate effective implementation of the knowledge triangle. Additionally, IMETE focuses strongly on the internationalisation of the collaboration between academia and the non-academic sector. Most non-academic partners involved in IMETE are European companies having commercial activities in non-European countries with rapidly growing economies. These companies need for a new generation of well-educated and ambitious top-level young professionals to support their global activities is one of the primary reasons for the IMETE programme. It is anticipated that most alumni of IMETE will become employees of companies and governmental agencies having activities in Europe and abroad. They will act as ambassadors, not only of the IMETE programme, but also of the educational excellence and professionalism of each of the educational institutes they resided at, the companies and research centres they worked at, the European Higher Education area as a whole and the European values and way of living. Both the IMETE alumni association and the departmental and university alumni associations will allow to trace the alumni as they move on after graduating from the IMETE programme, and to see how they are achieving their professional and personal goals. An additional questionnaire sent out in the first and fifth year after graduation will also provide important and valuable feedback on how the programme has added value to their professional path and what opportunities and challenges the alumni have encountered.

The Joint Management Committee will monitor and report on the impact and performance of IMETE according to

(at least) the following key performance indicators:

- Educational activities and effectiveness of the training programme: results of programme evaluations by students and alumni;
- Research activities, innovation and dissemination within the scientific world: research results obtained by the students, scientific publications, policy decisions and patents having students and IMETE lecturers as (co)author (with acknowledgment of the funding source);
- Awareness raising and outreach: participation of IMETE staff, students and alumni in public debates and their contribution to media, novel web-based learning materials developed, degree of participation in the MOOC, seminars (streamed on the internet) and Summer School;
- Interorganisational and international exchange: involvement of non-academic sector in training and research

activities; number of internships and theses conducted in (close collaboration with) the non-academic sector

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(inside and outside Europe), and results of their evaluation by students and staff members involved; and

- Management activities: effectiveness of Joint Management Committee decisions and interaction with local

faculty and university boards, number and success rates of Erasmus+ scholarship applications, external scholarships and self-payers, geographic distribution and gender balance of applicants and students, results of evaluations of local and central services by students and scholars.

4.3. The proposal describes how the proposed EMJMD encourages entrepreneurship and a sense of initiative, describes how employers will be involved in course implementation in order to improve students competencies and skills and thereby enhance the employability of graduates

IMETE focuses on providing the European private and public sector with well-qualified scientists and engineers

with a wide range of technical and complementary skills, a vision on innovation and an entrepreneurial mindset. A

crucial tool for this is the compulsory course Elective project which allows the students to combine technical knowledge in different fields of environmental technology with transferable skills such as presentation skills, property rights management and translation of research into a business case. To achieve this, industrial partners will

be involved in the selection of real cases for individual projects, consultations and participation in the final assessment. This assessment will be done as a joint event, where the students will offer their project outcomes to the

industrial partners, i.e. potential investors. It is expected that the best projects may be really financed and realized by

the industrial partners. Within this course, the students will also be provided by three theoretical lectures on Enterprise economics, Business case development and Intellectual properties management given by the lecturers of

UCT Prague that has these courses in its catalogue (see e.g.

[https://student.vscht.cz/eng/predmety/index.php?id=80893590482558df0eb3024feabd0e75&tid=&do=predmet&kod](https://student.vscht.cz/eng/predmety/index.php?id=80893590482558df0eb3024feabd0e75&tid=&do=predmet&kod=N437061)

=N437061 or

[https://student.vscht.cz/eng/predmety/index.php?id=80893590482558df0eb3024feabd0e75&tid=&do=predmet&kod](https://student.vscht.cz/eng/predmety/index.php?id=80893590482558df0eb3024feabd0e75&tid=&do=predmet&kod=S437018)

=S437018).

The mandatory course Elective project is seen as the key element for the involvement of potentially interested

players from the public and/or private sector for the development of horizontal skills of the students.

To take into account the needs of future employers and to increase employability prospects for the IMETE graduates, professional sectors are involved also in:

- guest lectures within courses (e.g., the lecturers from ABITEC and CHMI involved in the first semester); experts from professional sectors, including the associated consortium members, discuss specific cases and

share their experience with the students.

- excursions to industrial projects (e.g. wastewater treatment plants and treatment plants for polluted soils and

sediments): these are organised in close collaboration with companies and network organisations active in the field of environmental remediation and pollution prevention (e.g., the associated members ASIO, Envisan, ABITEC, French Geological Survey, ATTERO or Veolia Water).

- Seminar on Environmental Technology: because external participants are also invited to attend the seminars,

and field trips and guest lecturers are involved, interaction between the IMETE students, the professional sector and governments is promoted. The seminar also aims at increasing the familiarity of professional sectors and governments with the IMETE programme and its students/alumni.

- placement/internships: non-educational actors will offer work placement possibilities (elective at Ghent University, 7 ECTS, 6 weeks).

- thesis research: at least 50% of thesis topics will be suggested by the industrial partners and based on their

nature will be co-supervised by the industrial representatives, performed partially at the industrial partners or co-financed by them.

- The industrial partners will also be involved in Programme Steering and the Quality Assurance committee.

This is the key instrument for the IMETE consortium to reflect the needs and experience of the potential employers.

4.4. The proposal describes the types and methods of promotion/dissemination mechanisms, its target groups, and the concrete tasks of the partners in the awareness-raising strategy of the EMJMD. It explains how it plans to attract excellent students worldwide.

Before the first cohort of students will be admitted, the Coordinator and central secretariat will set up a promotion,

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dissemination and communication strategy for IMETE, in close collaboration with all academic and non-academic

partners involved, and based on the vast experience from managing several international programmes, which will be

approved by the JMC. Important parts of this strategy will be in particular:

- Mechanism for the publication of a press release for each major event within IMETE such as kick-off meeting, recruitment of a new cohort of students, summer school, thesis defences etc. These press releases will be published at the websites of all partners and will be actively offered to professional journals.

- Detailed strategy for the communication through social media, mainly Twitter (communication towards journalists and professionals), Facebook (communication towards students) and LinkedIn (communication towards both students and professionals).

- Detailed strategy for the management of the project website so that it is kept up to date and contains relevant and targeted information.

- The involvement of students for the promotion of IMETE, as they will be trained in the use of social media (Communication and writing skills for engineers) and encouraged to use them for advertising their work performed within Elective Project.

The coordinator will be responsible for managing the promotion and dissemination activities and the partners,

students and scholars will clearly commit to fulfil their promotion/dissemination/communication duties as stated in

this plan. This commitment will be stated in the Consortium Agreement and specific agreements with the nonacademic

partners, students and scholars. In terms of promotion all educational partners have experience, departments, materials and networks in place to promote international English taught master degrees throughout the

world to all relevant parties and stakeholders.

IMETE will be promoted in each and every of the following ways:

- through a dedicated IMETE programme website, hosted on the Ghent University servers, managed daily by

the coordination secretariat with input from all partners (educational, Associated and Supporting), containing all necessary information about the programme content and structure, partners, learning outcomes, final degree awarded, Dissertation and Internship, admission and selection, Erasmus+ programme

and the EMA student and alumni association, practical information about housing, fees, insurance, visa, etc., a FAQ section, Erasmus+ and other scholarship opportunities. All websites and social media accounts hosted at and managed by Ghent University are monitored and provide statistics on site visits, including country of origin, search paths and terms, clicks and comments. This allows for the promotional efforts online to be closely monitored, evaluated and steered. All Erasmus+ websites also take advantage of the lessons learnt in previous EMJMD and the recommendations by EACEA.

- through electronic and hardcopy distribution of promotional material in relevant networks, conferences, fairs

and governmental agencies such as DAAD (Germany), KIC Raw Materials network, R2T network and CAPTURE (see section A.1.6), European Higher Education Fairs, EMA Student and Alumni Association, ICA (Association for European Life Sciences Universities), IROICA (European Network of International Relations Officers at Higher Education Institutes for Agricultural and Related Sciences), NASULGC (National Association of State Universities and Land-Grant Colleges), staff and student exchange networks such as Erasmus+, Tempus, Atlantis, RISE, etc., personal contacts of the (visiting) lecturers, Associated and Supporting partners, both of IMETE and other relevant educational programmes,

- Through advertisements in international journals, newsletters of professional (international) network organisations in the field of geology, resource management, material sciences, environmental science and technology, e.g. the International Water Association (IWA), the International Union of Soil Sciences (IUSS), the European Geosciences Union (www.egu.eu),

- through the international relations offices (IRO) at faculty and university level of the three educational partners, specifically by the International Training Centre of the Faculty of Bioscience Engineering (www.lifesciences.ugent.be) and the Centre of Environmental Science and Technology (www.cest.ugent.be) of Ghent University who provide services to a variety of target groups in a wide range of countries, with education, training and research in the field of environmental technology and engineering as main focuses. UNESCO-IHE targets specific regions (focus on Asia) using google ads and also has a targeted approach for South America and the African continent. The International Relations Offices of Ghent and UNESCO-IHE are already contributing to the international promotion of their English taught master programmes, including

the EMJMDs, thereby acknowledging the promotional benefit which the 'excellence'-label of the EMJMDs brings to the entire institute. Frequent electronic mailings are sent out to partner institutes of the universities.

The IROs ensure that publicity material of IMETE will be sent to worldwide international student fairs attended by the governmental agencies of the respective countries.

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- Through social media: IMETE has a Facebook account www.facebook.com/imete.emmc?fref=ts. A LinkedIn as well as a Twitter account will be also created.

- Through printed media such as flyers and posters, publications of the three host institutes will include the IMETE programme, and dedicated material will be designed by the International Training Centre of the Faculty of Bioscience Engineering at Ghent University. These materials meet the specific needs of the programme and are targeted specifically to the IMETE audience we want to reach, at the same time representing the clear visual identity of the Erasmus+ programme and the Consortium.

4.5. If relevant, the proposal describes how the materials, documents and media produced will be made freely available and promoted through open licences, and does not contain disproportionate limitations.

UNESCO-IHE has an Open course ware platform <https://www.unesco-ihe.org/open-courseware> where the following

courses offered for IMETE students (among others) are already freely available :

- Constructed Wetlands for Wastewater Treatment
- Biological Wastewater Treatment: Principles, Modelling and Design
- Constructed Wetlands for Wastewater Treatment

UNESCO-IHE will also develop in collaboration with TU Delft Massive Open Online Courses (MOOC) as it has been recognised that MOOCs are effective marketing tools for the degree programmes.

As part of the lifelong learning offerings, it is anticipated that UNESCO-IHE will strengthen its activities in the field

on line course by proposing many additional courses (<https://www.unesco-ihe.org/online-courses>). There are already

several courses falling in the interest of the IMETE programme available. However those courses are not freely

available. Also Graduate Professional Diploma Programme (GPDP) in the following fields Sanitation and Sanitary

Engineering, Drinking Water Supply, Water and Wastewater Treatment, Urban Flood Management and Water Network Infrastructure, and Pollution Prevention and Control will be offered.

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Projects/activities implemented by the consortium organisations in relation with the proposal and **Skills and expertise** of key staff involved in the project

This section must be completed for each organisation involved in the consortium (applicant and partners) and their

key staff members directly involved in the project. The information provided in this part will be used specifically in

relation to the assessment of the "Quality of the project team and the cooperation arrangements".

Each organisation must complete separately the tables of this form. The partner number of each organisation has to

be indicated, followed by the respective organisation name. The number allocated to each organisation (P1, P2,

P3 ... Pn) should respect the same numbering used in the eForm. Filling-in the table by each partner should be done

by copy-pasting the respective table.

Projects/activities implemented by the consortium

Partner number **P1**

Organisation name **Stichting IHE Delft**

Please provide a short presentation of projects/activities (e.g. title, duration, funding programme, partners involved, etc.)

implemented by your organisation relating to the area covered by the proposed project. (maximum 2.000 characters)

2009-2017 : The Environmental Technologies for Contaminated Solids, Soils and Sediments (ETeCoS3) EMJD programme provides education and research at PhD level, training its doctoral candidates to think globally and cowork

in multidisciplinary research teams. The ETeCoS3 EMJD is centered around three key topics in environmental

pollution: i) heavy metals, ii) recalcitrant organic pollutants and iii) contaminated solids. The EMJD focuses on

fundamental and applied aspects to treat and remove these pollutants as well as on the development of recovery and

reuse technologies with market potential. ETeCoS3 composed of 3 beneficiaries (University Cassino and Southern

Lazio – Italy (coordinator), University Paris-Est – France, UNESCO-IHE – The Netherlands), 12 academic associated

members, 3 professional associations and 1 SME associated member, from 10 different countries, including 3 thirdcountries.

The PhD programme awards a fully recognized and accredited joint Doctoral Degree in Environmental Technology.

2015-2018: The Advanced Biological Waste-to-Energy Technologies (ABWET) MSC EJD provides education and research at PhD level on environmental technologies that convert waste materials into bioenergy, training doctoral candidates to think globally and work in multidisciplinary research teams. ABWET is centred around environmental technologies for treatment of waste, with a focus on anaerobic treatment processes, valorisation of the digestate and biofuel clean-up. ABWET focuses on fundamental and applied research of different treatment technologies as well as on the development of innovative recovery and reuse technologies with enhanced market potential. A strong industrial participation brings a close connection to practical problems. The current three ETeCoS3 beneficiaries issue a fully joint PhD degree in Environmental Technology will expand the degree awarding consortium with a 4th beneficiary, Tampere University of Technology – Finland.

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Skills and expertise of key staff

Partner number **P1**

Organisation name **Stichting IHE Delft (UNESCO-IHE)**

Please provide a summary of relevant skills and experience of the key staff directly involved in the project, including where relevant

a list of recent publications related to the domain of the project. At least one (1) person must be identified for each consortium

member with a maximum of three (3). Please adapt the table according to the number of key staff per organisation. (maximum

750 characters for each person)

1) Name of staff member xxxxxxxxx

In September 2016, xxxxxxxxx joined UNESCO-IHE as chair professor in Environmental Science. He has a significant experience in teaching at MSc level mainly in Environmental Chemistry, Biogeochemistry, Environmental

Microbiology, Biological wastewater treatment and Biological organic waste treatment. He is involved in 2 joint PhD

programmes. The Erasmus Mundus Joint Doctorate ETeCoS3 (The Environmental Technologies for Contaminated

Solids, Soils and Sediments) and the Marie Skłodowska-Curie - ITN European Joint Doctorate ABWET (Advanced

Biological Waste-to-Energy Technologies) (xxxxxxx).

2) Name of staff member xxxxxxxxx

xxxxxxx is a senior lecturer in resource recovery at IHE since 2012 and holds a PhD degree in Chemical Engineering from IIT Madras (India). He is the coordinator of the MSc programme in Environmental Technologies

for Sustainable Development between AIT and IHE. He teaches courses on industrial resource management and

cleaner production, air pollution control, biological wastewater treatment, eco-industrial parks, aquatic ecosystems

and scientific writing. He supervises MSc and PhD students on their thesis on topics related to bioprocesses for waste

gas, wastewater treatment and resource recovery and the development of artificial intelligence-based models for

environmental systems.

3) Name of staff member xxxxxxxxx

xxxxxxx is Associate Professor of Sanitary Engineering. He will be involved as main lecturer

and coordinator of the Advanced Wastewater Treatment Technologies track offered by IHE Delft. He is also coordinator of coordinator of the Online Course on "Biological wastewater treatment: Principles, modelling and design. During his professional career and besides being involved in research and education at MSc and PhD-level, he has also taken part in different consultancy projects for both public and private sector concerning municipal and industrial wastewater treatment systems (xxxxxxxxxx).

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Projects/activities implemented by the consortium organisations in relation with the proposal and **Skills and expertise** of key staff involved in the project

This section must be completed for each organisation involved in the consortium (applicant and partners) and their

key staff members directly involved in the project. The information provided in this part will be used specifically in

relation to the assessment of the "*Quality of the project team and the cooperation arrangements*".

Each organisation must complete separately the tables of this form. The partner number of each organisation has to

be indicated, followed by the respective organisation name. The number allocated to each organisation (P1, P2,

P3 ... Pn) should respect the same numbering used in the eForm. Filling-in the table by each partner should be done

by copy-pasting the respective table.

Projects/activities implemented by the consortium

Partner number **P2**

Organisation name **Universiteit Gent**

Please provide a short presentation of projects/activities (e.g. title, duration, funding programme, partners involved, etc.)

implemented by your organisation relating to the area covered by the proposed project. (maximum 2.000 characters)

2011-2017: The Erasmus Mundus Master programme International Master in Environmental Technology and Engineering (IMETE) forms a new generation of professionals with a broad scientific basis, capable of analysing and

solving multidisciplinary environmental problems related to the deterioration of our environment, with focus on

prevention and remediation of environmental pollution. IMETE has in the five years of its existence trained 108

students, which all followed a common mobility path, starting at UNESCO-IHE in the first semester, and continuing

over UCT Prague and Ghent University in the second and third semester, respectively. In the fourth semester, students

performed master dissertation research at one of the main partner institutes or at/with one of the 17 academic

associated partners or one of the 9 associated partners from industry.

2010-2014: The Tempus Project CIBELES contributed to a Bologna-consistent reform of environmental study programmes at the Bachelor, Master and PhD levels in the region of Central Asia and the Caucasus. The project was

coordinated by the University of Göttingen, and involved 7 EU country partners (Belgium, Bulgaria, Germany, Hungary, Italy, Poland, Spain) and 6 partner countries (Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan,

Uzbekistan). Goals of the project included to implement the Bologna process in environmental studies and to

implement and reform curricula at the BA level in forestry, industrial safety and water and soil environmental science.

Skills and expertise of key staff

Partner number **P2**

Organisation name **Universiteit Gent**

Please provide a summary of relevant skills and experience of the key staff directly involved in the project, including where relevant

a list of recent publications related to the domain of the project. At least one (1) person must be identified for each consortium

member with a maximum of three (3). Please adapt the table according to the number of key staff per organisation. (maximum

750 characters for each person)

4) Name of staff

member xxxxxxxxxx

xxxxxxx is full professor in Biogeochemistry of Trace Elements. He conducts research in the area of biogeochemistry of trace elements. He is author or co-author of more than 120 international publications (h-index

36), 110 congress contributions and 8 chapters in books. He has an extensive teaching assignment in courses related

to analytical chemistry, soil chemistry and environmental chemistry. Since 2011, he is the coordinator of the Erasmus

Mundus programme International Master in Environmental Technology and Engineering. He has acted as programme

director and is member of several programme committees at the faculty of Bioscience Engineering.

List of publications: <http://lib.ugent.be/bibliografie/801000663701/>

5) Name of staff

member xxxxxxxxxx

xxxxxxx has working experience both in the university and in private companies. He has worked with ENECO Energie Belgium, and then worked for several years as research & technology platform coordinator (90%)

and as guest professor at Ghent University (10%) before fully joining Ghent University as associate professor in

October 2016. He is also visiting professor at Milano University, Italy. He has significant teaching experience in these

and other institutions. Since October 2016, he is full time associate professor at Ghent University. His research

focuses on environmental chemistry and resource recovery in the modern agro-industry.

List of publications: <http://lib.ugent.be/bibliografie/801001502446/>

6) Name of staff

member xxxxxxxxxx

xxxxxxx is associate professor in applied analytical and environmental chemistry. His research is into trace elements and engineered metallic nanoparticles. He was founder and co-organiser of the “International

Symposium on Wetland Pollutant Dynamics and Control (WETPOL)”. He teaches courses in environmental analytical chemistry. He was until recently member of the management board of the International Master in Environmental Technology and Engineering and has recently initiated an international programme on resource

recovery, the International Master of Science in Sustainable and Innovative Natural Resource Management.

List of publications: <http://lib.ugent.be/bibliografie/801001479511/>

Projects/activities implemented by the consortium organisations in relation with the proposal and **Skills and expertise** of key staff involved in the project

This section must be completed for each organisation involved in the consortium (applicant and partners) and their

key staff members directly involved in the project. The information provided in this part will be used specifically in relation to the assessment of the "Quality of the project team and the cooperation arrangements". Each organisation must complete separately the tables of this form. The partner number of each organisation has to be indicated, followed by the respective organisation name. The number allocated to each organisation (P1, P2, P3 ... Pn) should respect the same numbering used in the eForm. Filling-in the table by each partner should be done by copy-pasting the respective table.

Projects/activities implemented by the consortium

Partner number **P3**

Organisation name **VYSOKA SKOLA CHEMICKO-TECHNOLOGICKA V PRAZE**

Please provide a short presentation of projects/activities (e.g. title, duration, funding programme, partners involved, etc.)

implemented by your organisation relating to the area covered by the proposed project. (maximum 2.000 characters)

European Joint Doctorate programme Sustainable Resource, Product and Energy Recovery from Wastewater (SuPERW, N°676070, Horizon 2020) is run by five academic partner institutions (UGent – coordinator, TUDelft, RWTH Aachen, UCT Prague and UPC Barcelona) and 12 non-academic partners from different European countries. SuPERW

awards 3-year PhD scholarships to 15 ESRs. Duration: 2016 - 2020.

International Research Staff Exchange Scheme (IRSES) project Advanced Biological Waste-to-Energy Technologies

(BioWET, No. 269255) integrated a number of advanced biotechnologies for waste-to-energy conversion. The project

was coordinated by UCT Prague and the partners were UNESCO-IHE and the University of South Florida. During

2012 – 2015, we facilitated 5 long-term secondments of ESR and several short-term ER visits. We established complementary funding for USF researchers based on NSF PIRE (Partnerships for International Research and Education) project "Context Sensitive Implementations of Synergistic Water-Energy Systems".

International Research Staff Exchange Scheme (IRSES) project Renewable energy production through microalgae

cultivation: Closing material cycles (Algaenet, No. 295165). The consortium of CSIC (Spain – coordinator), UCT

Prague (Czechia), UHU (Spain), PUCV (Chile), UANTOF (Chile) and UFRO (Chile) has carried out 27 exchanges of

researchers, which correspond to 105 person months. The total budget was 709 800 € and the project took place from

2012 – 2016.

The Erasmus Mundus Master in Membrane Engineering for a Sustainable World, EM3E-4SW (before EM3E master).

In 2010, it was labelled by the European Commission as Erasmus Mundus Master for the period 2011-2017. In 2016,

the European Commission renewed the label under the Erasmus+ programme. The master involves 6 Higher Education Institutions of 5 European countries: UTwente (Netherlands), UNL (Portugal), UZaragoza (Spain), UCT

Prague (Czech Republic), UT3PS (France) and UMontpellier (France, coordinator).

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Skills and expertise of key staff

Partner number **P3**

Organisation name **VYSOKA SKOLA CHEMICKO-TECHNOLOGICKA V PRAZE**

Please provide a summary of relevant skills and e

experience of the key staff directly involved in the project, including where relevant a list of recent publications related to the domain

of the project. At least one (1) person must be identified for each consortium member with a maximum of three (3). Please adapt

the table according to the number of key staff per organisation. (maximum 750 characters for each person)

7) Name of staff

member xxxxxxxxxxx

xxxxxxxxxx is full professor in Environmental Chemistry and Technology. He teaches courses focused on biological wastewater treatment, design of wastewater treatment technology, anaerobic digestion and sludge

management. He supervises M.Sc. and Ph.D. students on their thesis on topics related to above mentioned courses and

conducts research in these areas. He is author or co-author of more than 50 international publications with more than

1100 citations. He has acted as vice-dean of the Faculty of Environmental Technology of UCT Prague. He is member

of Management Committee of IWA (International Water Association) Specialist Groups on Anaerobic Digestion.

List of publications: <http://tvp.vscht.cz/19015>

8) Name of staff

member xxxxxxxxxxx

xxxxxxxxxx, is full professor of Microbiology. She conducts research in the area of environmental and food microbiology and biotechnology. She is author or co-author of more than 192 international publications (hindex

24), 130 conference contributions and 3 chapters in books. She teaches in courses related to microbiology (environmental, pharmaceutical, food microbiology). She supervises MSc and PhD students on their thesis on topics

related to environmental microbiology, food microbiology and biotechnology. She was involved in nearly 35 national

and international projects.

9) Name of staff

member xxxxxxxxxxx

xxxxxxxxxx graduated as PhD at the University of Chemistry and Technology Prague, The Czech Republic, in 2006.

Since then, he held 2 post-doc positions: at Wageningen University and UNESCO-IHE Institute for Water Education.

His main research area is innovative wastewater treatment, especially resource recovery from wastewater (energy and

nutrients recovery). Since 2015, he has held associate professor position at the Department of Water Technology and

Environmental Engineering (UCT Prague). Besides his research duties, he teaches and cooperates with number of

industries in the fields of anaerobic wastewater technology and decentralized sanitation.

List of publications at <http://tvp.vscht.cz/department/19024>

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Other EU grants

Please list the projects for which the applicant organisation only (P1), respectively the department responsible for the management

of this application, has received financial support from EU programmes or initiatives during the last financial year.

EMMC 2011-1594 Stichting IHE Delft Flood Risk Management
EMMC 2011-0172 Ghent/Stichting IHE Delft IMETE
Erasmus+ mobility 2016-1-NL01-
KA103-022819
Stichting IHE Delft KA103
Erasmus+ mobility 2016-1-NL01-
KA107-022847
Stichting IHE Delft KA107
Horizon 2020 ITN 643071 Cassino/Stichting IHE Delft ABWET
EuropeAid DCIFOOD/
2010/242-588
UNESCO-IHE Cuba Food
EuropeAid DCI-ENV/2010/247-
301
UNESCO-IHE Cuba environment
EuropeAid 2011/257-183 UNESCO-IHE CaPiWua
Horizon 2020 689162 Stichting IHE Delft AfriAlliance
Horizon 2020 689744 Stichting IHE Delft Ground Truth 2.0
Horizon 2020 690900 UPB/Stichting IHE Delft Data4Water
Horizon 2020 685793 Aqualia/Stichting IHE Delft MIDES
Horizon 2020 688930 ICCS/Stichting IHE Delft SCENT
Horizon 2020 688928 RCS/ Stichting IHE Delft Waterspoutt
Horizon 2020 689150 LEI DLO/ Stichting IHE Delft SIM4NEXUS
Horizon 2020 730497 UCM/ Stichting IHE Delft NAIAD
FP7 COFUND
Programme
606838 Stichting IHE Delft Experienced Water Postdoc
Fellowship
Erasmus+ HE
International
Capacity Building
2016-0021/001-001 Universite Mohammed V de
Rabat/Stichting IHE Delft
MAGIC (Regional PhD School
based on Innovative
HydroPlatform in Water and
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Environment to Enhance
MAGhreb Inter-Research
Centres)

Add lines as necessary

Please also list any EU grant applications submitted by the applicant organisation (P1), respectively the department responsible for the project proposal, as well as by partners for the same /similar /closely linked project and mention the EU Programme concerned and the amount requested.

EMJMD Floodrisk 4.076.000 €

Add lines as necessary__