



Università  
Ca' Foscari  
Venezia

Presidio della Qualità  
di Ateneo

# 2020 Annual Research and Third Mission Report

Department of Environmental Sciences,  
Informatics and Statistics

Reference period 2017-2019

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## About this document

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This document reports on the research and third mission activities of the Department of Environmental Sciences Informatics and Statistics (DAIS), with focus on the quality of the research products, as requested by the “Assegnazioni Dipartimentali per la Ricerca” (AdiR) regulations.

This document was authored by the DAIS Research Committee with the following goals:

- to monitor the quality of the research products published by DAIS researchers;
- to monitor the quality of the third mission activities conducted by DAIS researchers;
- to evaluate future internal and external evaluations DAIS is subject to;
- to design supporting actions to improve the research environment of the department;
- to measure the effectiveness of the initiatives by the Research Committee.

# PART I: Research objectives

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## Section A - Statement of the Department research objectives and indicators

The **Department of Environmental Sciences, Informatics and Statistics (DAIS)** exploits its expertises in three research areas: environmental sciences, informatics and statistics. DAIS is engaged in multidisciplinary research produced by the recognized experience of its researchers in the analysis and management of environmental systems, with particular attention to sustainability and climate change themes, in basic and applied research in computer science, computer engineering and complex systems, in applied and basic research on statistics, and finally in technologies for preservation of cultural heritage. The research activity generates significant impact on educational activities through a complete degree programme (Bachelor's, Master's and PhD programmes) in Environmental Sciences and Computer Science, a Master's degree programme in Conservation Science and Technology for Cultural Heritage, a Master's programme in Biotechnologies for Sustainable Development and the Environment, and two multidisciplinary PhD programmes in Science and Management of Climate Change and in Polar Sciences.

DAIS research focuses on the following areas: biology and ecology, chemistry (environmental, analytical and for the conservation of cultural heritage), environmental engineering, computer science and engineering (AI and data mining, cybersecurity, secure and scalable distributed software, HCI, algorithms, bioinformatics), earth science and statistics. Transversal topics of research include climate and the socio-economic effects of its transformations, complexity, preservation of cultural heritage, monitoring, risk, environmental security and sustainability. Research is developed in collaboration with public bodies and local firms. This synergy together with the multidisciplinary approach allows the department to exploit a wide spectrum of expertises and to develop truly innovative research.

The objectives of the Department are formalized in the (triennial) Department Development Plan 2019-2020 (DDP)<sup>1</sup>, which is indeed based on the University Strategic Plan. We report below the research objectives as in the triennial DDP:

**DDP-1 Amount of research funding:**

- Indicators and targets:
  - i EU + other funding  $\geq 3.7$  M €

**DDP-2 Extent of interdisciplinary research:**

- Indicators and targets:
  - i Staff members actively involved in the Global Challenges Teams<sup>2</sup>  $\geq 50\%$

**DDP-3 Number of ERC grantees / Marie Skłodowska-Curie fellows:**

- Indicators and targets:
  - i Number of ERC grantees or MSC fellows per year  $\geq 1$

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<sup>1</sup>

[https://www.unive.it/pag/fileadmin/user\\_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/DocProgrammatici/PianoTriennale\\_DAIS\\_2016-2018.pdf](https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/DocProgrammatici/PianoTriennale_DAIS_2016-2018.pdf)

<sup>2</sup> <https://www.unive.it/pag/11651/>

#### **DDP-4 Research infrastructures and estates:**

- Indicators and targets:
  - i Epsilon Building (70% progress) and departmental shared resources.

#### **DDP-5 Overall research output:**

- Indicators and targets:
  - i Increase quality of research output without decreasing its volume.

DAIS must undergo several evaluation processes within the University and within the Ministry of Education, University and Research (MIUR). Each process exploits different indicators and enforces different requirements. Most of those process share the VQR<sup>3</sup> scheme for the evaluation of scientific publications.

The focus of this document is on the DDP-5 Overall Research Output. In this regard, **DAIS aims at improving the quality of its research output** without decreasing its volume. To do so, the departmental Research Committee (CdR<sup>4</sup>) defines the goals described below, which are the subject of the analysis reported in this document. These goals were defined by keeping in mind the many evaluation procedures the department must undergo and previous programmatic documents.<sup>5</sup>

Aiming at improving the research output of the department, DAIS pursues the following objectives:

#### **O1.High Quality of Research Output**

- Most of the evaluation the department must undergo are based on the ANVUR research product scoring system. The quality of research products is classified as Excellent, High, Average, Fair, Limited, unclassified. Several indicators are computed on the basis of these scores for the evaluation of large institutions rather than individual researchers. The most relevant indicators are given by the average score of the research products by an institution, and the fraction of research products classified as either Excellent or high quality.

#### **O2.Interdisciplinary Research**

- DAIS is multidisciplinary by nature. It is in the interest of the department to exploit the several expertises in different scientific areas so as to improve the quality of its research.

#### **O3.High Quality Recruiting**

- The ANVUR evaluation of the publication record of newly recruited and promoted staff plays an important role in the evaluation of the department. DAIS aims at recruiting top-level researchers and allowing them to successfully conduct their research from the very first day in the department.

#### **O4.Internationalization**

- DAIS supports exchanges with international institutions so as to foster collaborations and research of international relevance.

For each objective, we identified a set of key performance indicators. Nevertheless, as we believe indicators alone cannot provide an exhaustive picture of the plenty of research activities and efforts, this document also takes into account additional indicators that are deemed useful for the sake of monitoring. Part II provides a quantitative analysis of the department's productivity.

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<sup>3</sup> V.Q.R. is a national evaluation process of research quality <http://www.anvur.it/attivita/vqr/>

<sup>4</sup> The acronym CdR comes from its name in Italian language "Comitato della Ricerca".

<sup>5</sup> DAIS Assicurazione della qualità <https://www.unive.it/pag/27538/>

To achieve the objectives above, DAIS undertakes both supporting and incentivizing actions, the latter being the focus of our interest. Indeed, the CdR is also interested in actions that do not have a direct impact on a specific indicator but that are considered useful for an “healthier” research environment. DAIS draws on the following instruments to co-support the department research activities:

- an annual support to individual researchers (up to € 3000, on the basis of their productivity) (ADIR<sup>6</sup>);
- post-doc positions and equivalent (“assegni di ricerca”) may receive up to 50% co-funding;
- co-funding of so called “joint” post-doc positions, up to 75% (an initiative started in 2019 and discussed later on in this report);
- IRIDE, which provides two kinds of support (<€5000): *i*) newly recruited researchers receive an “installment” fund, and *ii*) small individual research initiatives receive funding to support incoming and outgoing visits for short-term stays;
- financial support to seminars by visiting scholars.

Part III of this document discusses in greater detail these incentive instruments.

Part IV illustrates the most relevant third mission activities conducted by the department.

Part V of this document discusses key-performance indicators for each of the above objectives and sets targets to be achieved in the next future.

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<sup>6</sup> Research Support Department Funds “Assegnazioni Dipartimentali per la Ricerca” (AdiR)

## PART II: Human resources and scientific production

### Section A – Human resources

#### Subsection A.1 – Research Personnel

##### STAFF

ROLE	2017	2018	2019
Full Professors	19	17	17
Associate Professors	21	24	26
Researchers	11	9	9
Fixed-Term Researchers ( of which with tenure track [“Ric. t.d. art.24 c.3-b”] )	7 (3)	16 (8)	19 (11)
<b>TOTAL</b>	<b>58</b>	<b>66</b>	<b>71</b>

*Detected at 31 December of every year*

The total number of staff members increased significantly by 14% in 2018 and 8% in 2019. Note that in 2016 (not reported in the above table), the total number of staff members was 59, with a number of fixed-term researchers as low as 5. The increment mostly consists in fixed-term researches, more than half of them with tenure (see also Appendix I - Subsection A – Personnel distribution per year). We highlight that the department has been investing in new degrees and therefore the foreseen *permanent* staff members will help with the new teaching activities. Indeed, new initiatives are expected to start in the near future, for which we believe that the department still needs an increment in the total number of staff members.

The number of Associate Professors in 2019 (26 units) is similar to that of 2016, with 1 retirement, 1 new hiring and 2 former fixed-term researchers. The number of Full Professors is well below the required 50% of total Professors (Full+Associate) as requested by University hiring regulations. Such ratio is about 40% in 2019.

##### POST-DOCS AND PHD STUDENTS

ROLE	2017	2018	2019
Research fellows / Post-Docs [Assegnisti]	55	47	47
PhD students	23	22	31

*Research fellowship / PhD course starting year*

The number of PhD students increased significantly in 2019 from 22 to 31 students. This due to the activation of the PhD programme in Polar Sciences. The number of postdocs in 2019 (47 units) is



the same as the previous year. The good number of postdocs and fixed-term researches discussed above suggests that the department is in good health.

## STAFF – DISTRIBUTION BY ACADEMIC DISCIPLINE

CUN SCIENTIFIC AREA	ITALIAN SSD - DESCRIPTION	2017	2018	2019
01 - MATHEMATICS AND INFORMATICS	INF/01 - INFORMATICS	18	21	23
	MAT/08 - NUMERICAL ANALYSIS	1	1	1
03 - CHEMISTRY	CHIM/01 - ANALYTICAL CHEMISTRY	6	7	7
	CHIM/06 - ORGANIC CHEMISTRY	2	2	2
	CHIM/12 - CHEMISTRY FOR THE ENVIRONMENT AND FOR CULTURAL HERITAGE	5	7	8
04 - EARTH SCIENCES	GEO/02 - STRATIGRAPHY AND SEDIMENTOLOGY	1	2	2
	GEO/08 - GEOCHEMISTRY AND VOLCANOLOGY	3	3	4
	GEO/12 - OCEANOGRAPHY AND PHYSICS OF THE ATMOSPHERE	1	2	2
05 - BIOLOGY	BIO/01 - GENERAL BOTANY	0	1	1
	BIO/02 - SYSTEMATIC BOTANY	1	1	1
	BIO/03 - ENVIRONMENTAL AND APPLIED BOTANY	1	1	1
	BIO/05 - ZOOLOGY	1	1	1
	BIO/07 - ECOLOGY	7	6	6
08 - CIVIL ENGINEERING AND ARCHITECTURE	ICAR/02 - HYDRAULIC STRUCTURES, MARITIME ENGINEERING AND HYDROLOGY	1	1	1
09 - INDUSTRIAL AND INFORMATION ENGINEERING	ING-IND/11 - BUILDING PHYSICS AND BUILDING ENERGY SYSTEMS	0	1	1
	ING-IND/25 - CHEMICAL PLANTS	2	2	2
	ING-INF/05 - INFORMATION PROCESSING SYSTEMS	0	0	1
13 - ECONOMICS AND STATISTICS	SECS-P/05 - ECONOMETRICS	1	1	1
	SECS-S/01 - STATISTICS	7	6	6
	<b>TOTAL</b>	<b>58</b>	<b>66</b>	<b>71</b>

The staff members are distributed across 7 Scientific Areas as shown in the table above, where the areas of Computer Science and Chemistry are the largest. Indeed the Department includes very

different areas of research and even the Computer Science area, which includes about  $\frac{1}{3}$  of the department, should be considered as composed of several sub-areas.

The 5 new staff members are spread as follows: 1 unit in Area 09 - Industrial And Information Engineering which falls in to the new SSD of Information Processing Systems, 1 unit in Area 04 - Earth Sciences, 1 unit in Area 03 - Chemistry, and 2 units in Area 01 - Mathematics And Informatics. A growth in the SSD Information Processing Systems is envisioned in the near future due to a development of the informatics area towards engineering.

	<b>Full Professor</b>	<b>Associate Professor</b>	<b>Researcher</b>	<b>Total</b>
BIO	1	7	2	10
CHIM	5	4	8	17
GEO	1	3	4	8
INF	7	7	11	25
ING-IND	1	2	1	4
SECS	2	3	2	7
<b>Total</b>	<b>17</b>	<b>26</b>	<b>28</b>	<b>71</b>

*Breakdown by Role and Scientific Macro Area as of 31/12/2019*

The above table, limited to 2019, gives a better overview of the department composition in terms of scientific macro areas and personnel roles. By “macro area” we mean that “ING-INF/05 - Information Processing Systems” and “INF/01 - Informatics” are merged into the INF macro area, while “08 - Civil Engineering And Architecture” and remaining units in “09 - Industrial And Information Engineering” are merged into the ING-IND macro area. The other macro areas are self-explanatory. We highlight that the role distribution is very different across different areas. Consider for instance the BIO macro area where there is only 1 Full Professor out of 10 people and a very limited number of fixed-term researchers. On the other hand, the CHIM area includes more full professors than associate professors. We suggest that the upcoming hirings and promotions should take into account the ratio between full professors and all professors, and they should also provide support to areas with a limited number of researchers, especially young researchers.

Phd Students				
	33°	34°	35°	Grand Total
BIO/01		2		2
BIO/02	1	1		2
BIO/05		2		2
BIO/07		1	2	3
CHIM/01	4	2	4	10
CHIM/12	1	2	1	4
GEO/08	1	1	3	5
GEO/12		1		1
INF/01	7	3	7	17
ING-IND/25	2	1		3
SECS-P/01		1	1	2
SECS-P/05	1			1
Other	5	3	5	13
<b>Grand Total</b>	<b>22</b>	<b>20</b>	<b>23</b>	<b>65</b>

*PhD breakdown by SSD and by Cycle*  
*"Other" means not yet decided or supervisor*  
*belonging to other departments*

The breakdown of PhD students by SSD and by PhD cycle (corresponding to the 3 year of the monitored timeframe) also provides a few interesting hints about the future development of the department. At first glance there is a distribution of PhD students proportional to the number of staff members in each area. We note that there are no PhD Students of the department supervised by any of the 6 teachers in SECS-S. This is of course due to the lack of a PhD in Statistics.

## Section B - Scientific production (2017-2019)

### Subsection B.1 – Overall scientific production

#### TOTAL SCIENTIFIC PRODUCTION<sup>7</sup>

ARCA CLASSIFICATION	2017	2018	2019	TOTAL
Books	1	0	0	1
Journal articles	183	169	187	539
Book parts	17	13	6	36
Conference proceedings	34	37	28	99
Book editing activities	6	6	3	15
<b>TOTAL</b>	<b>241</b>	<b>225</b>	<b>224</b>	<b>690</b>

#### DEPARTMENTAL SCIENTIFIC PRODUCTION DETAILS

	2017	2018	2019	TOTAL
Scopus publications <sup>8</sup>	249	236	226	711
Publications in English <sup>9</sup>	206	186	180	572

The total scientific production does not vary significantly across years, with an average number of publications per year of 230. Most of the publications are indexed in Scopus and therefore widely available to the scientific community. Note that the reported number of publications indexed by Scopus (711) includes all document types, while the total scientific production (690 works) does not include abstracts and posters.

Given that the number of staff members increased significantly in the last 3 years, and especially by hirings of young researchers, we consider a positive result the stability of the production throughput. Nevertheless, we expect the output to increase in the next few years in relation with the forthcoming completion of several tenure positions.<sup>10</sup>

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<sup>7</sup> Source: [University Repository ARCA](#). Only publications with an ISBN/ISSN code have been considered. Conferences abstracts and posters have been **excluded** from the count of Conference Proceedings. Date of recognition: 18.09.2020; Faculty detected at 31.12.2019.

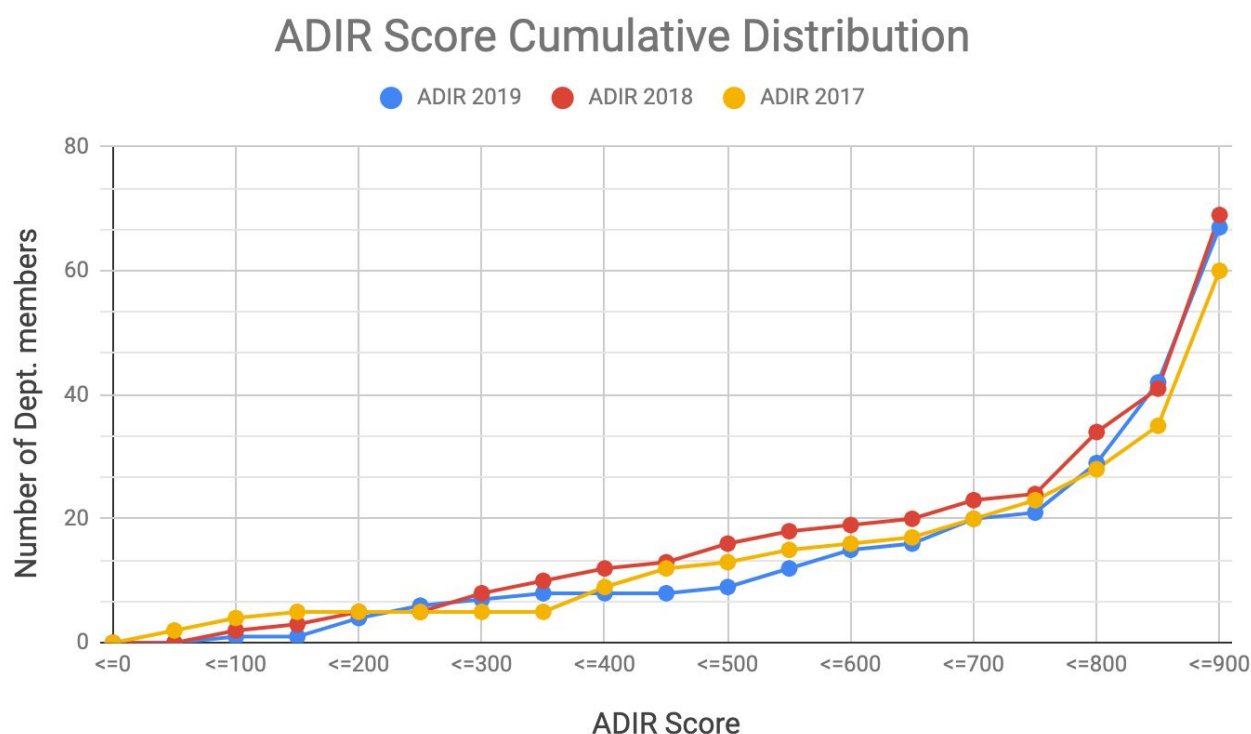
<sup>8</sup> Source: **Scopus**, all document types.

<sup>9</sup> Source: **ARCA**.

<sup>10</sup> We note that the “Total Scientific Production” and “Departmental Scientific Production Details” report data from different sources, respectively the university database ARCA and a scopus, which might result in slightly different figures.

### Additional Indicators: ADIR Score Distribution

As recommended by the assessment board, each member of the department is informed yearly about the ADIR evaluation of her/his own products. We remark that the ADIR scoring can provide a measure of the department's overall research quality, still its outcome is different from ANVUR-like evaluations.



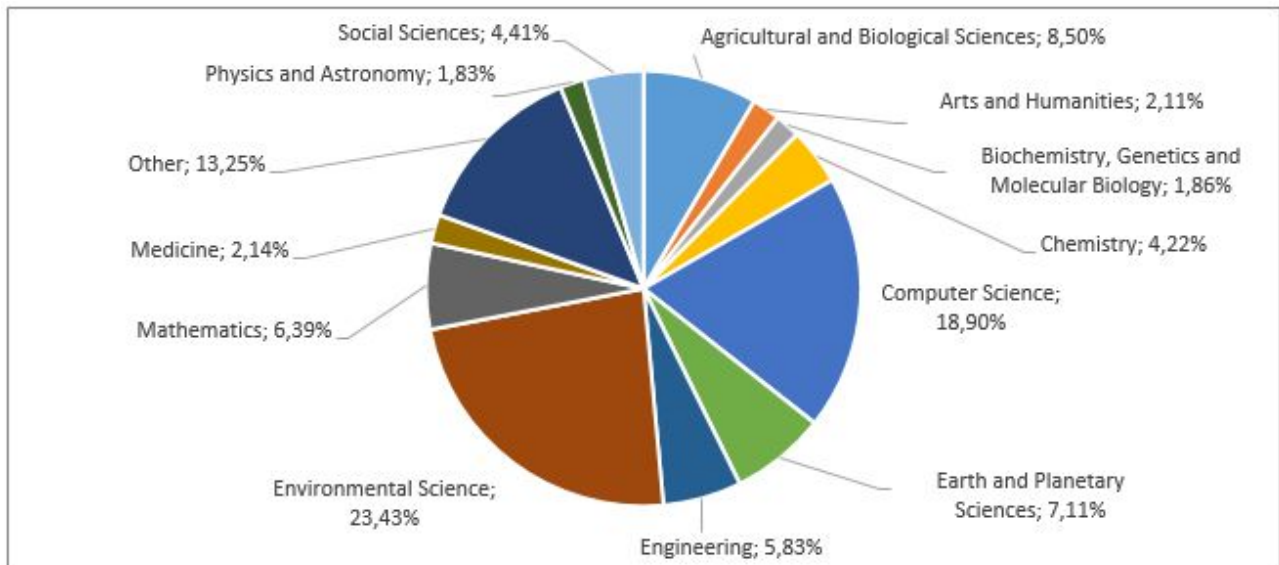
The Figure above reports the ADIR score distribution from 2017 to 2019. More details about the ADIR scoring is given in Part III. The trend is similar throughout the reporting period. The year 2019 shows a smaller number of researchers with a score lower than 500, which suggests an average improvement of the quality of the publications considered.

Overall, the number of department members with a score lower than 800 is less than  $\frac{1}{3}$  of the department size. This possibly suggests that the ADIR scoring system is not sufficiently discriminative, or at least it might require some refinement. We started evaluating possible actions after the previous report and at the time of writing, we are considering taking into account the different publication patterns (e.g., more/less products) in different scientific areas. The Department conducts research in very different areas and considering 9 products is not the best fit for all areas.

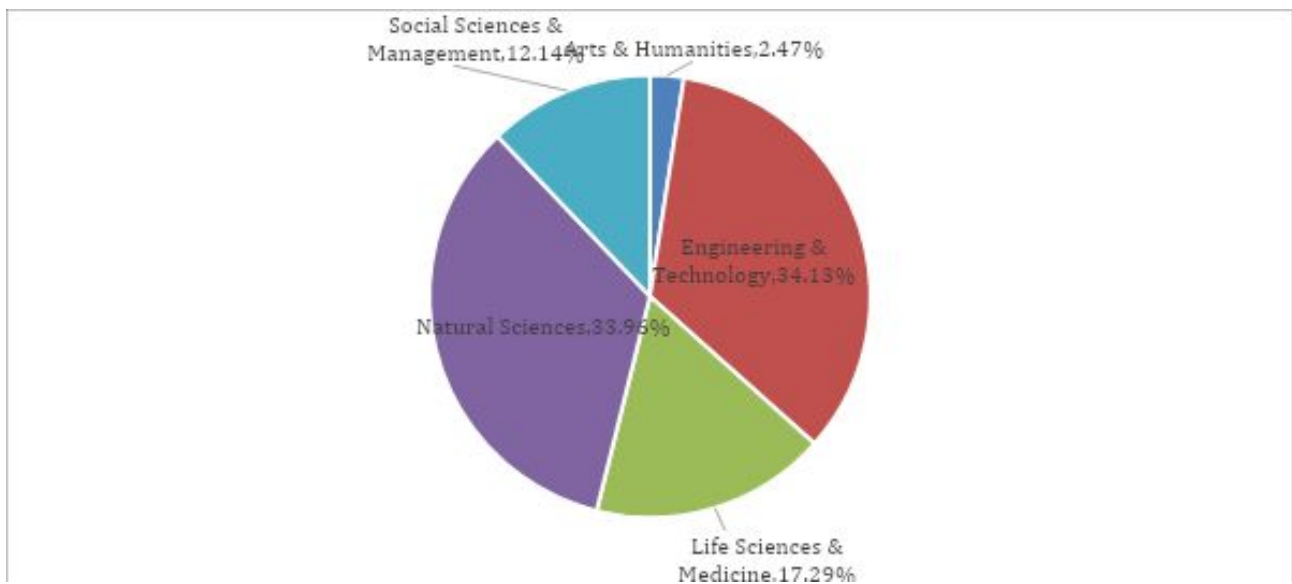
## Subsection B.2 - Overall Research output by Subject Area and Collaboration

By SciVal – Overview module. All document type. Faculty detected at 31.12.2019

### ASJC Subject Category distribution 2017-2019



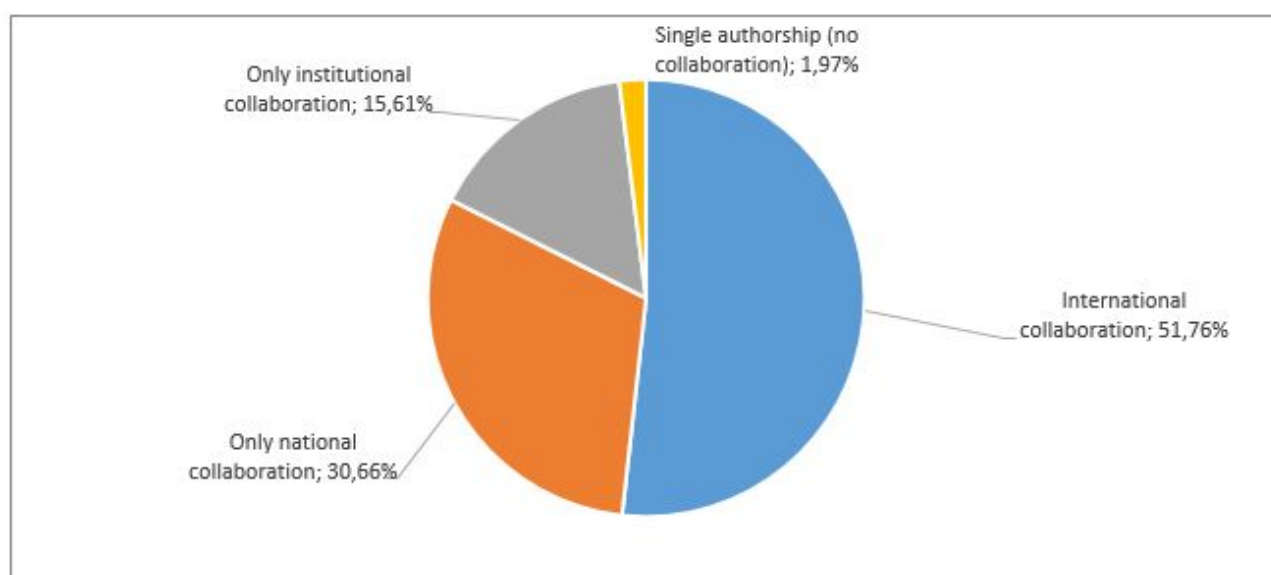
### QS Subject Category distribution 2017-2019



The Subject Areas and QS category distributions reflect the multi-disciplinarity of the department, which we think should be supported.

Scopus scholarly output by amounts of international, national and institutional collaboration

Collaboration	%	Scholarly Output 2017-2019	Citations	Citations per Publication	Field-Weighted Citation Impact
International	51.8%	368	3403	9,2	1,74
Only national	30.7%	218	1438	6,6	1,48
Only institutional	15.6%	111	513	4,6	0,94
Single authorship	2.0%	14	32	2,3	0,46



Confirming the results of previous years, outputs of international collaborations are more likely to have a larger visibility in terms of citations. To this end, we aim at increasing the international collaborations, especially through the IRIDE program, which funds both incoming and outgoing short-term visits. Nevertheless, it is difficult to evaluate these numbers due to the multidisciplinary nature of the department, where different scientific areas may have different healthy collaboration patterns. We highlight that the large involvement in EU projects is an additional indicator of the network of the international collaborations the department is involved in.



### Subsection B.3 – Bibliometric analysis by role

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

Faculty detected at: 31.12.2019

Scientific production: three-year period 2017-2019

Role	In staff	Scopus scholarly output (avg.)	Citation count	Citations per pub.	FWCI (2016-2018)	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	17	261 (15.4)	1863	7.1	1.45	20.3	60.4	49.2	37.2
Associate Professors	26	341 (13.1)	2523	7.4	1.41	17.6	50.4	40.1	25.4
Researchers	9	50 (5.6)	303	6.1	1.00	16.0	65.7	42.9	44.4
Fixed-Term Researchers	19	212 (11.2)	1698	8.0	1.65	24.5	55.2	49.7	25.0
<b>OVERALL</b>	71	673 (9.5)	5282	7.8	1.51	20.5	54.8	45.7	30.0

The above table shows several indicators on the productivity of the department with a breakdown by role. We highlight that Full Professors and Associate Professors have the largest productivity with about 15 and 13 products per person, while the productivity is significantly lower for Researchers. Other indicators are often contrasting and therefore it is difficult to get reliable insights out of them. Interestingly, Fixed-term Researchers show above average performance in almost all indicators, which, in the long term, should consolidate the research productivity and quality of the department.

Per year analysis is reported in Appendix I - Subsection B.

## Subsection B.4 - Scientific production of newly recruited and promoted researchers 2017-2019

### NEWLY RECRUITED AND PROMOTED RESEARCHERS - BIBLIOMETRIC ANALYSIS

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

**Newly recruited researchers** in the three-year period 2017-2019

Scientific production: three-year period 2017-2019

FACULTY	In staff	Scopus scholarly output (avg.)	Citation count	Citations per publication	FWCI (2016-2018)	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Associate Professors	4	53 (13.3)	332	6.3	1.41	13.2	63.0	29.6	44.4
Fixed-Term Researchers	19	210 (11.1)	1683	8.0	1.62	24.8	53.5	48.4	24.7
<b>OVERALL</b>	23	262 (11.4)	2012	7.7	1.57	22.5	54.9	45.7	27.6

**Promoted researchers** in the three-year period 2017-2019

Scientific production: three-year period 2017-2019

FACULTY	In staff	Scopus scholarly output (avg.)	Citation count	Citations per publication	FWCI (2016-2018)	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	4	53 (13.3)	282	5.3	1.43	13.2	62.9	42.9	31.4
Associate Professors	3	42 (14.0)	166	4.0	0.72	4.8	57.1	38.1	19.0
Fixed-Term Researchers (Type “B”)	1	10 (10.0)	24	2.4	1.24	0.0	70.0	60.0	30.0
<b>OVERALL</b>	8	103 (12.9)	457	4.4	1.13	8.7	60.9	43.8	28.1

We first highlight that newly recruited Associate Professors have high productivity indicators in terms of number of products and their visibility: larger than Promoted Associate Professors and similar to that of Associate and Full Professors. We believe that collaborations with newly recruited staff can be very fruitful for the whole department. Overall, promoted researches have similar performance figures to other researchers with the same role.

## Subsection B.5 - Researchers without scientific production<sup>11</sup>

### RESEARCHERS WITHOUT SCIENTIFIC PRODUCTION

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers <i>[Ricercatori t-det]</i>
0	0	0	0

### RESEARCHERS WITHOUT SCIENTIFIC PRODUCTION RECRUITED/PROMOTED IN THE THREE-YEAR PERIOD 2017-2019

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers <i>[Ricercatori t-det]</i>
0	0	0	0

No inactive staff members are present. Nonetheless, we believe that staff members with a reduced research output can strongly benefit from collaborations, internal or external. This would significantly impact positively all the evaluation procedures the department is subject to. Accordingly, the IRIDE and “joint grants” actions were designed to provide support in this direction. Concerns regarding underperforming staff are discussed in more detail in the final section of this document.

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<sup>11</sup> Researchers with no scientific publications in the three-year period (source: University Repository ARCA)

## Section C - International projects (2017-2019)

The Table below reports the EU contribution resulting from international project participations of the department. DAIS participates in 32 EU projects that started within the timeframe 2017-2019, and there are additional 17 projects started in 2020 or planned to start in 2021. Among the many projects we highlight the ERC Starting Grant by prof. Renata Soukand (a recent recruitment in BIO/01) and the ERC Advanced Investigator Grant by prof. Carlo Barbante (CHIM/01). The record of projects is quite relevant and it provides a significant contribution to support the department research activities. We observe a quite stable yearly EU contribution of two million euros.

We remark that the participation in projects is very important for the sustainability of DAIS's research, especially in areas such as BIO, CHIM and INF. The department invests lots of effort in fundraising, with about 40, and increasing, international projects proposals submitted every year. This clearly implies a huge effort for the secretarial staff which provides excellent support and it would benefit from additional units of personnel. We do not include national projects and collaborations with local companies which still provide interesting research opportunities with, maybe, a narrower scope.

The department provides the possibility of a reduction of the teaching load for those researchers involved in large projects. This is anyway not easy to accomplish due to the necessity to find substitute lecturers. A reduced teaching load was acknowledged to 5 researchers, either because of project involvement or because of other institutional duties.

EU Contribution SSD	Project Starting Year	2017	2018	2019	2020	2021	Total
BIO/01		€ 1.292.462,50					€ 1.292.462,50
BIO/02		€ 217.036,00			€ 333.869,00		€ 550.905,00
BIO/05			€ 262.269,00				€ 262.269,00
BIO/07		€ 601.783,12	€ 710.328,75	€ 496.426,35	€ 529.746,19	€ 171.473,28	€ 2.509.757,69
CHIM/01			€ 365.000,00	€ 236.377,20	€ 171.473,28	€ 251.002,56	€ 1.023.853,04
CHIM/06				€ 24.500,00			€ 24.500,00
CHIM/12		€ 529.790,90	€ 190.764,30	€ 586.723,60	€ 402.267,50	€ 401.625,00	€ 2.111.171,30
GEO/08				€ 30.000,00	€ 125.750,00		€ 155.750,00
INF/01			€ 305.200,93	€ 212.532,63	€ 308.531,38	€ 586.066,00	€ 1.412.330,94
ING-IND/11				€ 292.872,50			€ 292.872,50
ING-IND/25		€ 199.020,00					€ 199.020,00
SECS-P/05			€ 165.254,10	€ 211.515,15	€ 183.473,28		€ 560.242,53
<b>Total</b>		<b>€ 2.840.092,52</b>	<b>€ 1.998.817,08</b>	<b>€ 2.090.947,43</b>	<b>€ 2.055.110,63</b>	<b>€ 1.410.166,84</b>	<b>€ 10.395.134,50</b>

See Appendix I - Subsection C for the detailed list of EU-funded projects.

## Section D - Research Topics (2017-2019)

We shortly report below the main research topics covered by the DAIS department and some future interesting research directions.

- DAIS has several computer science labs working on Machine Learning foundational approaches for computer vision, information retrieval, etc. Other relevant topics of research include cyber-security both in cyber-physical systems and, interestingly, also in Machine Learning as security becomes very relevant when machine learning systems get into our daily life. We also mention quantitative analysis of computer systems, distributed systems and bioinformatics.
- DAIS chemistry labs are working in conservation technologies for cultural heritage, now aiming at developing non-invasive imaging applications for heritage science. In the area of environmental chemistry, an interesting topic is that of climate change multi-risk assessment and management. We observe here that a huge impact is expected from Machine Learning both in the area of computer vision for cultural heritage, and in the area of climate risk adaptation and planning with clear opportunities of collaboration and cross-contamination within the department. In the area of analytical chemistry DAIS is conducting research in paleoclimatology investigations aiming at reconstructing the climate and the greenhouse content of the past 1.5 million years.
- Regarding industrial engineering, and related to environmental safeguard, DAIS is investigating biological CO<sub>2</sub> capture from industrial gas emissions and wastewater treatment, also leading to the conversion of secondary carbon streams in biofuels and bioplastics materials.
- Researchers in the BIO area tackle several aspects of the environment management, evolution and anthropic impacts. The main aspects of marine and terrestrial ecosystems are studied, with a particular emphasis on transitional coastal ecosystems: ecosystem functioning, socio-ecosystem services, ecotoxicological impacts, sustainability of fishery and aquaculture, eco-ethology, conservation biology and restoration ecology. Future research directions include priority environmental problems such as effects of emerging pollutants and alien species. The area is continuously strengthening its interactions both with public administrations and with small and medium-sized enterprises.
- Research in the GEO area encompasses experimental oceanography, paleoclimatology, and the study of decadal climate variability and predictability. Strong interest is on natural phenomena that can impact and mitigate anthropogenic climate change.
- Research in the statistics area mainly contributed to the development and application of statistical methods for the solution of real-world problems through interdisciplinary research. Applied research fields included environment, paleoclimatology, epidemiology and sociology.
- Finally we mention research activities in the areas of high-dimensional spatial and temporal datasets, riverine ecosystems and cultural and climate use of energy in residential buildings.

Research at DAIS spreads over several topics, with a clear common interest over phenomena with impact on climate and environment, and with huge collaboration opportunities between supposedly far away research areas also thanks to the machine learning and data analysis expertise present in the department.



## PART III: Resources, incentives, actions

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The following sections report on the funding initiatives of the department. The table below shows the expenses related to the different initiatives. We highlight that the total spending is decreased due to the decreased number of applications. The CdR will evaluate possible strategies to revise current regulations to design initiatives that better fit the necessities of staff members.

	Conferences	Post-doc positions [ <i>“Assegni di Ricerca”</i> ]	IRIDE	AdiR	Total
2017	€ 21.042,07	€ 126.543,66	€ 8.120,00	€ 125.104,01	€ 280.809,74
2018	€ 15.500,02	€ 134.482,28	€ 6.296,34	€ 149.999,98	€ 306.278,62
2019	€ 9.666,06	€ 83.252,96	€ 7.995,19	€ 140.000,00	€ 240.914,21

### Section A – Departmental research funding

AdiR evaluation takes place every year in November and considers the scientific production of the past three years of all the staff members, including the RTD-A and RTD-B. The evaluation of the articles in venues indexed by Scopus or WOS is carried out automatically according to their ranking. Each article receives a score in the range 30-100 which is proportional to the decile associated with the venue (decile 10 identifies the top). Non bibliometric works are evaluated by members of the Research Committee based on criteria such as international visibility, quality of the contribution. All the products in the 3-year period are evaluated but only the best nine contribute to the evaluation of the staff member. The results of the evaluation are verified by each single staff member, presented during a plenary meeting of the Department and then approved. For the upcoming years, the total budget is set at €140,000.

As mentioned above, we are considering taking into account the different publication patterns (e.g., more/less products) in different scientific areas. The Department conducts research in very different areas and considering 9 products is not the best fit for all areas. We refer to Part II of this for a detailed analysis of the outcomes of this process and a comparison with the different years.

### Section B – Funding for Research fellowships and Short term Research fellowships

The Department cofunds annual postdoc positions (or equivalent) for an amount that usually cannot exceed 50% of the minimum gross amount (see: [https://www.unive.it/pag/fileadmin/user\\_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/RegolamentiDip/RegolamentoCofinanziamentoAssegniRicercaDottorato\\_DAIS\\_2017.pdf](https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/RegolamentiDip/RegolamentoCofinanziamentoAssegniRicercaDottorato_DAIS_2017.pdf)). The amount available is established on a yearly basis using predictive budget estimates; two calls are open yearly to request the co-funding. The Department does not

provide funding for those positions that are (even partially) covered by on-going external projects, with the goal of supporting research activities that are not already funded. We stress the will of the department to take actions toward improving the co-funding scheme, particularly regarding the number of applicants.

To monitor the quality of the co-funded research activities, recipients must deliver to the CdR a final report discussing their scientific results and their publications. Lack of publications should be properly justified. In addition, recipients must present their results through a public seminar.

## Subsection B.1 – Research fellowships (assegni di ricerca)

Below we report the breakdown of the number of co-funded positions across the different scientific sectors of the department staff. The positions are spread across many sectors in proportion to the number of permanent staff members and to the involvement in collaborative projects.

Sum of Department Co-financing to PostDoc Positions					Number of Department Co-financed to PostDoc Positions				
	2017	2018	2019	Grand Total		2017	2018	2019	Grand Total
BIO/02		€ 11.893,28		€ 11.893,28	BIO/02		1		1
BIO/07	€ 24.364,81		€ 11.893,28	€ 36.258,09	BIO/07	3		1	4
CHIM/01	€ 18.873,28		€ 11.893,28	€ 30.766,56	CHIM/01	2		1	3
CHIM/06	€ 9.436,64	€ 11.800,00		€ 21.236,64	CHIM/06	1	1		2
CHIM/12	€ 5.491,53	€ 45.116,47	€ 11.893,28	€ 62.501,28	CHIM/12	1	3	1	5
GEO/08	€ 9.436,64			€ 9.436,64	GEO/08	1			1
ICAR/02		€ 11.893,28		€ 11.893,28	ICAR/02		1		1
INF/01	€ 26.723,97	€ 41.885,97	€ 47.573,12	€ 116.183,06	INF/01	3	4	4	11
ING-IND/25	€ 17.288,62	€ 11.893,28		€ 29.181,90	ING-IND/25	2	1		3
SECS-S/01	€ 14.928,17			€ 14.928,17	SECS-S/01	2			2
<b>Grand Total</b>	<b>€ 126.543,66</b>	<b>€ 134.482,28</b>	<b>€ 83.252,96</b>	<b>€ 344.278,90</b>	<b>Grand Total</b>	<b>15</b>	<b>11</b>	<b>7</b>	<b>33</b>

*PostDocs breakdown by SSD*

*This includes only PostDocs partially funded the department*

The co-funding of Post-Doc positions follow the same distribution of the participation in EU projects. Indeed, those research groups involved in research projects are more likely to be able to co-finance post-doc positions. We observe that the INF/01 sector took advantage of a large fraction of the co-funding. At the moment we do not believe this results from an unbalanced distribution as in the last two years no request for co-funding was refused. Anyway, some action can be foreseen to widen the areas benefiting from the co-funding: one possible solution is to favour involvement in funded projects and another option might be to increase the amount of co-funding. We also observe that INF/01 together with CHIM/12 are able to issue at least one co-funded position per year.

See Appendix I Subsection D – Co-Funded Post-doc positions for the complete list of funded positions



## Subsection B.2 – Short term Research fellowships (borse di ricerca)

Research scholarships (<1 year duration, eligible also for BsC students), according to the University regulations, must be funded with external financing sources, and therefore there is no internal co-funding available. In this case the largest number of scholarships is found in area CHIM/12. For the sake of completeness, we report some detail on co-funded post-doc positions and research scholarships in Appendix I - Subsection E.

Number of short-term scholarships							
	BIO/07	CHIM/01	CHIM/06	CHIM/12	INF/01	ING-IND/25	Total
2017				7			7
2018	5	1		16	12		34
2019	5	4	1	2	9	1	22
<b>Total</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>25</b>	<b>21</b>	<b>1</b>	<b>63</b>

Cost of short term scholarships							
	BIO/07	CHIM/01	CHIM/06	CHIM/12	INF/01	ING-IND/25	Grand Total
2016					19.367,00 €		19.367,00 €
				5.750,00 €			5.750,00 €
2018	47.633,33 €	900,00 €		52.325,00 €	94.693,28 €		195.551,61 €
2019	44.440,00 €	42.047,00 €	4.570,31 €	29.750,00 €	33.942,76 €	6.819,67 €	161.569,74 €
<b>Grand Total</b>	<b>92.073,33 €</b>	<b>42.947,00 €</b>	<b>4.570,31 €</b>	<b>87.825,00 €</b>	<b>148.003,04 €</b>	<b>6.819,67 €</b>	<b>382.238,35 €</b>

## Section C – Other departmental actions for research support

The Department financially supports the organisation of conferences, workshops and similar events co-organized by members of the Department. The department contribution ranges from €1,000 to €2,000 depending on the duration or on the scope (national vs. international) of the organized event. Members of the Department are invited to apply for the requests of fundings in two calls (April, October) each year. Projects' workshops are not included as these are already funded by the projects themselves. The organizers must advertise the support by Ca' Foscari in the event's Website and dissemination material. This contribution is used by many researchers in several areas. Here we see a good participation within the GEO area. We expect a very limited spending in the years 2020 and 2021 due to the covid pandemic.

Conference Co-funding								
	BIO/02	CHIM/01	CHIM/06	CHIM/12	GEO/12	INF/01	SECS-S/01	Total
2017	€ 484,00	€ 1.000,00		€ 5.831,00	€ 2.746,07	€ 10.981,00		€ 21.042,07
2018		€ 1.500,00	€ 2.000,02	€ 4.500,00	€ 2.000,00	€ 3.500,00	€ 2.000,00	€ 15.500,02
2019				€ 4.055,11	€ 2.110,95	€ 3.500,00		€ 9.666,06
<b>Total</b>	<b>€ 484,00</b>	<b>€ 2.500,00</b>	<b>€ 2.000,02</b>	<b>€ 14.386,11</b>	<b>€ 6.857,02</b>	<b>€ 17.981,00</b>	<b>€ 2.000,00</b>	<b>€ 46.208,15</b>

Number of co-funded conferences

	BIO/02	CHIM/01	CHIM/06	CHIM/12	GEO/12	INF/01	SECS-S/01	Total
2017	1	1		5	3	7		17
2018		2	4	3	2	7	1	19
2019				3	1	2		6
<b>Total</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>11</b>	<b>6</b>	<b>16</b>	<b>1</b>	<b>42</b>

## Section D – Other incentives

Co-founding of post-doc positions is one of the most impactful actions of the department. For this reason in 2019 we added an additional co-founding opportunity named “Joint Research Grant”. While external collaboration is supported through the IRIDE founding, internal collaboration was not specifically supported. We are well aware that external collaborations are more relevant for the sustainability of the department (networking for participation in funded international projects). Still we believe that internal collaboration is useful in the following case. The department provides a 75% co-founding of post-doc positions led by two staff members, where one of the two has an ADIR score in the lowest quartile. We believe that a researcher having a limited productivity, which may happen for several reasons, may significantly benefit from a new collaboration with another colleague so as to start a possibly new research line, opening new external collaborations. Also, as limited productivity often results in limited resources, a co-funding of 75% widens the number of potential applicants. The co-funding is limited to two positions per year, and its budget is part of the co-funded post-doc positions budget. This new form of co-financing started in 2019, and only one project was funded out of two proposals. The research activity was postponed due to the Covid pandemic, therefore it is not possible to evaluate its impact on the recipients productivity. The department aims at supporting this initiative in the future.

## Section E – Internationalization actions

IRIDE is a successful funding program funded by the department aiming at promoting individual research activity by tenured staff members. This initiative also supports newly recruited researchers with a *starting grant* which can be used to cover travelling, dissemination, hardware expenses. The applicants must submit a 18-month project research proposal about a new line of research in an international context. The key points of the program are:

- to promote mobility, both incoming and outgoing, by covering expenses associated with implementing collaborations with scholars working in renowned foreign research institution;
- to help new tenured staff members start and accelerate their individual scholarship.

Expected results of the program are:

- create, or contribute to, new international research networks;
- publication of joint papers with the international scholars involved in the project.

At the end of the projects, each recipient must deliver a report of the activity conducted which is evaluated by the CdR.

	BIO/03	BIO/07	CHIM/06	GEO/12	ICAR/02	INF/01	SECS-S/01	Total
2017	€ 2.360,00			€ 2.360,00		€ 3.400,00	€	8.120,00
2018	€ 2.399,10		€ 1.500,00	€ 2.397,24			€	6.296,34
2019					€ 7.995,19	€ -	€	7.995,19
<b>Total</b>	<b>€ 2.399,10</b>	<b>€ 2.360,00</b>	<b>€ 1.500,00</b>	<b>€ 2.397,24</b>	<b>€ 2.360,00</b>	<b>€ 7.995,19</b>	<b>€ 3.400,00</b>	<b>€ 22.411,53</b>

Number of IRIDE projects								
	BIO/03	BIO/07	CHIM/06	GEO/12	ICAR/02	INF/01	SECS-S/01	Total
2017		1			1		1	3
2018	1		1	1				3
2019						3	1	4
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>10</b>

The number of applications is 3 or 4 per year. We aim at increasing significantly the number of IRIDE projects, especially considering that IRIDE can fund incoming-only visits. Unfortunately, this will be difficult in 2020 and 2021 due to the Covid pandemic.

### Subsection E.1 – Incoming and outgoing researchers

Scholarly visits are promoted by the department, and they are funded with different instruments (including non departmental funds). Below the list of visiting professors and their teaching activities at DAIS. No sabbatical leave occurred.

Year	Period Start/End	Name	Home institution	Research area	Teaching activities	Funding Sources
2017	31/03/2017-30/04/2017	PAPADOPOULOS APOSTOLOS	Department of Informatics, Aristotle University of Thessaloniki Greece	Computer Science	Mining of Massive Datasets (PhD in Computer Science)	Unive € 8,000
2017	01/09/17 - 30/05/18 (3 mesi dentro questo periodo)	SCHIAVON Nicola	HERCULES Laboratory - Évora University (Portogallo)	Conservation Science. Titolo della Ricerca o Progetto: Studio degli impatti dell'ambiente sulle superfici dei beni Culturali in aree costiere; docenti unive: Zendri e Balliana.	GEOLOGY APPLIED FOR CULTURAL HERITAGE - [CM60] CONSERVATION SCIENCE AND TECHNOLOGY FOR CULTURAL HERITAGE - MSc	Unive € 15,000

2018	1/1/2018 - 31/7/2018	VONA Francesco	OFCE Sciences-Po (French Economic Observatory of Sciences-Po)	Area CUN: 13/A Economia; S.S.D: SECS-P/01 e SECS-P/02 C. Giupponi - A. Marcomini	INTRODUCTION TO ECONOMICS-2 [ET7005] - [ET7] DIGITAL MANAGEMENT - Laurea; INTEGRATED MANAGEMENT OF NATURAL RESOURCES [CM0452] - [CM5] SCIENZE AMBIENTALI - Laurea magistrale (DM270); CLIMATE CHANGE POLICIES – NEGOTIATIONS, IMPLEMENTATION AND ASSESSMENT II [PHD091] - [R243] SCIENZA E GESTIONE DEI CAMBIAMENTI CLIMATICI	Unive € 11,000 + € 4,000 DAIS
2019	1/1/19 - 31/7/19	VONA Francesco	OFCE Sciences-Po (French Economic Observatory of Sciences-Po)	Area CUN: 13/A Economia; S.S.D: SECS-P/01 e SECS-P/02 Carraro	INTRODUCTION TO ECONOMICS-2 [ET7005] - [ET7] DIGITAL MANAGEMENT - Laurea; INTEGRATED MANAGEMENT OF NATURAL RESOURCES [CM0452] - [CM5] SCIENZE AMBIENTALI - Laurea magistrale (DM270); CLIMATE CHANGE POLICIES – NEGOTIATIONS, IMPLEMENTATION AND ASSESSMENT II [PHD091] - [R243] SCIENZA E GESTIONE DEI CAMBIAMENTI CLIMATICI	Unive € 11,000 + € 4,000 DAIS
2019	1/11/19 - 15/12/2019	WILLIAMSON Carey	University of Calgary Alberta Canada	Area CUN 01; SSD INF/01; Frequency scaling in network scheduling - Marin Rossi, Balsamo	SIMULATION AND NETWORK PERFORMANCE [CT0421] - [CT3] INFORMATICA - BSc	Unive € 5,500 + € 6,500 DAIS

## **PART IV: Third Mission activities**

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### **Section A – Statement of the Departmental policy and objectives about Third Mission activities**

Looking at the strategic documents of the Department, and in particular at the three-year plan (Piano Triennale), DAIS aptitude for third mission activities is clear already from the presentation of the new master's degree path. Indeed, the new master in Biotechnology for the environment and Sustainable Development (Biotechnologie per l'Ambiente e lo Sviluppo Sostenibile) is presented as a new master conceived in collaboration with local companies, highlighting the connection with the local industrial context in which the Department is operating.

Into the document, the Department highlights the objective of improving its networks, in particular the social and economic ones, with the intent of strengthening the third mission and the technology transfer. The intent of setting up activities to involve the community, public administration, chambers of professional, and the industries is clearly underlined.

From a mere economical point of view, the Department is setting the challenging target of increasing by 10% the amount of funding coming from "non-EU" sources. Of course, such a goal sees the consultancy activities as the main target for the increment. Together with this, DAIS clearly targets an increase for what concerns the number of spin-off and civic-engagement activities (see point 4 of the document).

The document reports the involvement of DAIS in the SMACT Competence Centre, which is a public-private partnership, as a further means to reinforce the contact with local industries and provide them the needed competences for a strategic evolvement toward the so called "industry 4.0".

Getting to the details and looking at the point "Agire da Catalizzatore di Innovazione" the Department set the following targets connected to the University indicators:

4.1 Number of international cultural programs -> 5 main programs;

4.2 Opening of Science Gallery Venice -> Science Gallery opened and self-financed by 2019. Production of 3 events a year in collaboration with DVRI;

4.3 Celebrations for Ca' Foscari 2018 -> An year-long program with 5 main events and strong media presence;

4.4 Opening of Venice Innovation Hub -> It will include 40-50 start-ups / SMI and 30-40 financed stages. The Active Learning Lab fully up and running;

4.5 Implementation of the Innovation and Tech-transfer Unit in collaboration with "Fondazione Ca' Foscari" -> +100% of revenue from consultancies activities (conto terzi) in research and innovation projects.

Following, the targets connected with the SUA-RD sections are listed:

- I.1 Intellectual property – Baseline=1 -> Target=1
- I.2 Spin-off – Baseline=0 -> Target=3
- I.3 Consultancies (conto terzi) – Baseline=380k -> Target=400k
- I.4 Public Engagement – Baseline=3 -> Target=4
- I.5 Cultural Heritage – Baseline=1 -> Target=2
- I.6 Table of Health – Baseline=0 -> Target=1
- I.7 Continuing Education – Baseline=0 -> Target=1
- I.8 Intermediation entities – Baseline=21 -> Target=22

Among the planned actions listed in the document, it is worth to mention:

4.1C Starting activities meant to enhance civic engagement, promoting the spread and awareness over results of research carried on campus. Also, activating projects that strongly involve students on the territory;

4.2A Enhancing tec-transfer actions on e-government topics to better target public administration bodies ([CEVID](#) project). Furthermore, promotion of [DEL-FabLab](#) with projects in collaboration with IoT companies;

4.2B Collaboration with the [SMACT](#) initiative in the development of start-up and active learning courses.

Concerning the monitoring of third mission activities, the main concern was for public engagement and orientation activities. In fact, consultancy (conto terzi) and patenting activities are already properly monitored by dedicated offices in the department and at university level.

Public engagement has been monitored with a dedicated tool. A spreadsheet repository has been shared among the faculty members and they have been properly instructed to feel in it anytime an event is implemented. The document is meant to collect information on the following activities:

- Educational/informative publications, seeing a faculty member as author, published at national or international level;
- Active presence of faculty staff in TV or radio programs to disseminate research/teaching activities;
- Active participation in public events organized by third parties;
- Public events organized by the dDepartment or faculty members;
- Digital or paper publications targeting a non academic audience;
- Events organized for faculty members other staff to build and improve communication skills;
- Interactive educational/informative websites;
- The use of Department facilities by the local community;
- Concerts, exhibitions, and other public events;
- Policy making related activities;
- Participation at standards drafting and technical committees;

- Events for rising citizen awareness on health related topics;
- Collaboration in urban-development projects and initiatives;
- High-school students engagement initiatives;
- Educational/informative events for kids and teenagers;
- Consensus conferences and citizen panels.

Now that the ARCA repository is set to collect information also on these types of activity, the shared spreadsheet will be less used. The Idea is to gradually move from the internal repository to the centralized ARCA system.

#### Subsection A.1 – Third Mission activities – Case studies

Title	Professione Scienziato
Year	2019
Scientific Responsible	Rossano Piazza, Andrea Marin, Elisabetta Zendri

<p><b>Description</b></p>	<p>As part of the Scientific Degree Plan (Piano Lauree Scientifiche, PLS), the Department of Environmental Sciences, Informatics, and Statistics (DAIS), the Department of Molecular Sciences and Nanosystems (DSMN) and the Centre for Women's Leadership (LEI) of the University Ca' Foscari of Venice launched a project aimed at promoting the employment of females in the professional fields of Science, Technology, Engineering and Mathematics (STEM).</p> <p>The activities included:</p> <ul style="list-style-type: none"> <li>● Experiential workshops divided into the three subject fields that characterize the Scientific Area of Ca' Foscari (chemistry and sustainable technologies, information sciences and environmental sciences). The workshops were thought to allow the students to experience some practical scientific experiments based on the principle of approaching science by play (more details are provided below).</li> <li>● Panel discussion with female scientists, technologists and mathematicians who have been standing out for their important professional or particular merits.</li> </ul> <p><b>Detailed description of the experiential activities, Environmental Sciences: “A bright future for the environment” - “Un futuro roseo per l’ambiente”</b> (Chair Rossano Piazza)</p> <p>Experiential laboratory based on the exploration of multidisciplinary tools and approaches for studying and monitoring the quality and changes of the environment in all its matrices, based on demonstrations and interactive games. The workshop was organized into 3 main thematic areas, each divided into several short activities carried out in turn by the students.</p> <p><b><i>Environmental Analytical Chemistry area</i></b></p> <p>The activities aimed to show the targets, principles and problems of typical environmental chemical analyses through practical examples:</p> <ol style="list-style-type: none"> <li>1. Experiment on the use of luminol for the determination of iron in environmental fresh waters through a chemiluminescence reaction. The activity started with a short introduction to the topic of biogeochemical cycles.</li> <li>2. Simulation of the preparation, loading and starting of a high-volume sampler for atmospheric aerosols. The activity was accompanied by short introduction to the problem of atmospheric pollution in urban vs. remote areas.</li> </ol>
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3. "Olfactometric" test of synthetic fragrances. The students were invited to smell 6 different synthetic fragrances as pure substances and then challenged to test their ability to detect their presence/absence in 6 unknown samples (complex mixtures) of commercial products for personal care of household cleaning. The challenge was run between two groups at a time, with prizes for the best performing group. The activity was accompanied by short introduction to the commercial use of fragrances and their dispersion in the environment.

(Marco Roman)

#### ***Bio-ecological area***

The activities aimed to show how the problem of climate change affecting plants can be addressed by scientific research. The experiences included:

1. Carrying out germination tests in Petri dishes;
2. Stereoscopic observation of fruits and seeds of species of environmental and commercial/agronomic interest;
3. Observation of herbarium samples.

(Gabriella Buffa, Silvia del Vecchio)

#### ***Earth Sciences area***

The activities aimed to demonstrate how remote areas of the Earth can preserve information on its climatic history and by which experimental approaches it is possible to access such information. In particular, the experiences were focused on showing how to:

1. Relive drilling operations on an oceanographic vessel, with video footage;
2. Reconstruct the climate of the past by interpreting the characteristics of marine sediment samples;
3. Observe and distinguish fossil organisms representative of different climatic periods under the microscope.

(Patrizia Ferretti)

#### ***Computer Science*** (Chair: Andrea Marin)

Activities aimed to describe how modern computer science is gradually changing its focus from algorithm to data. As a matter of fact, we live in a world where a massive amount of data is generated every day, often conveyed by different media and with a big temporal variability. There is a

	<p>strong need to develop automated methods to let machines automatically discover patterns and relations in data, to solve non-trivial problems that are too complex to be tackled with a purely algorithmic approach. We've shown, with some simple real-world examples, how these new techniques can effectively learn from previously observed data to make predictions on future events.</p> <p><b><i>Detailed description of the experiential activities, Chemistry for the Conservation of Cultural Heritage : “Art &amp; Science”</i></b> (Chair: Elisabetta Zendri)</p> <p>Using different methodologies and technologies, several demonstrations and interactive experiences have been set up on mock-ups and real artefacts. The aim was to show to the participants the processes commonly use and the knowledge needed to preserve art.</p> <p>The workshop was structured into 4 main thematic areas, each subdivided into several short activities. Each participant had the chance to take part in every activity. In particular the activities dealt with:</p> <ol style="list-style-type: none"> <li>1. How is a painting, a fresco and an art street work made? Application of optical technique for the observation of painting layers</li> <li>2. Discovering the invisible by multispectral instrumentations: what is below what we see? How is it made?</li> <li>3. The conservation of the paintings and stones. Cleaning tests;</li> <li>4. New insights on paintings conservation. Tests with innovative cleaning gels.</li> </ol> <p>(Elisabetta Zendri, Eleonora Balliana, Francesca Caterina Izzo, Dafne Cimino, Paola Lucero)</p>
<b>Impact</b>	<p>The initiative was specifically aimed to:</p> <ul style="list-style-type: none"> <li>● Increase the number of female students enrolled in courses of the Scientific Area;</li> <li>● Work on social stereotypes to enhance talents and encourage girls to follow their inclinations without excluding specific professions <i>a priori</i>;</li> <li>● Bringing students and female students closer to professionals in the scientific sector who can be a model to inspire their future choices;</li> </ul>

	<ul style="list-style-type: none"> <li>● Allow students and female students to experience first-hand what working in the scientific field consist of through experiments and practical laboratories.</li> </ul>
<b>Indicators to corroborate impact</b>	The Project is part of the PLS-32 Scientific Degree Plan (local unit Leader Stefano Malavasi) and started from the collaboration amongst the Center for Women's Leadership – LEI, the DAIS and the DSMN. The event saw the participation of about <b>250 female students from the 3rd and 4th year of high schools</b> all along the Veneto Region.

Title	TWO PHASES ANAEROBIC DIGESTION PROCESSES WITH DYNAMIC DIGESTATE RECIRCULATION
Year	2018
Scientific responsible	Prof. Paolo Pavan
<b>Description</b> <i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i>	<p>The proposed invention is a method to optimize the biological production of bio-hythane (mix of CH<sub>4</sub> and H<sub>2</sub>) and volatile fatty acids (VFA) using an anaerobic digestion (AD) process with separate phases. This application (developed by the University Ca' Foscari of Venice together with the University of Verona and University La Sapienza of Rome) is aimed to increase energy and material recovery from the biological treatment of the organic fraction of municipal solid waste (OFMSW) and waste activated sludge. The AD process is a widespread technology, often integrated with composting process and thus based on microbiological conversion of organic matter in absence of oxygen, into energy vectors such as hydrogen and methane. This optimization is achieved by controlling the pH in the fermentation reactor, through the recirculation of the digestate. The recirculation ratio is managed by an algorithm that, through pH and electrical conductivity measurements from probes in the two reactors, estimates the ammonia concentration. The algorithm also automatically establishes the recirculation flow rate to maintain the pH in the fermentation reactor at a value close to optimal conditions while at the same time preventing an excessive accumulation of ammonia in the system. The system has a high resilience and a rapid and automatic ability to restore optimal settings, following stress conditions. The process can be fed by organic fraction of municipal solid waste or by sludge from wastewater treatment, as well as zootechnical and agro-industrial waste.</p>
<b>Impact</b> <i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i>	<p>The method can be used to optimize the production of biogas, facilitating the automatic system recovery following stress conditions. The beneficiaries could exploit this technology to increase energy and material recovery, reducing environmental impact and saving cost related to plant management (e.g. electric and thermal energy recovery). In particular, the technology can be applied for OFMSW or other fermentable organic waste treatment, with automation of two phases anaerobic digestion processes for hydrogen, methane and VFA production.</p>

<b>Indicators to corroborate impact</b> <i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i>	The activities related to patent exploitation has led to expressions of interest from Italian and American companies (Verliant Energy President and Funder Damien Quinn California, Safe SpA and Tonello Energie srl) and further contacts for patent development by license. During these days PINK office is defining with the interested companies possible exploitation agreements.
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Title	Coderdojo @ Ca' Foscari
Year	2017-2019
Scientific responsible	Marta Simeoni, Alvise Spanò In collaboration with Associazione Digiveneto ( <a href="https://www.coderdojofosso.it/digiveneto/">https://www.coderdojofosso.it/digiveneto/</a> )
Description <i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i>	<p>Coderdojo@ Ca' Foscari is a programming lab for 7-14 years old kids. The aim of the lab is to promote an active attitude with respect to the new technologies and to propose a new type of literacy and a form of personal expression precious for future citizens . The so-called "digital natives" show their familiarity with new technologies on many occasions, but often it is a passive use, which totally ignores the underlying rules and mechanisms. The lab idea is to teach the <i>Computational Thinking</i> principles by directly applying them through the Scratch programming environment.</p> <p>The expression <i>Computational Thinking</i> was initially introduced in 1980 by Seymour Papert - mathematician, computer scientist and pedagogist, a student of Jean Piaget - talking about teaching programming to children and identifies, in the most commonly accepted meaning, "the mental process which underlies the formulation of problems and their solutions so that the solutions are represented in a form that can be effectively implemented by a human or artificial information processor (as stated by Jeannette Wing). In other words, it is the intellectual effort necessary to describe a set of precise and unambiguous rules / instructions for the solution of a problem. The sequence of instructions defines the solution algorithm, which therefore becomes a concrete expression of human intelligence and the mechanisms of reasoning. Computational thinking finds application in multiple contexts, only to a small extent related to information technology, because it concerns the ability to clearly and concisely describe how a process must be carried out, taking into account the possible alternatives, deciding a priori how to behave in the face of events that have not yet occurred and identifying abstract models applicable to different parts of the process itself. It is important to develop computational thinking from the early years of school to allow for the simultaneous strengthening of the combination of logical skills, abstraction skills and the ability to solve problems in a creative and efficient way on which computational thinking is based.</p> <p>In the heterogeneity of didactic proposals aimed at the development of computational thought, a common element sees computer scientists, psychologists and pedagogists: currently the best way to train computational thinking is the practice of programming. It has also been shown in several studies that learning to program leads to a measurable improvement in the</p>

	ability to perform other types of tasks not specifically related to IT. Mitchel Resnick, head of the Lifelong Kindergarten of MIT MediaLab, with his collaborators has created <a href="#">Scratch</a> , a visual programming environment that allows children to create their own animated stories, games and simulations in a simple and intuitive way: today Scratch counts a community of young developers spread all over the world and is in fact the reference tool for teaching children about computational thinking through programming.
Impact <i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i>	<p>Social impact: these initiatives foster the integration between Academy and citizenship. The events allow young people to enter the Science Campus and already feel part of a place and environment that they will hopefully frequent in the future.</p> <p>Cultural impact: primary and secondary schools are often unable to provide adequate didactics in computer science. The proposed initiatives can be seen as an integration to the preparation of young people in this area.</p>
Indicators to corroborate impact <i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i>	<p>From 2017 to 2019 we organized 14 events: 5 in 2017; 4 in 2018; 5 in 2019; All the events took place on Saturday morning and there was about one appointment every two months during the school period. We hosted almost all the events at the Scientific Campus, only 3-4 dates were hosted in Venice (S. Giobbe or S. Basilio). Participation was free.</p> <p>We had 50 participants (kids) per date on average. By counting also the (mandatory) accompanying person, about 100 people were present at the Campus on the Coderdojo's Saturday morning.</p> <p>Some primary school teachers participated too.</p> <p>On total we hosted more than <u>1400</u> people of which more than <u>700</u> were active participants</p> <p>The local press published two articles about our activity.</p>

Title	First Italian Conference on Cybersecurity (ITASEC17)
Year	2017
Scientific responsible	General chair (local organization): Riccardo Focardi (Ca' Foscari)
Description <i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i>	<p>The Italian Conference on Cybersecurity (ITASEC17) was the first occurrence of an event series supported by the <a href="#">CINI Cybersecurity National Laboratory</a> that aimed at putting together Italian researchers and professionals from <u>academia, industry and government</u> working in the field of cybersecurity. The event was structured into a main track on cybersecurity science and technology, a “fil rouge” track including a sequence of multidisciplinary sessions on a specific hot topic in cybersecurity and a demo track devoted to prototypes developed by industries, research centers and universities. The conference featured selected distinguished keynote speeches and panels.</p> <p>ITASEC17 included a Stakeholder Space featuring distinguished Keynotes Speeches, Invited Talks, Vision Speeches, and Panels. Sessions of the Stakeholder Space had an informative nature so to be accessible to a wide audience (open to the public) covering variegated strategic topics such as: standardizations and frameworks, role of research, Industry 4.0, cyberwarfare and risk assessment. Speakers were from industry, academy and government, with keynote speeches from, e.g., the National Institute of Standards and</p>

	Technology (NIST), Mitre Corporation and il dipartimento delle informazioni per la sicurezza (DIS) italiano.
Impact <i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i>	Cybersecurity is a multidisciplinary area that involves technical, legal, procedural and financial issues. As such, it is approached in variegated ways from different actors and it is often the case that solutions provided by one actor are not adequate for others. Italy was missing a national event putting together all actors from government, industry and academia, working in the cybersecurity field and ITASEC17 was the first national event on this strategic topic. The event had a multidisciplinary flavor, offering both technical and informal sessions, also covering economic and social aspects. The interest in the event was very high and we had to close registration for space issues.
Indicators to corroborate impact <i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i>	ITASEC17 was supported by important industrial sponsors, playing an important role in the field of cybersecurity, among which: Cisco, IBM, Leonardo, Microsoft, Palo Alto, Trend Micro. Registration was closed due to space constraints at about 600 participants.

## Section B – Third Mission data

### Subsection B.1 – Patents and plant variety rights

TOTAL NUMBER OF PATENTS (per year)

2017	2018	2019
4	1	2

LIST OF PATENTS REGISTERED IN THE THREE YEARS PERIOD 2017-2019

PATENT ID	PUBLICATION YEAR	TITLE	INVENTOR(S)	APPLICANT(S)
WO2017103779	2017	Method and apparatus for the spatial measurement over time of the surface of the sea from mobile platforms	Benetazzo Alvise; Sclavo Mauro; Carniel Sandro; Barbariol Francesco; Bergamasco Filippo; Torsello Andrea	CNR; Univ. Ca' Foscari Venezia
US20170344463	2017	System and method for bypassing evasion tests with applications in analysis and monitoring of mobile applications	Bello Luciano; Ferrara Pietro; Pistoia Marco; Tripp Omer	IBM
US20170372060	2017	System, method and apparatus for extracting usage-based fine grained permissions	Ferrara Pietro; Pistoia Marco; Tripp Omer	IBM
US20200175200	2017	Privacy detection of a mobile application program	Ferrara Pietro; Pistoia Marco; Tripp Omer	IBM
EP3642259	2018	Process for preparing a polymer from mustard carbonate analogues	Arico' Fabio; Tundo Pietro	Tundo Pietro
US20190121987	2019	Light-weight context tracking and repair for preventing integrity and confidentiality violations	Ferrara Pietro; Pistoia Marco; Tripp Omer; Tsankov Petar	IBM
WO2019171316	2019	Method for the production of polyhydroxyalkanoates (phas) from high solid content organic waste	Majone Mauro; Valentino Francesco; Pavan Paolo; Bolzonella David; Micolucci Federico; Gottardo Marco	Univ. Ca' Foscari Venezia; Univ. degli Studi di Verona; Univ. Degli Studi di Roma La Sapienza

## TOTAL NUMBER OF PLANT VARIETY RIGHTS (per year)

2017	2018	2019
-	-	-

## LIST OF PLANT VARIETY RIGHTS REGISTERED IN THE THREE YEARS PERIOD 2017-2019

None

## Subsection B.2 – Spin off

## TOTAL NUMBER OF REGISTERED SPIN-OFF (per year)

2017	2018	2019
1	0	0

## LIST OF SPIN-OFF REGISTERED IN THE THREE YEARS REFERENCE PERIOD

NAME	YEAR	FOUNDER/MEMBER
Digitalmetrix s.r.l.	2017	Andrea Albarelli

## Subsection B.3 – Lifelong learning activities and open education resources

## LIFELONG LEARNING ACTIVITIES

	2017	2018	2019
Nr. of provided courses	4	4	9
Hours of teaching	840	1180	1284
Nr. of participants	128	373	368

## “ALTERNANZA SCUOLA LAVORO” PROJECT WITH SECONDARY SCHOOLS

	2017	2018	2019
1. Nr of projects carried out	10	13	14
2. Nr. of students involved	436	634	428

## MOOC AND BLENDED COURSES

	2017	2018	2019
Nr of MOOC provided	1	1	1
- of which in English	1	1	1
Nr. of participants	115	139	157

	2017	2018	2019
Nr of Blended courses provided	5	4	4
- of which in English	1	1	2
Nr. of participants	719	730	439



## PART V: Assessment

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### Section A – External evaluation of Research activity

#### Subsection A.1 - Evaluation Unit

Evaluation provided by the Ca' Foscari Evaluation Unit (*Nucleo di Valutazione*)

DAIS was subject to an evaluation by the Assessment Board (*Nucleo di Valutazione*) and by the *Presidio della Qualità* on April 20 2018. Note that the subject of the visit was the AVA system (<http://www.anvur.it/attivita/ava/>) which evaluates the solutions adopted by the department for the design, management, self-evaluation and improvement of its scientific activities. The full report of the evaluation is available online<sup>12</sup>. We summarize and discuss the most relevant remarks below.

Requirement R4.B.1: Agreement between the university and the department research management strategy.

*Comment Summary:* The department plan is in agreement with the university strategic plan.

Requirement R4.B.2: Evaluation of results and incentive actions.

*Comment Summary:* Monitoring efforts are recommended.

Requirement R4.B.3: Definition and advertisement of incentives and awards.

*Comment Summary:* A wide spectrum of actions is recognized, but a better documentation of such efforts is recommended.

Requirement R4.B.4: Personnel and infrastructures supporting research activities.

*Comment Summary:* Actions within the department and beyond university initiatives should be evaluated.

Regarding R4.B.1, there is nothing to be commented as the board acknowledged the goodness of the Department Development Plan, which is going to be updated in the next future.

Regarding R4.B.2., the department adopted the UniBas-CRUI platform discussed in Part II of this document. This tool is being used to actively monitor the productivity of the department. Part of this monitoring is described in this document.

Regarding R4.B.3, the CdR is reviewing all the regulations related to the various initiatives and supporting actions. Also, the CdR will evaluate different information sharing mechanisms toward

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<sup>12</sup>

[https://www.unive.it/pag/fileadmin/user\\_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Azioni/NucleoValutazione/Verbale\\_audit\\_DAIS\\_Scienze\\_Ambientali\\_20-04-2018.pdf](https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Azioni/NucleoValutazione/Verbale_audit_DAIS_Scienze_Ambientali_20-04-2018.pdf).

increasing the awareness among staff members about the department's initiatives, awards and incentives.

Regarding R4.B.4, the department plans to investigate flexible contractual options to deal with work overloads in specific periods of the year.

The Advisory Board provided comments and feedback on the 2019 Annual Research Report on December 2020. No major issues were raised. We thus aimed at a general improvement of the presente report.

## Section B – Self Evaluation of Research and Third Mission activities

### Subsection B.1 - Indicators

In this section, for each of the Objectives of the department introduced in Part I, we define below a set of Key Performance Indicators aimed at monitoring the department research output and validating the supported initiatives. Finally, we draw some concluding remarks.

#### **O1 - High Quality of Research Output**

**KPI-1.1: ANVUR X score:** fraction of products in ANVUR Class A or B (Excellent or High quality) normalized by scientific area; **Target  $\geq 1$**

KPI-1.1	Area 01	Area 03	Area 04	Area 05	Area 08b	Area 09	Area 13
2018	0.85	1.04	1.10	0.99	N/A	1.36	2.08
2017	0.87	0.93	1.03	0.68	N/A	0.33	2.34

*At the time of writing, the 2019 data was not available because the CRUI tool that we use to extract this KPI was under maintenance because of the undergoing VQR evaluation. We will update this section for internal use. Below we report the analysis conducted last year.*

This KPI is indeed quite relevant in several internal and evaluation schemes. Performance of the department varies across different scientific areas. Area 01 is stable despite 3 new Fixed-term researchers, suggesting the performance of the newly recruited researchers is in line with the rest of the staff members. Area 3 showed a 10% improvement, and even in this case 3 new fixed-term researchers were hired. Area 4 is quite stable, including 2 new fixed term researchers. Area 05 shows a significant improvement due also to the hiring of a new Associate Professor. Data is not available for Area 08 for privacy concerns of the CRUI tool (there is only one member). Area 09 also shows a remarkable improvement, to which the hiring of a new Associate Professor contributed. Area 13 is stable and with a remarkable score  $>2$ , also considering that the two Full professors retired and one researcher was replaced by 2 new fixed-term researchers. As discussed previously, the new recruitments are bringing new

energies and new opportunities to the research activities of the department. With a main focus on internationalization, we hope that internal collaboration with the newly recruited researchers may bring a benefit to the performance of the department.

**KPI-1.2:** Fraction of **staff members with at least 2 products indexed in WoS/Scopus** in the last 3 years; **Target = 100%**.

This KPI is both related to the minimum number of publications to be presented for VQR-like evaluations. It might also be considered as an inactivity warning.

There is 1 out of 71 staff members with less than 2 products indexed in WoS/Scopus in the 2017-2019 time-frame. There are two other researchers with exactly 2 indexed products. Even if this indicator accounts only for the number of published works, we highlight it is important to evaluate also the quality of those publications.

This indicator has been stable in the last few years, and therefore additional actions need to be considered to reach the desired target

*Supporting and Incentive Instruments:*

- ADIR: supporting mechanism providing a small research fund (<€3000) each year on the basis of researchers' productivity
- Co-funding of research fellowships (<€13000) is used by the department to support several research projects.
- Reduction of teaching load is allowed for those researchers involved in large international research projects.
- IRIDE provides a small research fund (<€5000) for new staff members, that complements university funds which are reserved to "external" staff.

*New initiatives and correcting actions:*

- In addition to the incentives mentioned above, we devised a new tool for supporting low performing researchers that consists in funding 75% of a research fellowship supervised by two colleagues, one of them being in the lower quartile of the ADIR score. This measure is expected to help low-performing personnel, like those identified by indicator KPI-1.2, to boost their research productivity through internal collaboration. It is clear that we are asking more productive researchers to provide an additional contribution to the department. These Joint Grants funded only one post-doc position so far, which was delayed due to the Covid pandemic. We hope to see the benefits of this initiative in the next years.

## **O2 - Interdisciplinary Research**

**KPI-2.1:** Fraction of research products having as co-authors staff members of different scientific areas; **Target = 5%**.

	2017	2018	2019
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<b>KPI-2.1</b>	4.8%	3.6%	3.8%
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This KPI measures collaborations among authors belonging to different areas. Given the multidisciplinary nature of the department, such collaborations are an added value and they could boost high-quality research. Area 04 has interesting collaborations with Area 03 and Area 05. Area 13 and Area 01 can easily start interesting collaborations. This KPI decreased in the last two years, yet we would like to confirm the positive results achieved in 2017.

**Supporting and Incentive Instruments:**

- Seminars from incoming visitors are supported, and other seminar activities are regularly advertised.

**New initiatives and Correcting actions:** We foresee several opportunities for collaborations between different research areas, also considering the AI is becoming pervasive in several other fields. The CdR will consider co-financing novel multi-disciplinary research initiatives.

**O3 - High Quality Recruiting**

**KPI-3.1: Fraction of products in the top 10% SNIP score ranking of newly recruited researchers; Target >= Equivalent permanent staff.**

**KIP-3.2: Fraction of products in the top 10% SNIP score ranking of promoted researchers; Target >= Equivalent permanent staff.**

<b>KPI-3.1 and KPI-3.2 Fraction of products in the top 10% SNIP score ranking</b>	<b>Permanent staff</b>	<b>Newly Recruited</b>	<b>Promoted</b>
Full Professor	<b>37.2%</b>	--	31.4%
Associate Professor	24.4%	<b>44.4%</b>	19.0%
Researcher	44.4%	--	--
Fixed-Term Researchers [Ricercatori t-det]	25.0%	24.7%	<b>30.0%</b>

Newly recruited staff show a large productivity which will raise the quality level of the department research output. This indicator is largely exploited in both internal and external evaluation.

**Supporting and Incentive Instruments:**

- IRIDE provides a small installment fund (<€3000) for new staff members, that complements university funds which are reserved to "external" staff.

**New initiatives and Correcting actions:** To further monitor the quality of the research activities conducted by researchers and associate professors, the Department nominated a committee in charge of evaluating the scientific results of those with National Scientific Qualification as Full Professor.

## **O4 - Internationalization**

**KPI-4.1:** Fraction of publications with **international co-authors** normalized by scientific area;  
**Target  $\geq 1$**

KPI-4.1	Area 01	Area 03	Area 04	Area 05	Area 08b	Area 09	Area 13
2018	1.64	1.99	<b>2.52</b>	1.25	N/A	1.66	<b>3.16</b>
2017	1.96	1.88	2.77	1.24	N/A	1.79	3.13

*At the time of writing, the 2019 data was not available because the CRUI tool that we use to extract this KPI was under maintenance because of the undergoing VQR evaluation. We will update this section for internal use. Below we report the analysis conducted last year.*

The target is largely achieved by all areas. The department conducts high quality research which naturally translates into solid international collaborations. We highlight that the Areas with largest international collaborations also have a general better performance according to multiple indicators.

### **Supporting and Incentive Instruments:**

- IRIDE provides a small research fund (<€5000) for incoming and outgoing scholarly visits so as to foster international collaborations.
- Seminars from incoming visitors are also supported.

**New initiatives and Correcting actions:** *No corrective actions are envisaged.*

## Subsection B.2 – General analysis, taking into consideration the data reported in parts I, II III and IV

Most of the monitoring indicators were commented in detail in the previous section. In the following we provide an overall review of the department research activities by highlighting some strengths and weaknesses.

### **International Collaborations.**

Indicators show that DAIS research activities are supported by a very good network of international collaborations. DAIS is involved in several international collaborative projects, with a fundraising activity by far larger than other departments of the University. This provides a number of benefits for the research activity of the department. Participation in competitive calls for EU projects (or similar) requires staff members to confront with the evolving research activities of other groups in Europe, it increases the chance of international collaborations, and it supports the sustainability of the department thanks to the additional funds gained. We highlight the achievement of one ERC Starting Grant by prof. Renata Soukand (a recent recruitment in BIO/01) and the ERC Advanced Investigator Grant by prof. Carlo Barbante (CHIM/01), with a

total fundraising activity of about 7 million euros of funds received thanks to participation to European projects.

In terms of International Collaborations, the department performs well and no corrective actions are envisaged. Fundraising activities are quite effective. In the long term, it is important to keep this positive trend. In this regard, researchers of the department actively collaborate with the ARiC University Research Office which provides support in identifying interesting calls for collaborative projects or companies for technological transfer activities.

### **Quality of Research.**

We did not include VQR- and FFABR-like indicators in this report as the CRUI system was under maintenance at the time of writing due to the ongoing VQR evaluation. The ADIR score distribution shows a behaviour similar to that of the previous year. Yet, the ADIR score is not entirely reliable, especially because it is not normalized by Area. At the time of writing the Department is discussing a proposal for modification of the ADIR score. In particular, one possible correction is that of requiring a number of products proportional to the requirements of the National Scientific Qualification (ASN) of full professors. By looking at the analysis we conducted in the previous report, the quality of the research products is comparable to that of other universities, except for Area 13 (STATS) and Area 4 (GEO) where results are significantly better. The performance of newly hired members of the department suggests that the performance of the department should improve. The volume of the publications produced seems sufficient, therefore the department should pursue publications in top-quality venues.

Support the staff members is provided in the following ways:

- 50% co-funding of research fellowships. This is by far the most used tool by researchers: it allows to significantly reduce the cost of post-doc fellowships in a research group. Still, the access to this co-funding is limited to researchers that already have a good amount of resources.
- IRIDE-A funds incoming and outgoing visits, which may bootstrap new international collaborations and high quality research products.

In 2021 all italian universities will undergo the VQR evaluation. At the time of writing, evaluation criteria are still unknown and therefore it is difficult to estimate the outcome of the evaluation. Such evaluation will provide a more detailed analysis of the department production, especially because it can accurately compare DAIS with other national departments. This will be an extremely valuable feedback to plan the next supporting activities of the department.

### **Recruitment and Staff planning.**

In 2019 DAIS increased its size by 5 units, mainly due to new fixed-term researchers. One of the new hires is an associate professor in SSD ING-INF/05. Indeed, the department is planning to increment its personnel in the area of ING-INF/05 Information Systems. These new positions are both supporting a need of new personnel in the computer science area and they are improving the expertise of the department in the engineering area, which can be beneficial for inter-area collaborations and for the whole department. The quality of the research output of the newly recruited staff is still high compared to other members of the department, and we hope this will allow the department to improve in quality and not only to grow in size. The department supports newly recruited staff with small installment fund through IRIDE-B, which starting 2019 is implemented as an open call. Indeed, the university provides a much greater support in terms of first-installment funds which is usually gained by new associate professors. One additional area of possible growth is that of MAT/08 (or similar). Not only the department needs such foundational topics to be covered in its courses, but this need can potentially be shared with close departments.

Recently, the department has favoured new hirings instead of promotions. In the next future, and in the long run the department aims at a better balance between the two. Still, the need of growing in size is pressing, again due to the several teaching activities. The department aims with future new recruitments to support its research activities and to increase its ability to participate in collaborative international research projects.

### **Lower-performing staff.**

The average performance of the Department is satisfying. As monitored by KPI-1.2 there is 1 member of the personnel with only 1 publication indexed in Scopus in the last 3 years. This number grows to 5 if we consider members with only 3 publications. In the previous report we observed 3 and 10 members respectively. Even if results seem promising, still some action is required to increase the productivity of lower-performing staff. In 2019 we introduced a “Joint” research fellowship co-funding of 75%. This requires that two researchers join in supervising a research fellowship affording only 25% of the cost with the constraint that one researcher should be in the lower quartile of the ADIR ranking. The goal is to exploit a collaboration within the department to bootstrap new research lines and activities that can improve the productivity of both researchers. The instrument is too young to provide any evaluation. It is clear this instrument calls for a form of the contribution from all staff members, and we remark that most evaluation the Department is subject would benefit more by an incremented productivity by researchers in the bottom of the ADIR ranking rather than in the top. Regarding other instruments and incentives, it is very likely that the researchers we want to address do not have enough resources to take advantage of 50% co-funding for research fellowships. IRIDE is a very valuable instrument that allows even incoming-only visits of international researchers so as to foster novel collaborations.

### **Third mission.**

The department presented a good performance for what concerned third mission parameters. It is not clear how such a good performance could be maintained these days, looking at the pandemic crisis we are living in. Especially for what concerns public engagement the impact is unavoidable. For example the CoderDojo, presented also as a case study, is a very solid format that the Department was running with a good frequency (5-4 events per year) and good public presence. Such an event is no longer possible due to COVID restrictions and represent a bad loss both for the Department and for the community. This example is just meant to highlight the possible impact that the pandemic crisis has and will have, and to highlight the need from the Department to rethink the strategic actions to maintain the high standards achieved so far.

Beside obvious solutions, like converting some of the “in person” events into online activities, the department is strengthening the connection between the third mission and communication. The representatives for the third mission and communication, appointed by the director, will work in synergy to increase the visibility of the activities and the impact that these will have on public opinion.

The patenting activity is a strong point for DAIS. This is an element intrinsically connected with the nature of the research activities carried on at the campus, and characterizes DAIS compared to other departments. With seven patents in the period 2017-2019 we can highlight it as a good performance. Despite this, patenting, and tech-transfer in general, is a task difficult to incentivize and support. Services provided by PINK office are helping, but more needs to be done. Internal workshops may be needed to further inform faculty staff on tech-transfer, patenting opportunities, procedures and timing, so that every member knows how to convert a research result into an exploitable result.

### **Covid Pandemic.**

The Covid Pandemic started in 2020 and its impact is still difficult to be evaluated. One point we raise here is the large teaching overload that every member of the department confronted with. While in some areas, the Covid pandemic did not prevent to continue working, some

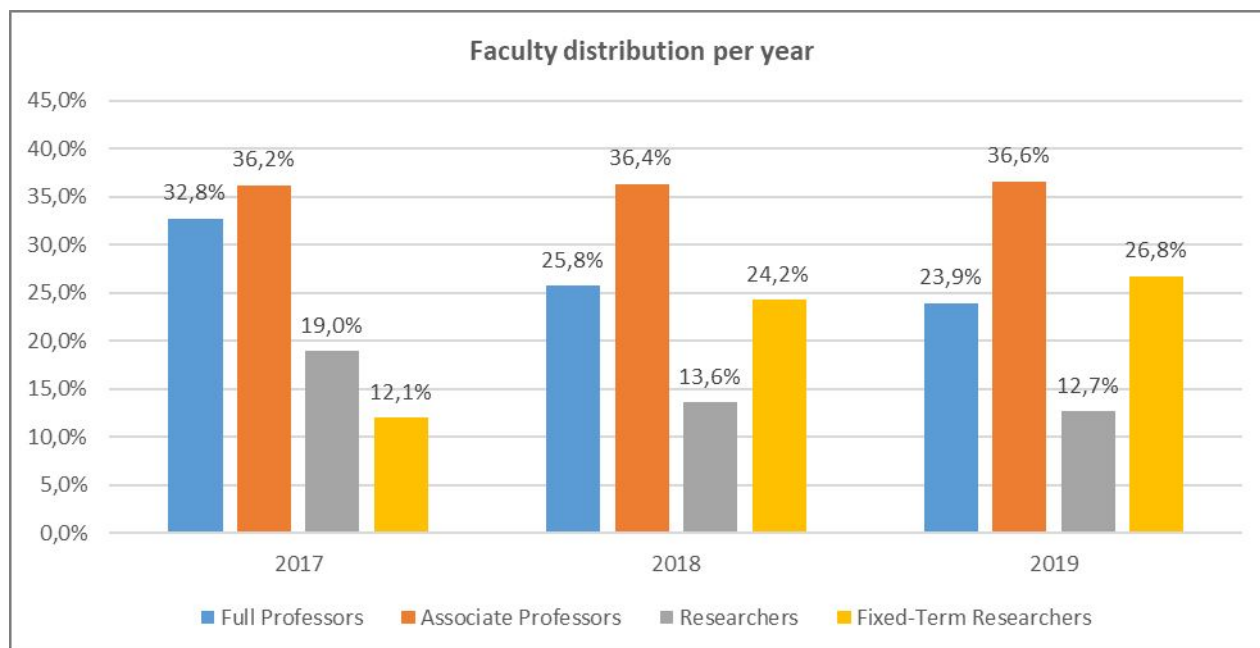
researchers even enjoyed the possibility of attending a larger number of conferences made available on-line, other areas were strongly affected by the restrictions regarding the access to the department and its labs. Certainly the teaching overload reduced the amount of time dedicated to research and the amount of quality of time spent with colleagues, especially with post-docs. The year 2021 will likely be similar.

We hope that the huge effort spent so far will be exploited in the next future. The way to achieve this goal is hard to find. One option we foresee is to allow a greater amount of on-line teaching when this is motivated by long visits periods or even “short sabbatical” periods at international institutions.



# Appendix I

## Subsection A – Personnel distribution per year



## Subsection B – Bibliometric analysis by role

Faculty detected at: 31.12.2019

Scientific production: 2019

FACULTY	In staff	Scopus scholarly output	Citation count	Citations per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	17	90	309	3.4	1.34	22.2	49.3	45.1	32.4
Associate Professors	26	108	307	2.8	1.22	15.7	45.2	33.3	22.6
Researchers	9	14	39	2.8	0.95	14.3	54.5	36.4	36.4
Fixed-Term Researchers	19	70	297	4.2	1.93	30	55.9	44.1	28.8
<b>OVERALL</b>	<b>71</b>	<b>216</b>	<b>693</b>	<b>3.2</b>	<b>1.37</b>	<b>19.9</b>	<b>50.6</b>	<b>41.6</b>	<b>28.1</b>

Faculty detected at: 31.12.2018

Scientific production: 2018

FACULTY	In staff	Scopus scholarly output	Citation count	Citations per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	17	92	849	9.2	1.87	19.6	67.8	56.9	37.3
Associate Professors	24	102	677	6.6	1.26	19.6	46.8	40.8	26
Researchers	9	17	149	8.8	1.18	23.5	83.3	58.3	50
Fixed-Term Researchers	16	52	301	5.8	1.09	11.5	55.8	55.8	18.6
<b>OVERALL</b>	66	200	1578	7.9	1.55	19	53.3	48.9	27.7

Faculty detected at: 31.12.2017

Scientific production: 2017

FACULTY	In staff	Scopus scholarly output	Citation count	Citations per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	19	82	709	8.6	1.07	18.3	67.9	47.2	44.4
Associate Professors	21	99	1255	12.7	1.77	18.2	53.4	45.8	24.7
Researchers	11	30	156	5.2	0.78	6.7	47.1	29.4	38.9
Fixed-Term Researchers	7	19	315	16.6	2.2	26.3	53.8	30.8	15.4
<b>OVERALL</b>	58	189	2136	11.3	1.54	18.5	58.3	44.4	32

## Subsection C – European Projects

Starting Year	Project acronym	Project title	Call	Responsible	SSD	Status	Duration (months)	Starting Date	Total Budget	UNIVE Share
2021	SUNSHINE	Safe by Design Strategies for High Performance Multi-component Nanomaterials	H2020-NMBP-TO-IND-2018-2020 NMBP-16-2020 (II stage)	Antonio Marcomini	CHIM/12	Coordinator	48	01/01/21	€ 3.722.757,12	€ 401.625,00

2021	PIONEER	Open Wireless Ozone Sensor Network for smart environmental monitoring of remote areas: crossing the Alps along the 12th east meridian on the trail Munich	MSCA-IF-2018, Type of Action: MSCA-IF-EF-ST, Global Fellowship	Carlo Barbante Supervisor di Federico Dallo (Applicant)	CHIM/01	coordinatore	36	01/01/21	€ 251.002,56	€ 251.002,56
2021	RePAIR	Reconstructing the Past: Artificial Intelligence and Robotics Meet Cultural heritage	H2020 FET OPEN - single stage	Marcello Pelillo	INF/01	Coordinatore	42	01/06/21	€ 2.244.675,00	€ 586.066,00
2021	MAREA	Matchmaking Restoration, Ecology and Aquaculture	MSCA-IF-2019, Type of Action: MSCA-IF-EF-ST, European Fellowship	R. Pastres supervisor di Camilla Bertolini	BIO/07	Coordinatore	24	01/07/21	€ 171.473,28	€ 171.473,28
2021	DEEPICE	Research and training network on understanding Deep ice core Proxies to Infer past antarctic climate dynamics	H2020-MSCA-ETN-2020	STENNI Barbara	GEO/08	partner	48	01/01/21	€ 4.166.057,88	€ -
2020	EUMEPLAT	Platformization of European Media: Assessing Positive and Negative Externalities	H2020-SC6-TRANSFORMATIONS-2018-2019-2020 single stage - RIA	Fabiana Zollo (exProf. Walter Quattrocchi)	INF/01	partner	36	01/03/20	€ 3.023.375,00	€ 223.162,50

2020	DuraSoft	Tecnologie innovative per migliorare la durabilità delle strutture tradizionali in legno in ambienti socio-ecologicamente sensibili	Bando mirato per progetti standard n.07/2019	Annamaria Volpi Ghirardini	BIO/07	partner	24	01/03/20	€ 864.384,19	€ 119.199,19
2020	EMERGE	Evaluation, control and Mitigation of the Environmental impacts of shipping Emissions	H2020-MG-2018-2019-2020, H2020-MG-2019-Single Stage-INEA	Antonio Marcomini	CHIM/12	Partner	48	1/2/2020	€ 7.493.885,00	€ 402.267,50
2020	Acquavitis	Soluzioni innovative per l'uso efficiente dell'acqua in viticoltura transfrontaliera	Bando mirato per progetti standard n.07/2019	Barbara Stenni	GEO/08	partner	24	01/01/20	€ 878.175,00	€ 125.750,00
2020	ICELEARNING	Artificial intelligence techniques for ice core analyses	H2020-MSCA-IF-2018	Carlo Barbante Supervisor di Niccolò Maffezzoli (Applicant)	CHIM/01	Coordinatore	24	15/1/2020	€ 171.473,28	€ 171.473,28
2020	MEND	Modeling Energy for Sustainable Ethiopia	MSCA-IF-2019, Type of Action: MSCA-IF-EF-ST, European Fellowship	Carlo Carraro Supervisor di Amsalu Woldie Yalew (Applicant)	SECS-P/05	coordinatore	24	15/11/20	€ 183.473,28	€ 183.473,28
2020	EUROFLOW	A EUROpean training and research network for environmental FLOW management in river basins	MSCA-ITN-2017 - Innovative Training Networks (solo ospitalità)	Enrico Bertuzzo	ICAR/02	Siamo Partner solo per ospitalità ricercatrice	48	Sep-20	€ -	€ -
2020	IMSyPP	IMSyPP - Innovative Monitoring Systems and Prevention	REC-AG-2019 Topic REC-RRAC-RACI-AG-2019	Fabiana Zollo	INF/01	partner	24	01/03/20	€ 650.262,54	€ 85.368,88

		Policies of Online Hate Speech								
2020	LIFE PollinAction	Actions for boosting pollination in rural and urban areas	Call LIFE2019 - LIFE NATURE AND BIODIVERSITY	Gabriella Buffa	BIO/02	Coordinatore	42	01/09/20	€ 3.293.690,00	€ 333.869,00
2020	LIFE TRANSFER	Seagrass transplantation for transitional Ecosystem Recovery	Call LIFE2019 - LIFE NATURE AND BIODIVERSITY	Adriano Sfriso	BIO/07	partner	60	01/12/20	€ 4.214.120,00	€ 66.762,00
2020	NewTech Aqua	New Technologies, Tools and Strategies for a Sustainable, Resilient and Innovative European Aquaculture	H2020-BG-2 018-2020	Roberto Pastres	BIO/07	Partner	48	1/1/2020	€ 6.723.843,50	€ 343.785,00
2019	BRIDGE	Costruire la resilienza della società ai disastri naturali: metodologie e soluzioni avanzate per l'Italia e gli Stati Uniti	Bando MAECI ITA-USA 2018	Andrea Critto	CHIM/01	coordinatore	12 rinnovabili	1/1/2019	variabile	€ 56.100,00
2019	MEDREGION	Support Mediterranean Member States towards implementation of the MSFD new GES Decision and programmes of measures and contribute to regional/subregional	MARINE STRATEGY FRAMEWORK DIRECTIVE - SECOND CYCLE: IMPLEMENTATION OF THE NEW GES DECISION AND PROGRAMMES OF MEASURES - Reference: DG ENV/MSFD 2018 call	Antonio Marcomini	CHIM/12	Associated Entity to CORILA	24	1/2/2019	n/a	€ 26.413,60

		cooperatio n								
2019	APACHE	Active & intelligent PACKaging materials and display cases as a tool for preventive conservatio n of Cultural Heritage	CALL:H2020-NMBP-ST-IND-2018 TOPIC:NMBP-33-2018 Innovative and affordable solutions for the preventive conservatio n of cultural heritage (IA)	Antonio Marcomini	CHIM/12	partner	42	1/1/2019	€ 7.522.515,90	€ 349.875,00
2019	RiskGON E	Risk Governanc e of Nanotechn ology	CALL:H2020-NMBP-TO-IND-2018-2020 TOPIC: NMBP-13-2018 Risk Governance of nanotechnol ogy (RIA)	Antonio Marcomini	CHIM/12	partner	50	1/1/2019	€ 4.999.980,00	€ 180.435,00
2019	RECEIPT	REmote Climate Effects and their Impact on European sustainabili ty, Policy and Trade	Horizon 2020 Call: H2020-LC-CL A-2018-2019-2020 (Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement) Topic: LC-CLA-03-2018 Type of action: RIA	Antonio Marcomini	CHIM/12	parte terza CMCC	48	1/9/2019	N/A	€ 30.000,00
2019	BEYOND EPICA	Beyond EPICA Oldest Ice Core: 1,5 Myr of greenhous e gas – climate feedbacks	H2020-LC-CL A-2018-2019-2020	Barbara Stenni	GEO/08	Parte terza CNR	72	1/6/2019	n/a	€ 30.000,00

2019	GOLD-ICE	GOLD-ICE Next generation analysis of the oldest ice core layers	H2020-MSC A-IF-2017 - STANDARD EF	Carlo BARBANTE Supervisor di Pascal Bohleber (Applicant)	CHIM/01	coordinatore	24	15/1/2019	€ 180.277,20	€ 180.277,20
2019	PARIS-REINFORCE	"Delivering on the Paris Agreement : A demand-driven, integrated assessment modelling approach"	Horizon 2020 Call: H2020-LC-CLA-2018-2019 -2020 (Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement) Topic: LC-CLA-01-2018 Type of action: RIA	Carlo Carraro	SECS-P/05	parte terza CMCC	36	1/6/2019	N/A	€ 40.041,87
2019	CIFTRESS	Climatic Impact on Food Trade Topology	H2020-MSC A-IF-2018	Carlo Carraro Supervisor di Ali Kharrazi (Applicant)	SECS-P/05	Coordinatore	24	15/5/2019	€ 171.473,28	€ 171.473,28
2019	QUEST	Quality and Effectiveness in Science and Technology communication	CALL: SCIENCE WITH AND FOR SOCIETY Call identifier: H2020-SWAFS-2018-2020, TOPIC: Taking stock and re-examining the role of science communication	Fabiana Zollo	INF/01	partner	24	1/2/2019	€ 1.194.227,50	€ 168.431,25
2019	Chemistry beyond Chlorine	Chemistry beyond chlorine: dialkyl carbonates for biomass upgrading and synthesis of heterocycles	bando OPCW	Fabio ARICO	CHIM/06	coordinatore	40	29/4/2019	€ 24.500,00	€ 24.500,00

2019	ECOSS	ECOLOGical observing System in the Adriatic Sea: oceanographic observations for biodiversity	2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard	Fabio Pranovi	BIO/07	partner	30	1/1/2019	€ 3.390.551,05	€ 105.001,35
2019	Adri.SMArtFish	Valorisation of Small-scale ARTisanal FISHery of the Adriatic coasts, in a context of sustainability	2014 - 2020 Interreg V-A Italy - Croatia CBC Programme Call for proposal 2017 Standard	Fabio Pranovi	BIO/07	partner	30	1/1/2019	€ 3.242.230,00	€ 391.425,00
2019	CULTURAL-E	Climate and cultural based design and market valuable technology solutions for plus Energy Houses	H2020-NMBP-ST-IND-2018-2020	Wilmer Pasut	ING-IND/11	Partner	60	1/10/2019	€ 9.641.336,25	€ 292.872,50
2019	TIME MACHINE progetto DSU solo partecipazione personale DAIS)	'Time Machine : Big Data of the Past for the Future	H2020-FETFLAG-2018-2020/H2020-FETFLAG-2018-01	Andrea Torsello	INF/01	partner assieme a DSU		1/3/2019		€ 44.101,38
2018	Families_Share	Socializing and sharing time for work/ life balance through digital and social innovation	H2020-ICT-2016-2017, Topic: ICT-11-2017, Type of action: IA	Agostino Cortesi	INF/01	coordinatore	34	1/1/2018	€ 1.425.440,00	€ 219.700,93
2018	MASTER	Multiple aspect trajectories representation and analysis	H2020-MSC ARISE 2017	Alessandra Raffaetà	INF/01	partner	48	1/3/2018	€ 504.000,00	€ 85.500,00
2018	APPRODI	From ancient maritime routes to eco-touristic	Adriatic-Ionian Programme INTERREG V-B Transnation	Elisabetta Zendri	CHIM/12	partner	24	1/1/2018	€ 969.234,10	€ 148.695,00



		destination s	al 2014-2020							
2018	GAIN	Green Aquacultur e Intensificati on in Europe	H2020-SFS-2 016-2017 Topic identifier: SFS-32-2017 , two-stage	Roberto Pastres	BIO/07	coordinato re	42	1/5/2018	€ 5.998.795,00	€ 710.328,75
2018	REFIND	Remote strategies for fossil finding: multispectr al images and species distribution al modelling applicatio ns for large-scale palaeontol ogical surveys.	H2020-MSC A-IF-2017 Global Fellowship (GF)	Stefano MALAVASI Supervisor di Elena Ghezzi (Applicant)	BIO/05	coordinato re	36	1/9/2018	€ 262.269,00	€ 262.269,00
2018	ECOMOB ILITY	"ECOMOB ILITY -- ECOLOGICAL supporting for traffic Management in coastal areas By using an Intelligent System"	Italia - Croazia 2017 Standard + projects	Andrea GAMBARO	CHIM/01	coordinato re	18	1/1/2018		€ 365.000,00
2018	WATER DROP	Droughts and Water Scarcity in the EU: Economic Impact, Adaptation , Policy Implicatio ns and Integrated Assessmen t Modelling	H2020-MSC A-IF-2015 - STANDARD EF	Antonio Marcomini	CHIM/12	coordinato re	12	1/5/2018		€ 42.069,30
2018	MILO	Mining, lobbying and efficient environme ntal policy	H2020-MSC A-IF-2016 - STANDARD EF	Carlo Carraro	SECS-P/0 5	coordinato re		1/3/2018		€ 165.254,10
2017	LIFE LAGOON REFRESH	Coastal lagoon habitat (1150*) and species recovery by restoring the salt	LIFE+ Nature and Biodiversity	Adriano Sfriso	BIO/07	partner	60	1/9/2017	€ 3.315.130,00	€ 347.773,00

		gradient increasing the fresh water input								
2017	IN17MO07	Specifiche Formali per Sistemi Software Sicuri	MAE IT-INDIA	Agostino Cortesi, parte indiana: Chaki Nabendu	INF/01	Università Ca' Foscari Venezia coordinatore insieme a Università di Calcutta	3 anni, sino al 31/12/2019	18/4/2017	Finanziamenti per la mobilità dei ricercatori italiani in India	Finanziamenti per la mobilità dei ricercatori italiani in India
2017	BIORIMA	BIOmaterial Risk Management	H2020-NMBP-2016-2017, topic NMBP-12-2017, Id H2020-NMBP-2017-two stage	Antonio Marcomini	CHIM/12	partner	48	1/11/2017	€ 8.761.418,75	€ 195.387,50
2017	LIFE GOAST	Green Organic Agents for Sustainable Tanneries	Life ENV	Antonio Marcomini (per il DAIS)	CHIM/12	partner (DSMN/DAIS/DMA)	36	1/7/2017	€ 2.290.327,00	€ 314.536,20
2017	BLUEGRASS	BLUEGRASS - Promuovere lo sviluppo di un agroalimentare verde mediante l'introduzione dell'acquaponica	INTERREG V-A Italia-Slovenia 2014-2020, Bando pubblico per la presentazione di progetti standard sull'Asse prioritario 3 n. 03/2016 6f	Daniele Brigolin fino al 26/11/2019, poi Roberto Pastres	BIO/07	coordinatore	30	1/10/2017	€ 758.976,44	€ 254.010,12
2017	LIFE REDUNE	Restoration of dune habitats in Natura 2000 sites of the Veneto coast	LIFE2016 - LIFE NATURE AND BIODIVERSITY	Gabriella Buffa	BIO/02	coordinatore	55	1/9/2017	€ 2.005.384,00	€ 217.036,00
2017	DiGe	Ethnobotany of divided generations in the context of centralization	ERC-2016-STG	Renata Soukand	BIO/01	Principal Investigator	62	1/8/2017	€ 1.496.675,00	€ 1.292.462,50

2017	MEDCIS	Support Mediterranean Member States towards coherent and coordinated implementation of the second phase of the MSFD	"Implementation of the Second Cycle of the Marine Strategy Framework Directive: achieving coherent, coordinated and consistent updates of the determinations of Good Environmental Status, initial assessments and environmental targets" - "DG ENV/MSFD Second Cycle"	Antonio Marcomini	CHIM/12	Associated Entity to CORILA	24	1/3/2017		€ 19.867,20
2017	RES URBIS	RESources from Urban Bio-waSTE	H2020-IND-CE-2016-17	Paolo Pavan	ING-IND/25	partner	36	1/1/2017		€ 199.020,00

## Subsection D – Co-Funded Post-doc positions

Year	Supervisor	SSD	Recipient	Start Date	End Date	Co-financing	Total Cost
2019	Barbante Carlo	CHIM/01	Argiriadis Elena	13/04/19	12/04/20	€ 11.893,28	€ 23.786,55
2019	Critto Andrea	CHIM/12	Pesce Marco	01/02/19	31/01/20	€ 11.893,28	€ 23.786,55
2019	Torsello Andrea	INF/01	Minello Giorgia	15/02/19	14/02/20	€ 11.893,28	€ 23.786,55
2019	Pelillo Marcello	INF/01	Simen Aslan	03/07/19	02/07/20	€ 11.893,28	€ 23.786,55
2019	Albarelli Andrea	INF/01	Schiavinato Michele	01/10/19	31/12/19	€ 11.893,28	€ 28.699,35
2019	Franzoi Piero	BIO/07	Scapin Luca	15/10/19	14/10/20	€ 11.893,28	€ 23.786,55
2019	Cortesi Agostino	INF/01	Arceri Vincenzo	01/10/19	30/09/20	€ 11.893,28	€ 23.786,55
2018	Pelillo Marcello	INF/01	VASCON SEBASTIANO	10/01/18	09/01/19	€ 5.491,53	€ 23.786,55
2018	Zendri Elisabetta	CHIM/12	ZZO FRANCESCA CATERINA	10/01/18	09/06/19	€ 9.436,64	€ 23.591,59
2018	Aricò Fabio	CHIM/06	MUSOLINO MANUELE	01/03/18	28/02/19	€ 11.800,00	€ 28.543,57

2018	Zendri Elisabetta	CHIM/12	LUCERO GÓMEZ DELIA PAOLA	17/05/18	16/05/19	€ 23.786,55	€ 23.786,55
2018	Critto Andrea	CHIM/12	FURLAN ELISA	01/03/18	28/02/19	€ 11.893,28	€ 23.786,55
2018	Torsello Andrea	INF/01	BERGAMASCO FILIPPO	09/03/18	31/10/18	€ 12.607,88	€ 28.699,35
2018	Bertuzzo Enrico	CAR/02	MARCHI GIACOMO	04/04/18	03/04/19	€ 11.893,28	€ 23.786,55
2018	Albarelli Andrea	INF/01	GASPARETTO ANDREA	02/07/18	30/11/18	€ 11.893,28	€ 28.699,35
2018	Cortesi Agostino	INF/01	DEB NOVARUN	15/12/18	14/12/19	€ 11.893,28	€ 23.786,55
2018	Buffa Gabriella	BIO/02	FANTINATO EDY	05/10/18	04/10/19	€ 11.893,28	€ 23.786,55
2018	Pavan Paolo	ING-IND/ 25	GOTTARDO MARCO	01/09/18	31/08/19	€ 11.893,28	€ 23.786,55
2017	Poli Irene	SECS-S/01	DISTEFANO VERONICA	06/12/17	05/12/18	€ 9.436,64	€ 23.657,44
2017	Pastres Roberto	BIO/07	FORCHINO ANDREA ALBERTO	01/12/17	30/11/18	€ 9.436,64	€ 23.591,59
2017	Marcomini Antonio	CHIM/12	GIUBILATO ELISA	22/10/17	21/10/18	€ 5.491,53	€ 28.543,57
2017	Gambaro Andrea	CHIM/01	MORABITO ELISA	01/08/17	31/07/18	€ 9.436,64	€ 23.591,59
2017	Aricò Fabio	CHIM/06	MUSOLINO MANUELE	01/03/17	28/02/18	€ 9.436,64	€ 23.591,59
2017	Pavan Paolo	ING-IND/ 25	PIOVESAN STEFANO	01/02/17	31/01/18	€ 5.491,53	€ 23.591,59
2017	Franzoi Piero	BIO/07	SCAPIN LUCA	10/10/17	09/10/18	€ 9.436,64	€ 23.657,44
2017	Cavinato Cristina	ING-IND/ 25	SCARPONI PAOLINA	01/09/17	31/08/18	€ 11.797,09	€ 23.657,44
2017	Focardi Riccardo, Orlando Salvatore	INF/01	SQUARCINA MARCO	19/09/17	18/03/19	€ 9.436,64	€ 35.486,16
2017	Rampazzo Giancarlo	GEO/08	VALOTTO GABRIO	02/02/17	01/02/18	€ 9.436,64	€ 23.591,59
2017	Slanzi Debora	SECS-S/01	VASCON SEBASTIANO	09/01/17	08/01/18	€ 5.491,53	€ 23.591,59
2017	Barbante Carlo	CHIM/01	VILLOSLADA HIDALGO MARIA DEL CARMEN	03/08/17	02/08/18	€ 9.436,64	€ 23.591,59
2017	Sfriso Adriano	BIO/07	WOLF MARION ADELHEID	24/10/17	23/10/18	€ 5.491,53	€ 23.657,44
2017	Albarelli Andrea	INF/01	ZAVATTA GIULIO	01/02/17	31/01/18	€ 11.795,80	€ 23.591,59
2017	Cortesi Agostino	INF/01	ZOLLO FABIANA	16/01/17	15/01/18	€ 5.491,53	€ 23.591,59

## Subsection E – Short-term scholarships

Starting Year	Supervisor	SSD Responsabile	Recipient	Start	End	Call or Funding sources	Total Cost Euro
2019	ANDREA ALBARELLI	INF/01	COSMO LUCA	16/10/19	31/12/19	Convenzione Camera Commercio 2018	4.000,00 €
2019	ANDREA ALBARELLI	INF/01	BIGAGLIA	16/10/19	31/12/19	Convenzione Camera Commercio	

			GIANLUCA			2018	4.000,00 €
2019	ANDREA ALBARELLI	INF/01	GIUDICE LORENZO	16/10/19	31/12/19	Convenzione Camera Commercio 2018	4.000,00 €
2019	ANDREA ALBARELLI	INF/01	PISTELLATO MARA	01/12/19	31/12/19	Convenzione Camera Commercio 2018	1.536,26 €
2019	CLAUDIO LUCCHESI	INF/01	MARCUZZI FEDERICO	29/11/19	06/04/20	Fondi esterni	4.500,00 €
2019	CLAUDIO LUCCHESI	INF/01	BERNARDI RICCARDO	29/11/19	28/02/19	Fondi esterni	1.500,00 €
2019	ANDREA CRITTO	CHIM/12	HUNG VUONG PHAM	05/12/19	04/12/20	Programma di Ricerca "VENEZIA 2021" CORILA	17.850,00 €
2019	ANDREA GAMBARO	CHIM/01	MORABITO ELISA	17/12/19	16/12/20	Programma di Ricerca "VENEZIA 2021" CORILA	19.367,00 €
2019	FABIO ARICO	CHIM/06	ANNATELLI MATTIA	17/12/19	16/05/20	Convenzione Istituto per la Tecnologia delle Membrane Consiglio Nazionale delle Ricerche, CNR-ITM,	4.570,31 €
2019	CRISTINA CAVINATO	ING-IND/25	GIANMARCO FRENNA	10/02/19	29/11/19	Convenzione Ditta MM S.p.A.	6.819,67 €
2019	ANDREA GAMBARO	CHIM/01	ELISA MORABITO	01/04/19	30/06/19	Progetto "Ecomobility" - ECOlogical supporting for traffic Management in Coastal areas By using an Intelligent System", finanziato nell'ambito di ITALY - CROATIA CBC Programme 2014-2020 Standard+ Call for Proposals	4.840,00 €
2019	PIERO FRANZOI	BIO/07	SIMONE REDOLFI BRISTOL	15/04/19	14/01/20	Programma di Ricerca "VENEZIA 2021" stipulato tra il CORILA - Consorzio per il coordinamento delle ricerche inerenti al sistema lagunare di Venezia e l'Università Ca' Foscari Venezia - Dipartimento di Scienze Ambientali, Informatica e Statistica	13.500,00 €
2019	SALVATORE ORLANDO	INF/01	CARMELA BARRACANE	01/04/19	30/09/19	Progetto SIN Coll@bora	9.683,50 €
2019	DANIELE BRIGOLIN	BIO/07	FEDERICO COMEL	07/05/19	06/01/20	PROGETTO INTERREG V BLUEGRASS -	10.000,00 €
2019	ANDREA CRITTO	CHIM/12	MARTA BONATO	06/05/19	31/12/19	PROGETTO US19GR08 - BRIDGE	11.900,00 €
2019	ROSSANO PIAZZA	CHIM/01	SARAH PIZZINI	02/05/19	01/11/19	Convenzione Estense Servizi Ambientali S.p.A	13.000,00 €
2019	FABIO PRANOVI	BIO/07	MARCO ANELLI MONTI	12/06/19	14/09/19	Progetto margini prof. Pranovi	5.000,00 €
2019	SALVATORE ORLANDO - RINNOVO	INF/01	FILIPPO ZANATTA	02/07/19	01/09/19	Progetto AIS.ECOMOBILITY.GAMBARO	2.600,00 €
2019	ANDREA GAMBARO	CHIM/01	ELISA MORABITO	01/07/19	30/09/19	Progetto "Ecomobility" - ECOlogical supporting for traffic Management in Coastal areas By using an Intelligent System", finanziato nell'ambito di ITALY - CROATIA CBC Programme 2014-2020 Standard+ Call for Proposals	4.840,00 €
2019	ANDREA ALBARELLI	INF/01	YULIY KHYEBNIKOV	05/09/19	31/12/19	Convenzione Camera Commercio 2018	2.123,00 €
2019	ROBERTO PASTRES	BIO/07	SILVIA MAIOLO	15/05/19	14/08/20	Convenzione con La Fondazione Edmund Mach – Centro Trasferimento Tecnologico	9.500,00 €

2019	PIERO FRANZOI	BIO/07	FRANCESCO CAVRARO	20/02/19	19/06/19	Progetto margini prof. Franzoi	6.440,00 €
2018	FABIO PRANOVI	BIO/07	CACCIN ALBERTO	16/04/18	15/02/19	Progetto FSE "SI <sup>2</sup> - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017 CUP H73C17000500005 - Prof. Fabio Pranovi	20.000,00 €
2018	ARIANNA TRAVIGLIA	L-ANT/10	GIOVANELLI RICCARDO	28/06/18	28/08/18	Progetto "Groundtruthing VEiL" Dott.ssa Arianna Traviglia	1,110 RINNOVO € 800,00
2018	ARIANNA TRAVIGLIA	L-ANT/10	BERNARDONI ANNA	28/06/18	28/08/18	Progetto "Groundtruthing VEiL" Dott.ssa Arianna Traviglia	1200 RINNOVO € 400,00
2018	ARIANNA TRAVIGLIA	L-ANT/10	FLOREANI STEFI	28/06/18	28/08/18	Progetto "Groundtruthing VEiL" Dott.ssa Arianna Traviglia	1.200,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	GRANZO ANITA	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B	1.200,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	LUCCHINI ALICE	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B	2.475,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	THALER FEDERICO	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B	2.475,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	GRAVAGNA ELISA	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo C	2.475,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	PALADINI MARCO	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo D	2.200,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	BERGAMO MARTINA	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo E	2.500,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	PAIANO JACOPO	16/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo E	3.300,00 €
2018	FABIO PRANOVI	BIO/07	PAGLIONE MARIA LICIA	24/07/18	31/01/19	FSE "SI <sup>2</sup> - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017 CUP H73C17000500005 Prof. Fabio Pranovi	3.300,00 €
2018	ANTONIO MARCOMINI	CHIM/12	LAMON LARA	27/07/18	26/10/18	Fondi di Progetto MRG2017MARCOMINI	12.000,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	BENDINI MAINARDI ANNA	23/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A	7.000,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	FUSETTI PAOLO	25/07/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A	900,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	VITALONI CHIARA	27/08/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A	900,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	VISONE FRANCESCA	24/08/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo C	900,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	ALAIMO DANIELE	27/08/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A	2.200,00 €
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	DE NEGRI CLELIA	03/09/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon	900,00 €

						Borsa Borsa Tipo A	
2018	DIEGO CALAON ELISABETTA ZENDRI	CHIM/12	AVOGARO VIRGINIA	27/08/18	28/10/18	PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaan Borsa Borsa Tipo A	900,00 €
2018	ANDREA GAMBARO	CHIM/01	MORABITO ELISA	05/09/18	04/03/19	Convenzione stipulata tra l'Istituto per la Dinamica dei Processi Ambientali del CNR e l'Università Ca' Foscari - Dipartimento di Scienze Ambientali, Informatica e Statistica, Rep. n. 210/2018, Prot. n. 42863 del 25/07/2018 CUP H76C18000400005 prof. Andrea Gambaro	900,00 €
2018	ANDREA ALBARELLI	INF/01	COSMO LUCA	21/09/18	20/01/19	Progetto Cod. 2120-13-11-2018, finanziato con D.D.R. n. 522 del 31/05/2018 e successive modifiche, nell'ambito del bando regionale 2018, D.G.R. n. 11/2018 - "La ricerca a sostegno della trasformazione aziendale. Innovatori in azienda" - POR FSE 2014-2020 - Ob. "Investimenti a favore della crescita e dell'occupazione" - CUP H76C18000190005.	11.893,28 €
2018	ANDREA ALBARELLI	INF/01	MINELLO GIORGIA	21/09/18	20/01/19	Progetto Cod. 2120-13-11-2018, finanziato con D.D.R. n. 522 del 31/05/2018 e successive modifiche, nell'ambito del bando regionale 2018, D.G.R. n. 11/2018 - "La ricerca a sostegno della trasformazione aziendale. Innovatori in azienda" - POR FSE 2014-2020 - Ob. "Investimenti a favore della crescita e dell'occupazione" - CUP H76C18000190005.	8.000,00 €
2018	FABIO PRANOVI	BIO/07	VIANELLO RITA	13/11/18	12/06/19	Progetto FSE "SI <sup>2</sup> - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017	8.000,00 €
2018	FABIO PRANOVI	BIO/07	TRAVIGLIA GABRIELLA	13/11/18	12/04/19	Progetto FSE "SI <sup>2</sup> - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017	14.000,00 €
2018	ANTONIO MARCOMINI	CHIM/12	LAMON LARA	01/11/18	30/11/18	Progetto Fondi Margini AIS MRG2017 MARCOMINI	10.000,00 €
2018	PIERO FRANZOI	BIO/07	RIDOLFI BRISTOL SIMONE	27/11/18	26/03/19	Progetto Fondi Margini AISMRG2017FRANZOI	2.333,33 €
2018	ANDREA ALBARELLI	INF/01	CIOTOLA MARCO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.600,00 €
2018	ANDREA ALBARELLI	INF/01	CROSARIOL DANIELE	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2018	ANDREA ALBARELLI	INF/01	GIACOMAZZI ANDREA	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2018	ANDREA ALBARELLI	INF/01	CARISI MATTEO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare –	5.000,00 €

						Training, accompagnamento e mentoring	
2018	ANDREA ALBARELLI	INF/01	CHIAROT GIOACOMO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	17.100,00 €
2018	ANDREA ALBARELLI	INF/01	GIRARDINI DAVIDE	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2018	ANDREA ALBARELLI	INF/01	KHLYEBNIKOV YULIY	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	17.100,00 €
2018	ANDREA ALBARELLI	INF/01	MARCUZZI FEDERICO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2018	ANDREA ALBARELLI	INF/01	ROSADA FABIO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2018	ANDREA ALBARELLI	INF/01	SPOLAOR RICCARDO	05/12/18	04/09/19	Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	5.000,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	CIPOLATO ANDREA	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	1.000,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	RICCI GIULIA	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	1.000,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	COSTANTINI ISABEL	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	750,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	BERGAMO MARTINA	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	750,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	PAIANO JACOPO	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	750,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	THALER FEDERICO	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	750,00 €
2017	ELISABETTA ZENDRI/DIEGO CALAON	CHIM/12	PALADINI MICHELE	17/07/17	09/09/17	"Archeologia Altomedievale a Torcello, Venezia"	750,00 €