

## Appendix 1

### SCIENTIFIC, TECHNOLOGICAL AND SOCIAL METHODS ENABLING CIRCULAR ECONOMY information sheet

<b>Department</b>	INGEGNERIA INDUSTRIALE - DII
<b>Coordinator</b>	Prof. Manuele Dabalà
<b>Number of positions</b>	30
SCHOLARSHIP funded by MD 118/2023  <b>See Appendix</b>	<p><b>SCHOLARSHIP N.1</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Politecnico di Torino, Italy CURRICULUM: Circular Biomaterials and Biorefinery TOPIC: Circularity in processes related to biomass processing</p> <p><b>SCHOLARSHIP N.2</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Scuola Superiore Sant'Anna di Pisa, Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: Exploring businesses value creation processes within the circular economy</p> <p><b>SCHOLARSHIP N.3</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Brescia, Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: Modeling environmental transition in energy, water and waste sectors</p> <p><b>SCHOLARSHIP N.4</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Milano, Italy CURRICULUM: Circular Biomaterials and Biorefinery TOPIC: Extraction, characterization and uses of high-value biomolecules already present in waste and by-products from different agricultural supply chains</p> <p><b>SCHOLARSHIP N.5</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Napoli "Parthenope", Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: Transition from linear to circular economy. Performance analysis in the waste sector</p> <p><b>SCHOLARSHIP N.6</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: ExpandRenEU - Expanding the Role of Renewable Energy Communities in Italy: Regulatory, Organizational and Behavioural Challenges - A Multidisciplinary Path from EU Law and Policies to Actual Implementation</p> <p><b>SCHOLARSHIP N. 7</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Perugia, Italy CURRICULUM: Technical Materials for Circularity TOPIC: New catalytic strategies for chemical recycling of polyolefin plastics</p> <p><b>SCHOLARSHIP N.8</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Roma, "La Sapienza", Italy</p>

**CURRICULUM:** Circular Biomaterials and Biorefinery  
**TOPIC:** Development of Environmental Sustainability Indicators

**SCHOLARSHIP N.9**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Torino, Italy

**CURRICULUM:** Technical Materials for Circularity

**TOPIC:** Magnetic metal ions and inorganic systems in the circular economy perspective

**SCHOLARSHIP N.10**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Trento, Italy

**CURRICULUM:** Technical Materials for Circularity

**TOPIC:** Enabling circular economy by Additive Manufacturing methods for metallic tools repair

**SCHOLARSHIP N.11**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università del Piemonte Orientale, Italy

**CURRICULUM:** Technical Materials for Circularity

**TOPIC:** An all-round approach to carbon neutrality for cement production

**SCHOLARSHIP N.12**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Ferrara, Italy

**CURRICULUM:** Technical Materials for Circularity

**TOPIC:** Development of process and metallurgical control technologies for the valorization of aluminum secondary alloys

**SCHOLARSHIP N.13**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Firenze, Italy

**CURRICULUM:** Circular Anthropogenic Environment and Society

**TOPIC:** Technological, managerial and financial innovation enhancing technical-economic and environmental efficiency of water service utilities. A case study

**SCHOLARSHIP N.14**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Milano Bicocca, Italy

**CURRICULUM:** Circular Anthropogenic Environment and Society

**TOPIC:** Circular economy development of a rating model for SMEs: governance, production and communication profiles

**SCHOLARSHIP N.15**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università degli Studi di Padova, Italy

**CURRICULUM:** Circular Biomaterials and Biorefinery

**TOPIC:** Development of a cost-effective and sustainable peptide synthesis procedure to spread the use of biodegradable, safe and effective peptides against crop pathogens in agriculture

**SCHOLARSHIP N.16**

**HOSTING UNIVERSITY/RESEARCH CENTRE:** Università di Roma "Tor Vergata", Italy

**CURRICULUM:** Circular Anthropogenic Environment and Society

**TOPIC:** What role for Public Administration in the development and implementation of systemic innovation strategies for sustainability? A theoretical-practical study for the development of strategies to foster the transition towards a circular and regenerative economic model

	<p><b>SCHOLARSHIP N.17</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università di Roma "Tor Vergata", Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: The Green Public Procurement as strategic tool in the Global Value Chains</p> <p><b>SCHOLARSHIP N.18</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Salerno CURRICULUM: Circular Biomaterials and Biorefinery TOPIC: New catalysts for the synthesis and the chemical upcycling of biodegradable polymeric materials from bio-renewable sources</p> <p><b>SCHOLARSHIP N.19</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università Politecnica delle Marche, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Innovative technological solutions for the recovery and circular valorisation of urban wastewater and sludge</p>
<p>SCHOLARSHIP funded by DM 117/2023</p> <p><b>See Appendix</b></p>	<p><b>SCHOLARSHIP N.20</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Recovery of metals from electronic waste COFOUNDED BY: 9-Tech</p> <p><b>SCHOLARSHIP N.21</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Evaluation of an industrially sustainable methodology for the calculation of the life cycle (LCA) of the products sold by DAB (electric pumps, pumping systems, electric motors and control systems) using a cradle-to-grave model and compatible with the calculation of emissions according to category 12 of Scope 3 SBTi. COFOUNDED BY: DAB Pumps SpA</p> <p><b>SCHOLARSHIP N.22</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi della Basilicata, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Saving and recovery of materials and energy in the integrated water cycle COFOUNDED BY: Hydrolab srl</p> <p><b>SCHOLARSHIP N.23</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Materials and treatments to improve life cycle of positive displacement pumps COFOUNDED BY: Varisco s.r.l., via Prima Strada, 37 Padova</p> <p><b>SCHOLARSHIP N.24</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Trento, Italy CURRICULUM: Technical Materials for Circularity</p>

	<p>TOPIC: Production of additively manufactured metal components for the Hydrogen supply chain, with a focus on LB-PBF technology application enabling Circular Economy ecosystems COFOUNDED BY: Valland S.p.A., Lecco (LC)</p> <p><b>SCHOLARSHIP N.25</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Thermodynamic and kinetic studies on the formation of intermetallic phases in wrought aluminum alloys obtained from wastes COFOUNDED BY: DUEDI S.r.l., Viale dell'Artigianato 16, 35010 Santa Giustina in Colle (PD)</p> <p><b>SCHOLARSHIP N.26</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Wireless power transfer application in the field of mobility and household appliance for improvement of energy efficiency of process and product COFOUNDED BY : INOVA LAB srl</p> <p><b>SCHOLARSHIP N.27</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Decarbonization in the steel mill's production process COFOUNDED BY: Beltrame Group</p>
<p>SCHOLARSHIP FUNDED BY UNIVERSITY/OTHER BODIES</p> <p><b>See Appendix</b></p>	<p><b>SCHOLARSHIP N.28</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Padova, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Long stainless steel products dedicated to Hydrogen in applications as an energy source: choice of steels within the design criteria, supply conditions that meet the challenges of applications in the Hydrogen industry FOUNDED BY: ACCIAIERIE VALBRUNA S.p.A</p> <p><b>SCHOLARSHIP N.29</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università di Camerino, Italy CURRICULUM: Technical Materials for Circularity TOPIC: Experimental use of recycled building components</p> <p><b>SCHOLARSHIP N.30</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Bari Aldo Moro, Italy CURRICULUM: Circular Anthropogenic Environment and Society TOPIC: Sustainable financial instruments enabling circular economy</p> <p><b>SCHOLARSHIP N.31</b> HOSTING UNIVERSITY/RESEARCH CENTRE: Università degli Studi di Palermo, Italy CURRICULUM: Circular Biomaterials and Biorefinery TOPIC: Thermocatalytic decarbonization and valorization of residual organic matrixes in Zinc based molten salts</p>
<p><b>Selection criteria</b></p>	<p>PRESELECTION ON THE BASIS OF EVALUATION OF QUALIFICATIONS AND ORAL EXAMINATION</p>

<b>Oral examination via remote interview:</b>	Applicants who have requested it in the application form will take the oral exam via remote interview using the ZOOM videoconference tool.		
<b>Evaluation criteria</b>	Qualifications: points max 60 Oral examination: points max 40 Candidates may apply for admission to more than one Topic, with a maximum limit of 3 topics. The project proposal will be unique for all submitted applications.		
<b>Documents to be submitted</b>	<b>Curriculum:</b>	Points: max 54	<p>- Candidate Profile: 1) Relevance of your profile with respect to the Curriculum indicated and with respect to a specific research topic ("Tema Vincolato") selected; 2) Extended summary of the master's / specialist / old system degree thesis. For candidates who have not yet obtained the master's degree (or equivalent), the summary must be countersigned by the supervisor; 3) Proposal for a research project pertaining to the specific topic for the three-year period of the doctorate. The project proposal must be prepared according to the "PhD project proposal" model available at the link <a href="https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy">https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy</a> (max punti 21).</p> <p>- Candidate career: Grade Point Average weighted by the number of credits for exams taken in the Laurea Triennale (max 10 points) + Magistrale/Specialistica (max 8 points) or arithmetic average for exams taken in the Laurea Vecchio Ordinamento (max 18 point). For students with a foreign degree, provide the Grade Point Average (GPA) for each degree obtained (max score 18).</p> <p>- Actual length of your studies (max 12 points);</p> <p>- Other titles: 1) Time spent abroad during your studies (e.g. Erasmus grants, Time, Erasmus Placement, thesis abroad, etc.); 2) Relevant work experience after graduation (research grants, scholarships, internship periods, period of employment); 3) Scientific awards relevant to the curriculum; 4) Other qualifications (e.g., teaching assistantships). (Max 3 points)</p>
	<b>Scientific publications:</b>	Points max 3	<p>Scientific publications: publications in journals/conferences proceedings/books and patents; report full bibliographical information (name of authors, journal or conference name, volume, publication year, pages, DOI). Manuscripts accepted for publication will be considered only if DOI is provided. (max score 4). WARNING: insert publication data in the "LIST OF QUALIFICATIONS" template available at: <a href="https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy">https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy</a></p>
	<b>Reference Letter:</b>	Point max 3	Reference letter written through the PICA web form by a faculty member or a person working in industry.

<b>Preselection: First meeting of the Evaluating Commission</b>	<b>September, 08<sup>th</sup> 2023, 9.30 a.m. CEST</b>
<b>Publication of the results of the evaluation of the preselection</b>	Within <b>September, 14<sup>th</sup> 2023</b> the evaluating Commission will publish the results of the evaluation of the qualifications in the following website: <a href="https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy">https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy</a>
<b>Publication of the timetable of remote interviews and instructions on how to use the ZOOM video conferencing</b>	By <b>September, 14<sup>th</sup> 2023</b> the commission will publish on the course website <a href="https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy">https://www.unipd.it/dottorato/scientific-technological-social-methods-enabling-circular-economy</a> the timetable of the remote interviews and the instructions on how to use the ZOOM video conferencing for those applicants who have chosen in the application form to take the oral examination via remote interview and who have passed the preselection on the basis of the qualifications with a pass-mark of at least 7/10.
<b>Oral examination</b>	19/09/2023, 09:00 a.m. CEST - The exam may continue: 20/09/2023, 9:00 a.m. CEST, 21/09/2023 ore 9:00 a.m. CEST, 22/09/2023, 9.00

## APPENDIX

<b>SCHOLARSHIP N.</b>	<b>1</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	Circularity in processes related to biomass processing
CURRICULUM	Circular Biomaterials and Biorefinery
CONTACTS	Samir Bensaid ( <a href="mailto:samir.bensaid@polito.it">samir.bensaid@polito.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Politecnico di Torino, Italy  Department of Applied Science and Technology Corso Duca degli Abruzzi, 24, 10129 Torino TO <a href="https://www.disat.polito.it/">https://www.disat.polito.it/</a>
DESCRIPTION	The PhD project involves the study of depolymerization processes of waste biomasses in hydrothermal conditions. Experimental activity is planned using laboratory reactors, analysis of gaseous, liquid and solid products to understand their interconversion mechanisms. A sustainability analysis of the recovery and valorisation process of the biomasses considered will also be carried out.

<b>SCHOLARSHIP N.</b>	<b>2</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	Exploring businesses value creation processes within the circular economy
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Marco Frey ( <a href="mailto:m.frey@santannapisa.it">m.frey@santannapisa.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Scuola Superiore Sant'Anna di Pisa, Italy  Interdisciplinary Center on Sustainability and Climate, Piazza Martiri della Libertà, 33 56127 Pisa (Italy) <a href="https://www.santannapisa.it/it/centro-ricerca-interdisciplinare-sostenibilita-clima">https://www.santannapisa.it/it/centro-ricerca-interdisciplinare-sostenibilita-clima</a>
DESCRIPTION	<p>The management of value creation processes constitutes an essential aspect for companies. In the context of a regenerative circular economy, the implications and challenges related to the design and management of such value creation processes assume significant importance. Given the intricate nature of these processes, it is crucial to explore how companies can create and distribute circular value. The key challenges include: identifying and utilizing circular resources and materials, integrating innovative technologies into production processes, transforming waste into value, engaging with various stakeholders (including institutions), adopting new business models, and evolving relationships with customers and suppliers. Considering these complexities, the ambition of this doctoral research project is to employ robust methodologies to explore innovative strategies that can foster value creation processes of companies within the context of a regenerative circular economy.</p>



<b>SCHOLARSHIP N.</b>	<b>3</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Modeling environmental transition in energy, water and waste sectors
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Giorgia Oggioni ( <a href="mailto:giorgia.oggioni@unibs.it">giorgia.oggioni@unibs.it</a> ) Rossana Riccardi ( <a href="mailto:rossana.riccardi@unibs.it">rossana.riccardi@unibs.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Brescia, Italy  Economics and Management (DEM) Via S. Faustino 74/b, 25122 Brescia, IT <a href="http://www.dem.unibs.it">www.dem.unibs.it</a>
DESCRIPTION	<p>With the Paris Agreement, the involved parties have agreed to limit the increase of the world temperature to below 2°C. There is growing recognition that reaching a climate-neutral and a more circular economy will require progressively phasing out, or profoundly changing, of the carbon intense activities. The interaction of energy, water and waste sectors plays a central role in the environmental transition. This research project analyzes these issues to evaluate the impacts of the penetration of green technologies and the applications of new policies in the aforementioned sectors to make them cleaner, more efficient and more integrated. To this scope, new mathematical models e methods, based on linear and nonlinear programming, will be developed taking into account different uncertainty factors. These models will be implemented to get new results needed for this project.</p>

<b>SCHOLARSHIP N.</b>	<b>4</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	Extraction, characterization and uses of high-value biomolecules already present in waste and by-products from different agricultural supply chains
CURRICULUM	Circular Biomaterials and Biorefinery
CONTACTS	Alessio Scarafoni ( <a href="mailto:alessio.scarafoni@unimi.it">alessio.scarafoni@unimi.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Milano, Italy  Department of Food, Environmental and Nutritional Sciences(DeFENS), Via G. Celoria 2, Milano. – <a href="https://eng.defens.unimi.it/ecm/home">https://eng.defens.unimi.it/ecm/home</a>
DESCRIPTION	The focus will be the extraction and functional characterisation of high-value biomolecules already present in waste and by-products from different agricultural supply chains by means of 'green' chemical, enzymatic, microbiological and entomological methodologies for reuse in the agricultural sector through biotechnological approaches such as agrochemicals and biostimulants and for the preparation of new bio-materials. Applications to other sectors will be also explored.

<b>SCHOLARSHIP N.</b>	<b>5</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Transition from linear to circular economy. Performance analysis in the waste sector
CURRICULUM CONTACTS	Circular Anthropogenic Environment and Society Aniello Ferraro ( <a href="mailto:aniello.ferraro@uniparthenope.it">aniello.ferraro@uniparthenope.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Napoli "Parthenope", Italy Department of Economic and Legal Studies (DiSEG) Via Generale Parisi, 13 – 80132, Napoli <a href="https://www.diseq.uniparthenope.it/">https://www.diseq.uniparthenope.it/</a>
DESCRIPTION	The PhD program aims to address the economic and environmental performance of the waste cycle, as well as the impact of legislation in order to achieve the European target of zero waste (PNRR Mission 2). Italy disposes of less than a third of its waste in landfills and recycles more than 40% of it, however, the objectives of the circular economy model are far off; significant differences emerge between regions. The objective is to assess the progress made by Italy, in the waste management process (Legislative Decree 152/2006), from an economic and legal point of view, with respect to European circular economy objectives. Potential areas for improvement will be identified, offering policy guidance with particular reference to the development of GPP for PA. PAs can influence the waste market by fostering the achievement of environmental improvement objectives of the circular economy model (Contract Code: Art. 34, 95 and 96).

<b>SCHOLARSHIP N.</b>	<b>6</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	ExpandRenEU - Expanding the Role of Renewable Energy Communities in Italy: Regulatory, Organizational and Behavioural Challenges - A Multidisciplinary Path from EU Law and Policies to Actual Implementation
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Bernardo Cortese ( <a href="mailto:bernardo.cortese@unipd.it">bernardo.cortese@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy  Department of Public, International and European Union Law, DiPIC, Padova, via 8 Febbraio 1848 n. 2, 35122 Padova - <a href="https://dirpubblico.unipd.it/">https://dirpubblico.unipd.it/</a>
DESCRIPTION	Building on the EU legal framework, consisting of Directive 2018/2001 and the broader TFUE and legislative framework on the internal energy market, including state aid, the research will have a focus on the choices implemented by Legislative Decree 199/2021 and by the national regulator, and on the tools available to regional and local public authorities, with the aim of proposing concrete regulatory and operational choices, suitable to foster the development of the tool of RECs in Italy, in a comparison with models adopted in other member states. The setting of the Veneto Region - with the current interventions of LR 16/2022 and DRG 1442/2022 - and that of the City of Padua - European Commission project "100 climate neutral and smart European cities by 2030" - will become the main focus of discussion to envision the implementation of participatory models, support and promotion of RECs with a strong dimension of social solidarity.

<b>SCHOLARSHIP N.</b>	<b>7</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	New catalytic strategies for chemical recycling of polyolefin plastics
CURRICULUM	Technical Materials for Circularity
CONTACTS	Cristiano Zuccaccia ( <a href="mailto:cristiano.zuccaccia@unipg.it">cristiano.zuccaccia@unipg.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Perugia, Italy  Department Of Chemistry, Biology And Biotechnology, DCBB Via Elce di sotto, 8 – 06123 – Perugia <a href="http://www.dccb.unipg.it/en/">http://www.dccb.unipg.it/en/</a>
DESCRIPTION	<p>The economy of plastic materials mainly follows a linear approach and generates high amounts of waste. Currently, 90% of landfilled plastic waste after a single use is made of polyolefins (PO), which are essential materials for the development of modern society. Contemporary PO recycling strategies, such as incineration or mechanical recycling, are inefficient and lead to atmospheric pollution and degradation of the quality of the polymeric material.</p> <p>The aim of the project is the development of new catalytic systems, based on transition metal complexes, capable of promoting the selective cleavage of polymer chains under mild conditions, in a circular economy perspective. In particular, selective cleavage processes of PO, including hydrogenolysis and chemo-selective functionalization of C-H bonds, will be studied using advanced NMR techniques, first on model systems and then on matrices gradually more similar to commercial PO.</p>

<b>SCHOLARSHIP N.</b>	<b>8</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Development of Environmental Sustainability Indicators
CURRICULUM	Circular Biomaterials and Biorefinery
CONTACTS	Raffaella Pomi ( <a href="mailto:raffaella.pomi@uniroma1.it">raffaella.pomi@uniroma1.it</a> ), Alessandra Poletti
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Roma, "La Sapienza", Italy Department of Civil, Constructional and Environmental Engineering; Via Eudossiana, 18 - 00184 Roma; <a href="https://www.dicea.uniroma1.it/en/content/about-us">https://www.dicea.uniroma1.it/en/content/about-us</a>
DESCRIPTION	The PhD student will be required to develop a methodology for the qualitative and quantitative identification of indicators to assess the environmental performance of complex systems in a circular economy perspective. The set of indicators will serve as a support to Public Administrations and meet the requirements posed by the ecological transition targets.

<b>SCHOLARSHIP N.</b>	<b>9</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Research on Digital and environmental transitions
TOPIC	Magnetic metal ions and inorganic systems in the circular economy perspective
CURRICULUM	Technical Materials for Circularity
CONTACTS	Mario Chiesa ( <a href="mailto:mario.chiesa@unito.it">mario.chiesa@unito.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Torino, Italy  Dipartimento di Chemistry Via Giuria 7 10125 Torino, <a href="https://www.chimica.unito.it/do/home.pl">https://www.chimica.unito.it/do/home.pl</a>
DESCRIPTION	Magnetic atoms and ions find application in all fields of current scientific research, spanning from medical diagnostic to active sites in catalysis and from quantum information technologies to smart materials. Most of these applications rely on the use of rare elements, which are unevenly located throughout the globe and often extracted exploiting inhumane working conditions. The transition to abundant and cheap, first-row transition metals is typically associated with paramagnetic species and their radical-type chemistry. This project has a twofold scope; i) understanding the structure of earth-abundant open-shell species as potential contrast agents in medical diagnostics; ii) developing solid state inorganic systems for clean and secure chemical processes. The project involves inorganic synthesis, advanced magnetic spectroscopy methods and high-level data analysis. The research work will develop in close collaboration with leading national and international partners.

<b>SCHOLARSHIP N.</b>	<b>10</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Enabling circular economy by Additive Manufacturing methods for metallic tools repair
CURRICULUM	Technical Materials for Circularity
CONTACTS	Massimo Pellizzari( <a href="mailto:massimo.pellizzari@unitn.it">massimo.pellizzari@unitn.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Trento, Italy  Department of Industrial Engineering Polo Scientifico e Tecnologico Fabio Ferrari, Polo B, Via Sommarive, 9, 38123 Povo TN <a href="https://www.dii.unitn.it/en">https://www.dii.unitn.it/en</a>
DESCRIPTION	Repairing of metal parts, by means of additive manufacturing (AM), take on particular importance for complex and high-value components, whose replacement would be expensive in terms of both part cost and line shutdown. The literature lacks information about the quantification of the cradle-to-grave environmental benefits of repairing. The results available highlight high potential savings of raw materials, energy, and pollution. Exploitation of repairing enabling circular economy relies on important technical aspects like the best repairing technology for a given damage, the selection of suitable materials, processing parameters, finishing operations, and post-heat treatment. Most case studies reported in literature rarely consider the general frame, proposing solutions that are lacking and poorly applicable. Part of them do not consider the environmental and economic impacts, at all. Aim of this project is to approach the repairing of tools and dies using a global approach.



<b>SCHOLARSHIP N.</b>	<b>11</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	An all-round approach to carbon neutrality for cement production
CURRICULUM	Technical Materials for Circularity
CONTACTS	Enrico Boccaleri ( <a href="mailto:enrico.boccaleri@uniupo.it">enrico.boccaleri@uniupo.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università del Piemonte Orientale, Italy  Dipartimento per lo Sviluppo Sostenibile e la Transizione Ecologica (DiSSTE) Piazza Sant'Eusebio, 5 - 13100 Vercelli – <a href="https://www.disste.uniupo.it/en">https://www.disste.uniupo.it/en</a>
DESCRIPTION	<p>Cement production contribute to about 8% of anthropogenic CO<sub>2</sub> emissions and rank among the most energy-intensive industries worldwide. The next decade challenge is achieving 'net-zero' CO<sub>2</sub> emissions by approximately 2050; an actual revolution for hard-to-abate industries as cement sector, that should develop all strategies to reduce the CO<sub>2</sub> emissions and implement carbon capture, utilization, and storage techniques (CCUS).</p> <p>This PhD project intend to approach sustainable materials and CCUS with fundamental and applied studies matching several carbon-related strategies to reduce the impact of cement (new cementitious materials, novel processes, carbon sink additives, CO<sub>2</sub> use, carbon capture and storage) with a possible use (or sale) of CO<sub>2</sub> as a chemical product (CO<sub>2</sub> chemistry, possible market use).</p> <p>In this approach, green procedures and potential circular/internal use of materials, not only of CO<sub>2</sub> but also of CO<sub>2</sub>-based chemicals instead of conventional ones, will be valuably considered.</p>

<b>SCHOLARSHIP N.</b>	<b>12</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Development of process and metallurgical control technologies for the valorization of aluminum secondary alloys
CURRICULUM	Technical Materials for Circularity
CONTACTS	Mattia Merlin ( <a href="mailto:mattia.merlin@unife.it">mattia.merlin@unife.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Ferrara, Italy Department of Engineering, via Saragat 1, 44122 Ferrara. <a href="https://de.unife.it/en?set_language=en">https://de.unife.it/en?set_language=en</a>
DESCRIPTION	The primary objective of this project is to improve the efficiency of recycling in the production of new alloys with low energy impact and to develop a predictive model using machine learning techniques. The goal is to implement solutions to counteract the negative effect of iron and/or other contaminants commonly present in secondary alloys and to elaborate a prediction system of chemical, microstructural and mechanical properties through the analysis of the thermodynamic events that occur during the solidification process of molten aluminum alloys. A further objective is to correlate the properties of the secondary aluminum alloys on the basis of the quality and quantity of recycled aluminum used in the formulation of the molten pool. Appropriate methodologies will be explored to obtain alloys with properties required by the market by maximizing the use of recycled aluminum.

<b>SCHOLARSHIP N.</b>	<b>13</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	Technological, managerial and financial innovation enhancing technical-economic and environmental efficiency of water service utilities. A case study
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Ginevra Virginia Lombardi (ginevravirginia.lombardi@unifi.it)
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Firenze, Italy  Dipartimento di Scienze per l'Economia e l'Impresa (DISEI). Via delle Pandette, 32 - 50127 Firenze (FI) <a href="https://www.disei.unifi.it/">https://www.disei.unifi.it/</a>
DESCRIPTION	The research activity will deal with circular economy and the ecological transition issues, analysed at company level through the study and identification of the best management and control strategies in order to maximise economic and environmental efficiency in accordance with Tariff Method and the European Green Deal. The analysis of a case study with reference to economic and environmental results, economic management and monitoring and control processes will allow to verify any critical issues. The results obtained will be compared with a sample of homogeneous companies to design any action needed. The technical-economic and environmental assessment of alternative scenarios will provide support to the water utility authority (ARERA. AIT), partners (Municipalities), managers and stakeholders to overcome inefficiencies of the water service economic and environmental performances.

<b>SCHOLARSHIP N.</b>	<b>14</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	Circular economy development of a rating model for SMEs: governance, production and communication profiles
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Massimo Beccarello( <a href="mailto:massimo.beccarello@unimib.it">massimo.beccarello@unimib.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Milano Bicocca, Italy  Department of Business and Law Di.SEA.DE Via Bicocca degli Arcimboldi 8, 20126 Milano, Edificio U7 III e IV Piano <a href="https://www.diseade.unimib.it/it">https://www.diseade.unimib.it/it</a>
DESCRIPTION	The project aims to measure and spread circularity in small and medium-sized enterprises (SMEs) and encounters numerous specific problems; just to name a few of the best known: the economic resources required for research, for the industrial scale-up of technologies and, more generally, for process or product innovation - the know-how necessary to access the technology and to maintain high technical-quality levels - the regulatory apparatus. In the research project, tools were developed to support SMEs, for the assessment of the company's environmental profile (green profile assessment) and a model for calculating the return on investments by SMEs in projects to promote the circular economy. The aim is to provide a sort of gap analysis to evaluate areas of intervention and the economic sustainability of certain interventions on a qualitative and quantitative level, also for ESG purposes.

<b>SCHOLARSHIP N.</b>	<b>15</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Research on Digital and environmental transitions
TOPIC	Development of a cost-effective and sustainable peptide synthesis procedure to spread the use of biodegradable, safe and effective peptides against crop pathogens in agriculture
CURRICULUM	Circular Biomaterials and Biorefinery
CONTACTS	Marta De Zotti ( <a href="mailto:marta.dezotti@unipd.it">marta.dezotti@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy  Dipartimento di Scienze Chimiche, Via Marzolo 1 35131 Padova, <a href="https://www.chimica.unipd.it/">https://www.chimica.unipd.it/</a>
DESCRIPTION	Phytosanitary peptides offer biodegradable and effective plant protection, but their production costs are prohibitive. The project will develop an innovative enzyme catalysis technology for the continuous flow production of peptides active against pathogens lacking alternative strategies to copper/agrochemicals. The catalysis with immobilized enzymes of each stage of the synthesis will allow the circularity and economic and environmental sustainability of the production. The project is part of M2C1 of the PNRR: Sustainable agriculture and circular economy, will take place at the DiSC and foresees 6 months at the Martin-Luther-Universität Halle-Wittenberg for the selection of enzymes (F. Bordusa) and 6-8 months at the Spanish multinational company Bioiberica (N.Sierras), for the formulation of the peptides, efficacy tests in the open field and control tests on beneficial insects. The project will train an expert figure in biotechnology, synthesis and microprocess engineering.

<b>SCHOLARSHIP N.</b>	<b>16</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	What role for Public Administration in the development and implementation of systemic innovation strategies for sustainability? A theoretical-practical study for the development of strategies to foster the transition towards a circular and regenerative economic model
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Corrado Cerutti ( <a href="mailto:corrado.cerruti@uniroma2.it">corrado.cerruti@uniroma2.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università di Roma "Tor Vergata", Italy  Department of Management and Law Via Columbia 2 – 00133 Roma; <a href="https://economia.uniroma2.it/en/dmd">https://economia.uniroma2.it/en/dmd</a>
DESCRIPTION	The research project aims to: Reconstruct: (I) the theoretical frame of reference of circular innovation processes; Map: (I) methods, tools and technologies supporting systemic innovation; (II) methods and tools for systemic impact assessment; Observe: (I) public administration decision-making processes; (II) collaboration with relevant stakeholders; (III) the integration of methods, tools and technologies supporting systemic change; Analyse empirically collected data in the light of the theoretical frame of reference, in order to: (I) develop an interpretative model of innovation processes for sustainability in public administrations; (II) identify collaborative and co-creative behavioural models; (III) propose a framework of skills, technologies and decision support tools. Qualitative and quantitative methodologies will be used to carry out this research.

<b>SCHOLARSHIP N.</b>	<b>17</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: Public Administration
TOPIC	The Green Public Procurement as strategic tool in the Global Value Chains
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Andrea Appolloni ( <a href="mailto:andrea.appolloni@uniroma2.it">andrea.appolloni@uniroma2.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università di Roma "Tor Vergata", Italy  Department of Management and Law Via Columbia 2 – 00133 Roma; <a href="https://economia.uniroma2.it/en/dmd">https://economia.uniroma2.it/en/dmd</a>
DESCRIPTION	<p>Public Procurement is a strategic lever to achieve the global objectives of sustainability. Sustainable impact in Green Public Procurement (GPP) is a relevant challenge to be better explored in global value chains (GVCs) at a scientific level.</p> <p>The aim of the research project is to develop a model that synthesizes approaches and mechanisms for Italian and European Public Administrations that can support GPP as a sustainable tool in the selection of suppliers in global supply chains. Then identify tools for implementing and monitoring GPP by exploring defined processes of standards, and certifications. Therefore, in the actions that are involving companies towards sustainable transformation, also towards a new B Corp business model. The methodology used is based on a first part of an analysis of the literature, also with the identification of best practices globally and then a qualitative-quantitative approach.</p>

<b>SCHOLARSHIP N.</b>	<b>18</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	New catalysts for the synthesis and the chemical upcycling of biodegradable polymeric materials from bio-renewable sources
CURRICULUM	Circular Biomaterials and Biorefinery
CONTACTS	Claudio Pellecchia ( <a href="mailto:cpellecchia@unisa.it">cpellecchia@unisa.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Salerno, Italy  Dipartimento di Chimica e Biologia "A. Zambelli", via Giovanni Paolo II 132, 84084 Fisciano – <a href="https://www.dcb.unisa.it">https://www.dcb.unisa.it</a>
DESCRIPTION	A variety of bio-based and bio-degradable polymers, including PLA, PBS, PBAT and PHA's, are industrially produced on the scale of $\approx$ 1 million tons/year. However, despite the green credentials of these polymers, the current end-of-life option for post-consumer waste is the collection with the organic fraction for industrial composting. Also, the biodegradation of these polymers in soil and in seawater is very slow. The project aims to develop catalytic methods able (i) to promote the chemical depolymerization of bio-based polyesters to the monomers or other value-added products under mild reaction conditions, and (ii) to increase the biodegradability of the polymeric materials through controlled copolymerization of suitable monomers.



<b>SCHOLARSHIP N.</b>	<b>19</b>
FOUNDED BY	Ex DM 118/2023 - Action Line: PNRR
TOPIC	Innovative technological solutions for the recovery and circular valorisation of urban wastewater and sludge
CURRICULUM	Technical Materials for Circularity
CONTACTS	Anna Laura Eusebi ( <a href="mailto:a.l.eusebi@univpm.it">a.l.eusebi@univpm.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università Politecnica delle Marche, Italy  Scienze ed Ingegneria dell'Ambiente, della Materia ed Urbanistica Via Breccie Bianche, 12, 60131 Ancona AN <a href="https://simau.univpm.it/">https://simau.univpm.it/</a>
DESCRIPTION	The project is aimed at studying and testing technological solutions and integrated methodologies for the treatment and monitoring of wastewater and sewage sludge, also in a potentially synergistic way with agricultural or industrial waste in urban territorial contexts. The activity will also include the study of the fate of conventional or emerging pollutants. Finally, the integration of the tested solutions in territorial contexts will be evaluated also through the definition of the environmental, energy and carbon footprint impacts in different climate scenarios.

<b>SCHOLARSHIP N.</b>	<b>20</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	9-Tech ( <a href="http://www.9tech.it">www.9tech.it</a> )
TOPIC	Recovery of metals from electronic waste
CURRICULUM	Technical Materials for Circularity
CONTACTS	Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> ) Pietro Giovanni Cerchier ( <a href="mailto:info@9tech.it">info@9tech.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	Recovery of metals from electronic waste with thermal, mechanical and chemical techniques.

<b>SCHOLARSHIP N.</b>	<b>21</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	DAB Pumps SpA
TOPIC	Evaluation of an industrially sustainable methodology for the calculation of the life cycle (LCA) of the products sold by DAB (electric pumps, pumping systems, electric motors and control systems) using a cradle-to-grave model and compatible with the calculation of emissions according to category 12 of Scope 3 SBTi.
CURRICULUM	Technical Materials for Circularity
CONTACTS	Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> ) Lorenzo Gobbi ( <a href="mailto:lorenzo.gobbi@dabpumps.com">lorenzo.gobbi@dabpumps.com</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy  Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	The present PhD project intends to propose a widely debated topic of great industrial and social impact. Within the international context of non-financial sustainability reporting, in the last decade it has been possible to note a considerable heterogeneity in the methods of evaluation and reporting of both the environmental impact of production of the asset and the assessment of the entire life cycle (LCA). In the product sector of water handling products, in which DAB Pumps operates, the methodology based on the approach described by the "Science Based Targets Initiative" (SBTi) is emerging, which is perfectly aligned with the already present eco-sustainable development regulations. It is therefore of particular interest to define an LCA calculation methodology not only capable of supporting Scope 3 assessments, but which is itself operationally sustainable and integrated into the company's Product Data Management system.

<b>SCHOLARSHIP N.</b>	<b>22</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	Hydrolab srl
TOPIC	Saving and recovery of materials and energy in the integrated water cycle
CURRICULUM	Technical Materials for Circularity
CONTACTS	Donatella Caniani ( <a href="mailto:donatella.caniani@unibas.it">donatella.caniani@unibas.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi della Basilicata, Italy Scuola di Ingegneria Via Nazario Sauro, 85, 85100 Potenza PZ <a href="https://ingegneria.unibas.it/site/home.html">https://ingegneria.unibas.it/site/home.html</a> <a href="https://portale.unibas.it/site/en/home.html">https://portale.unibas.it/site/en/home.html</a>
DESCRIPTION	The world is facing a massive energy crisis. Therefore, there is an urgent need to limit the use of nonrenewable energy sources and reduce consumption. More than 50 percent of the energy consumption of a standard sewage treatment plant is due to aeration. Sludge production from biological treatment is also a huge economic and environmental burden due to the high production. The goal of the project is to improve the sustainability of wastewater treatment by both reducing energy consumption and sludge production in sewage treatment plants by converting or upgrading existing treatment cycles and technologies, facilitating the transition from energy-consuming to energy-neutral or even energy-positive sewage treatment plants, and alleviating the burden of excess sludge production.

<b>SCHOLARSHIP N.</b>	<b>23</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	Varisco s.r.l. via Prima Strada, 37 Padova
TOPIC	Materials and treatments to improve life cycle of positive displacement pumps
CURRICULUM	Technical Materials for Circularity
CONTACTS	Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	<p>The aim of this project is to analyse in more detail various aspects concerning the tribological aspect, the choice of materials and the various treatments for key components in internal gear pumps.</p> <p>Starting with a bibliographic research on the various types of treatment for shafts and bushings, this will be followed by a search for possible new treatments and the creation of an appropriate test bench to verify the various material/treatment combinations in the field, including as additional variables temperature and type of liquid (viscosity between 1 cSt and 60000 cSt, temperature between 0°C and 400°C), creating a database of data that will compose a history that can be analysed in the future. The ultimate goal is to find valid material/treatment combinations for as many combinations of the variables involved as possible and to explore the state of the art of materials and treatments offered on the market.</p>

<b>SCHOLARSHIP N.</b>	<b>24</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	Valland S.p.A., Lecco (LC)
TOPIC	Production of additively manufactured metal components for the Hydrogen supply chain, with a focus on LB-PBF technology application enabling Circular Economy ecosystems
CURRICULUM	Technical Materials for Circularity
CONTACTS	Massimo Pellizzari ( <a href="mailto:massimo.pellizzari@unitn.it">massimo.pellizzari@unitn.it</a> ) Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Trento, Italy  Dipartimento di Ingegneria industriale Polo Scientifico e Tecnologico Fabio Ferrari, Polo B, Via Sommarive, 9, 38123 Povo TN <a href="https://www.dii.unitn.it/en">https://www.dii.unitn.it/en</a>
DESCRIPTION	<p>The PhD opportunity is now available for a dedicated student seeking to make significant in the field of additive manufacturing and its implications for the hydrogen supply chain. The student will have the opportunity to investigate the utilization of Laser Beam Powder Bed Fusion (LB-PBF) technology, an additive manufacturing technique, to fabricate metal components that enhance the efficiency and sustainability of the hydrogen supply chain. With the increasing demand for sustainable energy solutions, hydrogen has emerged as a key player in the green transition. Under the guidance of faculty and in collaboration with industry experts, the student will delve into the intricacies of circular economy ecosystems. The research will emphasize the optimization of resource utilization and waste reduction.</p> <p>The aim is to develop innovative manufacturing processes that enable the sustainable production of metal components for the hydrogen industry.</p>

<b>SCHOLARSHIP N.</b>	<b>25</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	DUEDI S.r.l., Viale dell'Artigianato 16, 35010 Santa Giustina in Colle (PD)
TOPIC	Thermodynamic and kinetic studies on the formation of intermetallic phases in wrought aluminum alloys obtained from wastes
CURRICULUM	Technical Materials for Circularity
CONTACTS	Arshad Yazdanpanah ( <a href="mailto:engineering@offmeccduedi.it">engineering@offmeccduedi.it</a> ) Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE DEPARTMENT	Università degli Studi di Padova, Italy Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	Investigation of the effect of various casting conditions on the microstructural and mechanical properties of the final product and modifying the shape and size of the intermetallic phases present in the aluminum alloys. The presence of intermetallic phases will be assessed and corrected by means of the addition or dilution of various alloying elements in order to realize possible methods for reducing the deleterious effect of iron intermetallic phases on the overall quality of the cast products addressed to the subsequent plastic deformation processes.

<b>SCHOLARSHIP N.</b>	<b>26</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	INOVA LAB srl
TOPIC	Wireless power transfer application in the field of mobility and household appliance for improvement of energy efficiency of process and product
CURRICULUM	Technical Materials for Circularity
CONTACTS	Fabrizio Dughiero ( <a href="mailto:fabrizio.dughiero@unipd.it">fabrizio.dughiero@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE	Università degli Studi di Padova, Italy
DEPARTMENT	Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	<p>The wireless power transfer technique has been taken as an ideal solution for energizing electric-driven devices within some specific regions, e.g. implanted medical devices.</p> <p>The main objective of this project is to improve several aspects of WPT systems through innovative semiconductor switches, better coil designs, roadway construction techniques and studies of higher operating frequency. We want also to design a functioning system that allows fast charging of small daily devices, guarantying low costs and weights. We want to implement a system based on self-resonant technology, in which the coils of the inductive coupling are placed on a printed circuit board. In this way, we would be able to achieve a device which would be cheaper with the respect to the ones used nowadays.</p> <p>This technology can change our traditional utilization patterns of the energy in various applications, such as portable electronic devices, smart home applications, integrated circuits and electric vehicles.</p>



<b>SCHOLARSHIP N.</b>	<b>27</b>
FOUNDED BY	Ex DM 117/2023
COFOUNDED BY	Beltrame Group
TOPIC	Decarbonization in the steel mill's production process
CURRICULUM	Technical Materials for Circularity
CONTACTS	Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE	Università degli Studi di Padova, Italy
DEPARTMENT	Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	Providing carbon neutral steel to customers is part of a broader commitment by AFV Beltrame Group to reduce emissions and make its operations more environmentally sustainable. For this reason, AFV Beltrame Group has defined as the core of its strategy a decarbonization plan and a precise roadmap to reduce its CO2 emissions to 2030. Specifically, circular economy practices are being studied and there are projects aimed at encouraging the reuse of materials used in the production process (e.g., use of recycled products to replace coal).

<b>SCHOLARSHIP N.</b>	<b>28</b>
FOUNDED BY	ACCIAIERIE VALBRUNA S.p.A
TOPIC	Long stainless steel products dedicated to Hydrogen in applications as an energy source: choice of steels within the design criteria, supply conditions that meet the challenges of applications in the Hydrogen industry
CURRICULUM	Technical Materials for Circularity
CONTACTS	Roberto Bertelli ( <a href="mailto:roberto.bertelli@valbruna.it">roberto.bertelli@valbruna.it</a> ) Manuele Dabalà ( <a href="mailto:manuele.dabalà@unipd.it">manuele.dabalà@unipd.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE	Università degli Studi di Padova, Italy
DEPARTMENT	Department of Industrial Engineering Via Gradenigo 6/a 35131 Padova <a href="https://www.dii.unipd.it/en/">https://www.dii.unipd.it/en/</a>
DESCRIPTION	<p>The scholarship project for a PhD will develop the following:</p> <ol style="list-style-type: none"><li>1.Fact-finding investigation and identification:<ol style="list-style-type: none"><li>a)of the industrial sectors most involved in the "Hydrogen Economy"</li><li>b)of the materials predominantly used;</li><li>c)risk factors or characteristics that influence the performance of the materials used;</li><li>d)of the metallurgical parameters associated;</li><li>e) the most appropriate investigation and characterization methods for each type of material.</li></ol></li><li>2.Proposal and elaboration of improvements to be made to all phases of the AV production process.</li><li>3.Contribution to the training and educational material design as well as the production of appropriate communication tools and/or participation in technical-commercial events on the subject for the purpose of commercial promotion.</li><li>4.4. As part of product certification, constant information and updates on regulations in development for applications in the "Hydrogen Economy".</li></ol>

<b>SCHOLARSHIP N.</b>	<b>29</b>
FOUNDED BY	University
TOPIC	Experimental use of recycled building components
CURRICULUM	Technical Materials for Circularity
CONTACTS	Maria Federica Ottone ( <a href="mailto:mariafederica.ottone@unicam.it">mariafederica.ottone@unicam.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE	Università di Camerino, Italy
DEPARTMENT	Scuola di Architettura e Design Lungo Castellano Sisto V, n°36, 63100 Ascoli Piceno AP <a href="https://saad.unicam.it/">https://saad.unicam.it/</a>
DESCRIPTION	<p>The aim of the project is to investigate a methodology for the experimental use of prefabricated building components, based on the recycling (upcycling) of mass-produced elements that can be used for purposes other than those for which they were produced. The study makes use of some existing research in the field of architecture, such as the recycling of 'ship containers', spatially configured systems that have completed their first functional cycle. On the one hand, the focus is on the object of recycling, through the creation of a 'database' of building components, but the aim is to complete the upcycling operation towards the implementation of a useful case study to verify the validity of the methodology through the use of sustainability indicators. The tourism sector seems to be the most appropriate one for the choice of the case study, as it is best suited to receive innovations and to collaborate in the implementation of the "demonstrator".</p>

<b>SCHOLARSHIP N.</b>	<b>30</b>
FOUNDED BY	University
TOPIC	Sustainable financial instruments enabling circular economy
CURRICULUM	Circular Anthropogenic Environment and Society
CONTACTS	Mariantonietta Intonti ( <a href="mailto:mariantonietta.intonti@uniba.it">mariantonietta.intonti@uniba.it</a> )
HOSTING UNIVERSITY/RESEARCH CENTRE	Università degli Studi di Bari Aldo Moro, Italy
DEPARTMENT	Dipartimento di Economia e finanza Largo Abbazia Santa Scolastica - 70124 Bari <a href="https://www.uniba.it/it/ricerca/dipartimenti/dse">https://www.uniba.it/it/ricerca/dipartimenti/dse</a>
DESCRIPTION	<p>The research project aims to analyze the sustainable finance tools useful for the development of the circular economy, understood as "an economy designed to be able to regenerate itself" (Ellen MacArthur Foundation 2012, Towards the Circular Economy, vol. 1).</p> <p>The areas of analysis are the following:</p> <ul style="list-style-type: none"><li>• In-depth study of the methods of developing a business model compliant with the circular economy paradigm in companies, analyzing case studies and proposing new solutions both for reducing the production of waste materials and for starting waste reuse processes as a secondary raw material;</li><li>• Study of sustainable finance tools that can come from the private financial system and financial intermediaries in the form of green loans or in other forms (sustainable funds, venture capital, green bonds) or from the public sector in the form of subsidized finance for the circular economy.</li></ul>

<b>SCHOLARSHIP N.</b>	<b>31</b>
FOUNDED BY	University
TOPIC	Thermocatalytic decarbonization and valorization of residual organic matrixes in Zinc based molten salts
CURRICULUM	Circular Biomaterials and Biorefinery
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DESCRIPTION	The goal of the research activity is to explore the potential of the thermocatalytic valorisation of residual organic wastes using zinc based molten salts. The ideal target would be the simultaneous recovery of the energy content of the matrix by producing a low-carbon H <sub>2</sub> -rich fuel gas and the sequestration of the majority of the carbon content into a solid product suitable for further applications (e.g., biochar, nanocarbons, fertilizer, etc.) depending on its characteristics.