

Inaugural SACRU Research Student Seminar 2021

A sustainable future: research delivering impact for the 21st century

Timezones

7am EST (Boston)

9am BRT/CLST (Rio de Janeiro/Santiago)

12pm WET (Lisbon)

1pm CET (Barcelona, Milan)

9pm JST (Tokyo)

10pm AEST (Brisbane)

11pm AEDT (Canberra/Melbourne/Sydney)

Monday 8th November

Chair: Professor Pier Sandro Cocconcelli, Università Cattolica del Sacro Cuore

Welcome (5 min)

Digital housekeeping: recording, group photo, chat facility, timekeeping, reminder to mute

Session one: Opening plenary address

Professor Juan Carlos Muñoz, Director of Institute for Sustainable Development, Pontificia Universidad Católica de Chile

Better understanding, designing, operating and controlling public transporte, a key driver for urban sustainability [40 min]

Discussion (15 min)

Session two: Climate futures

Angie Topp Paredes (PUC)

2020 and Covid-19 as climate laboratory of carbon neutrality

Sirikaan Prachumyaat (Sophia University)

Flood Risk and Emergency Management; Chao Praya River Case Study

Marcelo Jara Ruiz (PUC)

Affective ties, territorial identity and vision of sustainability. The case of the socio-environmental conflict due to the Los Bronces Integrated project in the Metropolitan Region of Santiago de Chile

Discussion (10 min)

Tuesday 9th November

Chair: Associate Professor Peter Hanenberg, Universidade Católica Portuguesa

Session three: Sustainable learning

Pinillos Matsuda Derek Kenji (Sophia University)

People who move among cultures and languages: Japanese descendants in the U.S. from Peru

Oressa Gray-Mullen (Boston College)

The Impact of Research Curation on Perspectives in Universal Design for Learning Research and Product Development

Judith Pridmore (ACU)

The space in-between: The relational process of leading in education (ACU)

Giampaolo Sabino (UCSC)

Pedagogical reflection and Laudato Si'. Youth and education for integral ecology, between climate change and ecological conversion in action (UCSC)

Discussion (15 min)

Session four: Sustainable resources

Gonzalo Strahovský Fernández (PUC)

Market analysis: The use of timber in Ecuador's construction sector

Ludovica Carini (UCSC)

Slow-fashion and inclusion: the sustainable reshaping of the "Made in Italy"

Chiara Misci (UCSC)

The role of spontaneous fermentation in increasing food security of African indigenous leafy vegetables

Francesca Bandini (UCSC)

Fate and microbial diversity of biopolymers under industrial conditions for anaerobic digestion and aerobic composting of food waste

Diego Fernando Rodriguez Sanchez (PUC)

Synthesis of potential new direct oral anticoagulants using green chemistry approach

Discussion (20 min)

Wednesday 10th November

Chair: Professor Diego Cosmelli, Pontificia Universidad Católica de Chile

Session five: Healthy communities

Federica Costantino (UCSC)

Advanced polymeric nanocomposites for wastewater remediation process

K. Megan Collier (Boston College)

Health Literacy and Community Support of Persons Affected by Ebola in Sierra Leone
(Research Collaborators: Beth Kellenberg Klein, Thomas M. Crea)

Mireya Viviana Belloso Daza (UCSC)

The influence of climate change in the dissemination of multi-drug resistant bacteria in the food chain

Lucía Penalba (UCP/URL)

An increased functional connectivity between several posterior brain regions is detected in patients with late mild cognitive impairment and Alzheimer's disease

Ana Filipa Moreno (UCP)

Mental Health Force: Improving justice and police officer's mental health

Discussion (20 min)

Session six: Ending violence

Lucie Calleja (UCP)

Women and Grassroots-Level Engagement in Building Peace

Eliana Guerra de Alencar (UCP/URL)

Combating violence against immigrant women

Ulrike Marwitz (ACU)

Differentiating between coercive control and situational couple violence in child protection practice

Ulda Omar Figueroa Ossa (PUC)

Avoiding the separation of children from their mothers by the penal system: Redesigning public policy for children of criminal law offenders

Discussion (15 min)

Thursday 11th November

Chair: Assistant Professor by Special Appointment Takehito Kamata, Sophia University

Session seven: Sustainable economies

Alessia Argiolas (UCSC)

The impact of the SDGs on Corporate Sustainability Reporting practice: Are the Global Goals changing the way corporations talk about Sustainability nowadays?

Valentin Held (URL)

The governance of social enterprises: A literature review

Maurice Abayo (Sophia University)

Consideration of “environmental preservation factor” as an indicator when classifying countries in different levels of development (developed countries and developing countries)

Alessandro Iuffmann Ghezzi (UCSC)

C2C E-commerce of second-hand goods: are users greedy money-savers or conscious adopters of a new and sustainable lifestyle?

Juan Pablo Casadiego G. (URL)

A first attempt in abstracting a regenerative business model framework

Discussion (20 min)

Session eight: Professional development

Writing abstracts (20 min – Professor James F. Keenan SJ, Boston College and Professor Peter Wilson, ACU)

Closing discussion (15 min)

Abstracts

Angie Topp Paredes (Pontificia Universidad Católica de Chile), *2020 and Covid-19 as climate laboratory of carbon neutrality*

In 2020, the south-central zone of Chile had an increase in precipitation in areas where it was supposed to decrease due to the rise in temperature caused by global climate change. However, 2020 was the warmest year on record although the rate of greenhouse gas emissions stopped due to lockdowns due to COVID-19. Therefore, the increase in precipitation cannot be attributed to the decrease of saturation vapor pressure. Goal 13 of the Sustainable Development Goals speaks about the urgency of combating the impacts of climate change such as soil degradation (SDG 15). The goal of this research was to use 2020 as a climate laboratory for what will happen in 2040, when the world reaches carbon neutrality. The temperature, precipitation, vapor pressure deficit and transpiration of the years 2019 and 2020 were compared in 20 stations in regions V, VI, VII and RM in Chile, finding an 80% increase in temperature and a 70% increase in precipitation. Increased precipitation was positively correlated with plant transpiration. It is concluded that the increase in vapor pressure of the air in the atmosphere was due to an increase in the transpiration of the plants and that application of soil bioengineering will be necessary to protect and conserve the soils in these regions, due to the increase of erosion in extreme precipitation events.

Sirikaan Prachumyaat (Sophia University), *Flood Risk and Emergency Management; Chao Praya River Case Study*

One of the consequences of climate change is the increase in the intensity and severity of natural disasters; none more so than flooding which severely damages both the human and natural environments. It is well known that developing countries disproportionately suffer from the effects of climate change compared with developed countries. Developing countries have fewer resources to anticipate, prepare and recover from natural disasters, as well as having greater populations situated in vulnerable areas with insufficient safeguards. This research has two main focuses, which are divided into: (i) inundation water quality from flooding with respect to human health implications; and (ii) the social aspect of people's awareness and mindset, cultural influences (i.e., religious values) and the private sector's involvement, as a reactive measure to flooding. It is with high hopes that the outcome of this research can help expand knowledge on water inundation for prolonged periods in urban residential areas and the potential effects it poses to human health/livelihoods. In addition, this research hopes to be able to incorporate culturally sensitive responses to efficiently manage major flood events by better understanding the resilient nature and approach of local communities. A closer understanding of the above will provide a substantial guideline for decision makers and officials to improve flood risk management for the benefit of all stakeholders.

Marcelo Jara Ruiz (Pontificia Universidad Católica de Chile), *Affective ties, territorial identity and vision of sustainability. The case of the socio-environmental conflict due to the Los Bronces Integrated project in the Metropolitan Region of Santiago de Chile*

Framed in a FONDECYT research, this work addresses the socio-environmental conflicts associated with Anglo American's "Los Bronces Integrado" mining project, whose large-scale impacts in a context of climate change and water scarcity, generate a threat and potential risk to the inhabitants of the Region Metropolitan of Santiago and the Region of Valparaíso (Chile). The adopted methodology corresponds to a qualitative approach which is based on in-depth interviews with socio-environmental activists; additionally, it is complemented with discourse analysis to all the observations of citizen participation in the framework of the Environmental Assessment Service (580 observations); Finally, discourse analysis is carried out on all discourse and opinion production issued by territorial agents on digital platforms from 2018 onwards. The results describe that affections have a strong impact on the defense of the territory, the construction of a collective identity around it and the emergence of a vision of sustainability by environmental activists who

reinforce a comprehensive perspective on the territory. This line of analysis and reflection allows to vindicate the position of the contemporary subject regarding the role of the affects that transit and are drawn in the territories, and that make up the intersubjective identity of inhabitants, activists and social agents related to conflicts.

Pinillos Matsuda Derek Kenji (Sophia University), *People who move among cultures and languages: Japanese descendants in the U.S. from Peru*

SDG 4 is one of the fundamental goals to solve many conflicts in our world. In this presentation, I would like to follow up the trajectory of the Japanese who emigrate to Peru and ends in the United States during the Second World War. This hidden history has not been told so often; however, they have experienced three cultures and languages at that time and have overcome many issues in different countries. Their life trajectory can give us a hint to think about people who move and try to settle in a new environment. In most of the cases, they move in families and their children experience a totally different educational environment at schools. This is because of the educational policy of each country and in some cases, it is difficult to adapt to a new environment, especially when the language and culture are different. In this presentation, I would focus on the education to the children of these people who moved among these three countries. I will show a difference between generations and parts of the US where they lived after they were released from the camps. The resources for this presentation are from articles with the testimonies of people who experienced it, and interviews that I did for some of them.

Oressa Gray-Mullen (Boston College), *The Impact of Research Curation on Perspectives in Universal Design for Learning Research and Product Development*

I would like to briefly present conclusions from my recent action research thesis project supporting a project at CAST (Center for Applied Special Technology), improving the applications of Universal Design for Learning (UDL) in school improvement. I curated research to support a new certification framework and school improvement resources intended to aid the development of high-quality UDL implementation efforts. My research report highlights the importance of research curation to develop graduate student self-efficacy and the necessity of thoroughly considered and literature-based research to improve international access to and evolve the use of UDL. Goal 4 of the Sustainable Development Goals, pursuing "quality education," is highly related to my action research. Education nurtures upward socioeconomic mobility and impacts the development of various societal structures. UDL prioritizes access to education. It is structured by examining barriers to schooling from the onset of design and allows for flexible interaction with and demonstrations of learning. I argue that this innovative model has reached a crucial point of development and international attention to warrant critical monitoring to push forward and examine a decade of research. I also advocate for the use of research curation to develop professional confidence to act. Additionally, this connects with goals 10 and 16. UDL is directly associated with reducing inequalities through pursuing improved access to education for all. As schools teach people their rights, match them with resources, and provide room to hope. Strong networks of justice are built by educated students connected with institutions or apprenticeship opportunities to explore knowledge-building. My research also relates to the 7 Laudato Si' Goals. Communities can encourage empowering, participatory action and pursue ecologically-minded change through education that is barrier-focused, flexible for learner and community needs, and accessible to all. Participation in action for positive change is motivated by participation in flexible, relevant learning opportunities.

Judith Pridmore (Australian Catholic University), *The space in-between: The relational process of leading in education*

Amid the current burgeoning corporate and educational research literature portraying leadership as essentially a relational phenomenon, none of this has sought to explore what Uhl-Bien referred to as 'the space in-between'. Simply, the dominant focus of relationship research is the entity rather than the relationship. This study set out to rectify this research deficiency by exploring the potential significance of the nature and dynamic of the relational space in-between a primary school leader and the leadership team. This shift in emphasis from the individual to the relationship responds to the UN Sustainable Development

Goal of Quality Education by extending understandings about leadership as fundamentally relational; and the *Laudado Si'* Goal of Ecological Spirituality by activating a cosmological/ontological perspective that not only understands the universe as intrinsically meaningful and creative, but also acknowledges our intersubjective coming to know the natural world with reason, sensory experience, and spiritual connectedness. A multi-site instrumental case study was conducted in a faith based primary school situated in an Australian capital city. Informed by Radical Naturalism and Symbolic Interactionism, relevant documents, experiences of leadership team meetings, and semi-structured interviews were analysed using Constant Comparative Analysis and memoing. Nine intersubjective themes were identified as becoming known in the dynamic of the relational space in-between the principal and the leadership team – Affinity, Collaboration, Communication, Deference and Care, Human Flourishing, Knowledge and its Potential to Create, Organising, Relational Identity and Relational Learning.

Giampaolo Sabino (Università Cattolica del Sacro Cuore), *Pedagogical reflection and Laudato Si'. Youth and education for integral ecology, between climate change and ecological conversion in action*

In the Encyclical Letter *Laudato Si'*, Pope Francis asks for an ecological conversion: since human activities are modifying the climate system, and the consequences of climate change undermine the survival of the planet and have serious repercussions on the poorest populations and on the future generations, “many things have to change course, but it is we human beings above all who need to change” (LS 202). My research project pursues the aim of studying and experimenting training courses to accompany students to the maturation of an intimate covenant between humanity and the environment, through an ecological education for sustainable development and sustainable lifestyles. Therefore, in the perspective of general and social pedagogy and in step with the work of the Dicastery for Promoting Integral Human Development, the purpose of the project is to promote the ecological conversion process of younger generations, because “the ecological crisis is also a summons to profound interior conversion” (LS 217). At the heart of this project is the education as a key factor for building and protecting our common home and supporting the common good, towards a “universal fraternity” (LS 228). To reach the purpose of identifying the elements able to generate changes in youth lifestyles and a renovated ecological spirituality, I am conducting a scientific and cultural in-depth analysis of the encyclical on caring for our common home, exploring youth values in relation to climate change, in dialogue with the UN Sustainable Development Goals (in particular, my work tries to connect with targets 4.7 and 13.3 of the UN Agenda 2030) and the integral ecology perspective (especially as expressed in 4, 5 and 6 *Laudato si'* Goals).

Gonzalo Strahovský Fernández (Pontificia Universidad Católica de Chile), *Market analysis: The use of timber in Ecuador's construction sector*

This research diagnoses the performance of Ecuador's construction sector, in order to identify opportunities to promote wood as a structural material in high-rise building projects; a clear way to contribute to the sustainable challenges the industry faces today¹. This document establishes that the effort to build with timber (structural wood) in Ecuador is worthy. In any country with poor construction productivity, unexploited forestry potential and housing deficit to resolve, it makes sense to promote these timber industries, which, in addition, contribute to the environmental care in the current climate emergency context. The study allowed to understand what's required to develop the industry:

1. Companies capable of industrializing timber projects.
2. Forestry and construction industries with higher standards.
3. Regulations to encourage the use of timber.
4. Public policies to allow execution of emblematic projects.
5. Forestry industry with 100% of sustainable plantations.
6. Related academic programs to train professionals.

¹ Goals addressed directly by the study: SDG No. 9: Industry, innovation and infrastructure; SDG No. 12: Responsible consumption and production; LSG No. 3: Ecological economics. Goals addressed indirectly by the study: SDG No.1: No poverty; SDG No. 8: Decent work and economic growth; SDG No. 13: Climate action; SDG No. 15: Life on land; LSG No. 1: Response to the cry of the earth; LSG No. 2: Response to the cry of the poor.

7. Study centers to disseminate timber knowledge.

The document suggests how to move forward today, indicating that access to both timber and quality wooden boards by industrializing companies established in the country, enables the development of projects of up to 8–stories based on lightweight systems. Finally, some drawbacks are mentioned. High demand for trained professionals as well as relocation of workers, who previously operated in artisanal contexts and wouldn't have a place in industrialized contexts, emerge as problems.

Ludovica Carini (Università Cattolica del Sacro Cuore), *Slow-fashion and inclusion: the sustainable reshaping of the "Made in Italy"*

Although recent years have seen Italy engaged in emergencies including economic crises, migration crises and health crises, it is important to not fully divert attention from long-term ongoing challenges. Cultural industries represent an interesting niche at the forefront of trying to respond to issues related to sustainability, both in terms of environmental protection and increase of socio-economic opportunities, bringing into play constructive dialogue and the production and renegotiation of meanings. Within this sector, however, fashion is a field still associated with heavy exploitation of both people and natural resources and, at the same time, inherently connected with luxury, waste and elitism. Moreover, the concept of "Made in Italy" is a recognised synonym of taste and quality laying its foundations on manufacture, traditions and practices linked to local territories, and this has contributed to exacerbating some other well-known issues concerning the fashion industry: it being mostly western-centric and prone to cultural appropriation. Despite these factors, the Italian fashion system has shown encouraging signals of change, accelerated by the Covid-19 pandemic as well as by the almost concomitant global rise in violent racist episodes against BIPOC individuals. The aim of this work is thus to present an angle of an ongoing study, focusing on the call by designer Giorgio Armani to shift towards a "slow-fashion" focused on quality over quantity, and also presenting the experience of WAMI - We are made in Italy, a collective of afro-descendant designers that debuted on the catwalks of the Milan Fashion Week in 2020.

Chiara Misci (Università Cattolica del Sacro Cuore), *The role of spontaneous fermentation in increasing food security of African indigenous leafy vegetables*

The population of Sub-Saharan Africa (SSA) is growing exponentially, but the expansion of agricultural areas and the increment in yields are not adequate for sustainment. Additionally, poor post-harvest handlings lead to losses that threaten food security for the poorest, hampering the achievement of the UN Sustainable Development Goal 2. Indigenous leafy vegetables (ILVs), e.g. Amaranth (*Amaranthus* sp.) and pumpkin leaves (*Cucurbita* sp.), might help the SSA thanks to their adaptability to harsh conditions. Regrettably, these ILVs often wilt or spoil, failing to meet consumers' demands. Lactic acid fermentation might represent an inexpensive solution to preserve the quality of the leaves. Thus, amaranth and pumpkin leaves were separately fermented with a saline-sucrose solution for one week. Leaves submerged in distilled water served as controls. pH of samples collected at 0, 24, 48, 72, and 168 hours was measured. Culture- and molecular-based methods were used to assess changes in microbial populations. Moreover, B-group vitamins, β -carotene, lutein, and phytic acid content were assayed before and after treatment with the saline-sucrose solution. Treated amaranth and pumpkin leaves showed a pH drop and the suppression of microbial spoilage. Different species of lactic acid bacteria dominated treated leaves, whilst in controls, the microbial deterioration occurred. Overall, following the treatment, the nutritional content of amaranth and pumpkin leaves was ameliorated affecting different compounds for the two plants. In conclusion, the final product resulted in a safer and more nutrient commodity preserved from microbial deterioration. Although, further improvements must be done to get rid of undesired microorganisms and pathogens.

Francesca Bandini (Università Cattolica del Sacro Cuore), *Fate and microbial diversity of biopolymers under industrial conditions for anaerobic digestion and aerobic composting of food waste*

Starch-based bioplastic (SBB) and poly(lactic acid) (PLA) are widespread biopolymers recycled within the organic fraction of municipal solid waste (OFMSW). The aims of this study were to simulate under real industrial conditions of anaerobic digestion and aerobic composting the treatment of the OFMSW at laboratory-scale and to assess the sustainable biodegradation of PLA and SBB, claimed by LSGs. Methane

production and mass loss were determined to estimate the anaerobic degradation, whereas phytotoxicity tests were performed to evaluate the compost quality. To visualize the effects on the materials, SEM analyses, differential scanning calorimetry (DSC) and FT-IR/ATR spectroscopy were performed. To assess the microbial communities high-throughput sequencing (HTS) of phylogenetic markers was carried out. Results showed that PLA didn't biodegrade under anaerobic conditions, while SBB showed 85.79% of disintegration degree. CH₄ production varied between 40 and 50% for both the materials. Phytotoxicity test on the composts highlighted negative effects for PLA treatments. Both bioplastics showed chemical modification according to DSC and FT-IR/ATR analyses. Moreover, HTS for bacterial and fungal communities revealed differences between aerobic biofilm and compost from PLA whereas the inoculum showed similarities with both the anaerobic biofilms. Otherwise, the archaeal diversity presented dissimilarities between inoculum and anaerobic biofilms but also distinctions among the other samples. Pilot-scale analyses under the same conditions are currently ongoing. To better predict the fate of these materials in real plants, disposable spoons with same size and thickness were used in the scale-up. The same analyses were performed, but with a deeper focus on compost quality.

Diego Fernando Rodriguez Sanchez, *Synthesis of potential new direct oral anticoagulants using green chemistry approach* (Pontificia Universidad Católica de Chile)

Chemistry has been playing a critical role in society's development. However, the early development of chemistry did not consider sustainability as a fundamental pillar. This situation was reflected in creating several chemical substances and processes which subsequently unleashed severe environmental problems. In response to circumstances, Anastas postulated the green chemistry principles as an alternative to polluting conventional chemistry, focusing on prevention over the treatment of waste. In the last three decades, the implementation of green chemistry has made outstanding achievements, significant reductions of chemical waste and promotion of new sustainable chemical methodologies. Nevertheless, a great effort is still necessary to enable sustainable chemistry to make a tangible contribution to the sustainable development goals (SDGs). We consider that the early development of science in the green chemistry field is necessary to achieve a natural transition forward to inherent sustainable chemistry, thus facilitating environmentally friendly processes, reducing the number of deaths due to chemical contamination and environmental chemical pollution. For this reason, our research is focused on developing green synthetic methodologies with applications in the synthesis of molecules with potential anticoagulant activity for the prevention of cardiovascular diseases. According to this, we used efficient reactions, alternative sources of energy such as microwave irradiation, and bio-renewable solvents. We expect our research to achieve a real contribution to objectives 3.9 and 12.4 of the 2030 agenda.

Federica Costantino (Università Cattolica del Sacro Cuore), *Advanced polymeric nanocomposites for wastewater remediation process*

Water plays a vital role in sustain life on earth. However, the quality of the water resources is affected alarmingly due to the pollution caused by industrial, municipal, and agricultural activities.¹ The demand for freshwater increasing constantly and clean water scarcity is the main issue in today's world of 7.7 billion people. Ensure the availability and sustainable management of water and sanitation for all are reported in the Agenda 2030 of United Nations (GOAL 6). All the States by 2030 have to improve the quality of water by reducing pollution and minimizing the release of hazardous chemicals.² Several physical, chemical, and biological water treatments methods are employed to remediate the toxic organic and inorganic contaminants in water.¹ Current water treatment technologies need a large infrastructure for the wastewater plant. In this scenario, the utilization of nanotechnology could be helpful for miniaturizing water treatment costs and develop innovative solutions for water treatment applications.³ Considering this behavior, during my Ph.D., have been developed and prepared different types of polymer nanocomposites for wastewater treatment remediation. In particular, combining the photocatalytic process, where the light is used to promote different chemical reactions, and different types of nanomaterials are used to absorb the light and generate species against the pollutant.¹ These nanocomposites are able to destroy several organic compounds in water such as organic dyes and pesticides.^{4,5} This approach can pave the way to use innovative and inexpensive mats for water treatment applications.

- (1) *Water Pollution and Remediation: Photocatalysis*; Inamuddin, Ahamed, M. I., Lichtfouse, E., Eds.; Environmental Chemistry for a Sustainable World; Springer International Publishing: Cham, 2021; Vol. 57. <https://doi.org/10.1007/978-3-030-54723-3>.
- (2) 21252030 Agenda for Sustainable Development Web.Pdf.
- (3) Homaeigozar, S. Water Treatment with New Nanomaterials. **2020**, 4.
- (4) Costantino, F.; Armirotti, A.; Carzino, R.; Gavioli, L.; Athanassiou, A.; Fragouli, D. In Situ Formation of SnO₂ Nanoparticles on Cellulose Acetate Fibrous Membranes for the Photocatalytic Degradation of Organic Dyes. *Journal of Photochemistry and Photobiology A: Chemistry* **2020**, *398*, 112599. <https://doi.org/10.1016/j.jphotochem.2020.112599>.
- (5) Costantino, F.; Cavaliere, E.; Gavioli, L.; Carzino, R.; Leoncino, L.; Brescia, R.; Athanassiou, A.; Fragouli, D. Photocatalytic Activity of Cellulose Acetate Nanoceria/Pt Hybrid Mats Driven by Visible Light Irradiation. *Polymers* **2021**, *13* (6), 912. <https://doi.org/10.3390/polym13060912>.

K. Megan Collier (Boston College), *Health Literacy and Community Support of Persons Affected by Ebola in Sierra Leone*. Research Collaborators: Beth Kellenberg Klein, Thomas M. Crea

The 2014-2016 West African Ebola outbreak was the largest in history, with over 28,000 infections and 11,000 deaths. Despite the outbreak's eventual containment, national and international health sensitization efforts were widely criticized. The third SDG - to ensure healthy lives and promote well-being - and the Laudato Si' goal of elevating the voices of under-resourced communities - both inform the current study that explores Ebola-related health literacy among infected and affected individuals in Sierra Leone. **Methods** Participants (n=228) were youth and adults in three categories: those who were infected, their families/caregivers, and community leaders. In-depth interviews and focus groups explored Ebola-related experiences, including health effects, stigma, and community relationships. Transcripts were coded for information related to health literacy, including knowledge of disease origin, transmission, and recovery. **Results** Levels of health literacy and subsequent reintegration of survivors were largely products of community-based efforts, rather than top-down, national public health responses. Main sources of sensitization included: survivors acting as peer educators, NGO support in communities, and being personally treated for Ebola. **Discussion** This study highlights the importance of a community-based response for increasing health literacy and decreasing disease-related stigmatization. National and international sensitization campaigns raised awareness about Ebola and its symptoms, but from a top-down approach. Our study found that utilizing the experiences of trusted cultural insiders led to a deeper understanding of Ebola, particularly around interacting with survivors, and helped infected and affected community members reintegrate. Future public health efforts should incorporate community-based participatory approaches to address infectious disease outbreaks.

Mireya Viviana Belloso Daza (Università Cattolica del Sacro Cuore), *The influence of climate change in the dissemination of multi-drug resistant bacteria in the food chain*

Climate-driven environmental changes have a direct impact in the increase of food-borne diseases. Principally, temperature fluctuations and precipitation pattern changes affect the persistence of pathogens in the environment by altering their rates of dissemination. Intensive food production practices have to an increase of antibiotic use in animal husbandry and plant health, which may contribute to the development of antimicrobial resistant (AMR) food-borne pathogens. There is significant evidence that temperature is highly related to bacterial processes and infections and so, major mechanisms for the acquisition of antibiotic resistance such as Horizontal gene transfer (HGT) are incremented. For instance, salmonellosis infection rates increase with higher temperatures and humidity and therewith AMR *Salmonella*. In addition, the negative externalities of increased rainfall may cause flooding and thereby waterborne infections due to water pollution. Pollutants are known to induce expression of antibiotic-resistance genes and bacterial mutagenesis. The consequences of the silent pandemic of AMR in the food chain have a direct impact on food safety and security and influences the achievement of Sustainable Development Goals related to hunger poverty, and the promotion of health and well-being. Proper risk assessment techniques including WGS, the development of rapid detection systems are urgently required to improve mitigation strategies.

Lucía Penalba (Universidade Católica Portuguesa/Universitat Ramon Llull), *An increased functional connectivity between several posterior brain regions is detected in patients with late mild cognitive impairment and Alzheimer's disease*

In view of our rapidly aging population, there is an urgent need to identify Alzheimer's Disease (AD) at an early stage. Our work aims to bring us closer to the 3rd sustainable development goal for 2030 "*ensure healthy lives and promoting well-being for all at all ages*". More specifically, to *reduce mortality from non-communicable diseases*. Moreover, it aligns with the Laudato Si goal "*Ecological Economics*" as detecting AD early will enable us to generate preventive interventions that will help reduce considerably the economic burden of the disease. In the present study, we assessed the dynamic functional connectivity (dFC) (i.e. the statistical dependency between two or more brain regions considering the changes over time) using new approaches. Here, a rsfMRI dataset from the Alzheimer's disease neuroimaging initiative (ADNI) was used (n= 128). The blood oxygen level dependent (BOLD) signals of 116 regions of 4 groups of participants i.e. healthy controls (n=35), early mild cognitive impairment (EMCI) (n= 29), late mild cognitive Alzheimer's (LMCI) (n= 30) and Alzheimer's disease (AD) (n= 34) were extracted, and analyzed. FC and dFC were computed using Pearson correlation and sliding-windows correlation (SWC) analyses and the Point Process analysis (PPA). Our results using the three methods showed an increased FC in several regions, most of them in posterior areas in LMCI and AD in contrast to HC and EMCI. These results suggest an increase in excitatory neurotransmitters such as glutamate in a late prodromic AD stage explained as a mal-adaptive short-term mechanism to maintain cognition.

Ana Filipa Moreno (Universidade Católica Portuguesa), *Mental Health Force: Improving justice and police officer's mental health*

Police officers (PO) are continuously exposed to different stress sources. These situations often threaten PO's mental health and increase the likelihood of developing mental health problems. Although some programmes already exist concerning police officers' psychological well-being, this topic still needs major investment and development, namely in Portugal. Given our current pandemic situation, this concern has become even more prominent. Thus, the present project aims to improve PO's mental health through emotion regulation training facing conflict situations, which can be framed within the light of both United Nations sustainability goals that aim to promote "good health and well-being" and "peace, justice and strong institutions", and the *Laudato Si – Ecological Economics* goal. Therefore, we aim to contribute to a more peaceful and fair society and promote well-being and better mental health, directly in who is responsible for applying justice. By doing so, this will impact greatly conflict situations between the police and civilians, especially the most vulnerable, resulting in less violence, a more peaceful and just society, better police performance, and mental health of the involved. Therefore, the present project is divided in two phases: Plan ALPHA and Plan BETA. Plan ALPHA is being carried out in Portugal, Spain and the UK and it aims to compare the training available concerning mental health for police officers; and assess and compare police officer's stress, and emotional regulation and coping strategies. As to the latter, we aim to design, validate and implement in Portugal a program focused on promoting police officers' mental health and relevant skills for their intervention in society and risk/crisis situations.

Lucie Calleja (Universidade Católica Portuguesa), *Women and Grassroots-Level Engagement in Building Peace*

In *Building Peace: Sustainable Reconciliation in Divided Societies* (1997), John Paul Lederach expressed that "the greatest resource for sustaining peace in the long term is always rooted in the local people and their culture" (1997:94). Based on this argument, this research promotes bottom-up approaches to peacebuilding and acknowledges the need for more inclusion and coordination between actors. Aligned with the Sustainable Development Goals (SDGs) outlined in the 2030 Agenda adopted in 2015, we advance the centrality of community engagement and women's participation in building sustainable peace. The 2030 Agenda for Sustainable Development constitutes a collective action to strengthen universal prosperity and highlights the linkages between development, peace, and gender equality. More specifically, SDG 5 'gender equality' is central to this research as it advances the need to ensure women's full inclusion and equal participation in peacebuilding processes. Besides, our perspective supports SDG 16, reaffirming the need to ensure peace and security through conflict prevention and resolution initiatives. We emphasise the need to include grassroots approaches and strengthen capacity-building at the community level. In this regard, this research relates to the Laudato Si' Goals (LSGs) 'Response to the Cry of the Poor' and 'Community

Engagement and Participatory Action’. These goals defend the development of cultures and policies that protect human life and increase solidarity with vulnerable people. Finally, this research highlights the need for increased coordination and collaboration between all stakeholders as a global partnership to achieve inclusive and sustainable peace worldwide.

Eliana Guerra de Alencar (Universidade Católica Portuguesa/Universitat Ramon Llull), *Combating violence against immigrant women*

In 2015, at the UN headquarters, a work agenda was created containing an action plan with objectives aimed at guaranteeing human rights, eradicating poverty, protecting the planet, and building peace. The 2030 Agenda is a universal commitment that seeks to achieve, through joint efforts between countries, combining economic, social and sustainable environment dimensions 17 sustainable development goals (SDGs), in an integrated and indivisible way until the year 2030. Also, in 2015, Pope Francis wrote a letter with the title “Caring for the planet as a common place for all individuals”, aimed at all the Catholic Community in the world, inviting for a reflection and a dialogue renewal, regarding how the humanity has been related to our planet and seeking for solutions through unifying efforts around the world. According to the 2020 IUCN report, the environmental crisis affects disproportionately women, worsening the current global situation regarding gender violence, mainly in the rural and low-income families. An important factor to be considered in the decision to seek abroad a better and safer life is the main motivation behind immigration. IOM/UN data demonstrate that the world officially registered 272 million immigrants in 2019, representing 3.5% world’s population, in which 47.9% are women that decided to immigrate by themselves or with their kids. Understanding the scenario and collecting data to formulate new and innovative public policies, aimed at combating violence against immigrant women will be my research contribution, considering SDG 5 and the seven GOALS of the “Laudato Si”.

Ulrike Marwitz (Australian Catholic University), *Differentiating between coercive control and situational couple violence in child protection practice*

The targets and indicators of Goal 16 of Laudato Si’ include 16.1 ‘Significantly reduce all forms of violence and related deaths rates everywhere’ and 16.2 ‘End abuse, exploitation, trafficking and all forms of violence against and torture of children’. Domestic violence is a common form of violence that impacts of people across all cultural and economic groups, and particularly harms women and children. Children living in homes where there is violence are at an increased risk of child abuse and are also harmed by witnessing violence. To effectively protect such children, child protection services need to understand the causes of domestic violence, and the interventions that can help to end such violence and improve children’s safety. There is growing recognition in the domestic violence field that it is important to differentiate between violence that is characterised by coercive control, and violence that is situational in nature without accompanying coercive control. Research suggests that these forms of violence have different causes, and that different kinds of interventions may be needed to improve the safety of victims, including children. Differentiation between these violence types has been explored in a number of contexts such as family court, perpetrator programs, and relationship counselling, but not, to date, the context of statutory child protection practice. My thesis explores whether differentiating between coercive control and situational couple violence is relevant to this particular practice setting and whether this could lead to improved safety for children and young people harmed by domestic violence.

Ulda Omar Figueroa Ossa (Pontificia Universidad Católica de Chile), *Avoiding the separation of children from their mothers by the penal system: Redesigning public policy for children of criminal law offenders²*

The incarceration of women offenders has increased over the last few decades, making it difficult for them to exercise their motherhood. This has generated social problems, affecting the children's mental health, increasing the chances of school dropout and the chances of starting a criminal career. This work

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carries out a review of the strategies that States implement to face these social problems. Based on the Chilean State experience, the implementation of three types of strategies is critically analyzed: allowing children to live in prisons with their mothers, providing community services for their children, and the suspension of the sentence imposed to their mothers. Based on this diagnosis, the public policy aimed at imprisoned women and their children is redesigned. We propose to coordinate the social and penal institutions to detect early on women that are starting delinquent activities. Using alternatives to prison, they should be linked to probation programs that grant social benefits to their children and intervene on criminogenic factors that encourage their mothers to offend—under the pre-requisite that avoiding reoffending is the condition to not be separated again from their children by the criminal justice system. This proposal is made in the framework of United Nations SDG No. 10, as it seeks to reduce the social inequalities that generate mass incarceration, while also providing answers to the call made by the encyclical “Laudato Si” to promote solidarity with children at social risk.

Alessia Argiolas (Università Cattolica del Sacro Cuore), *The impact of the SDGs on Corporate Sustainability Reporting practice: Are the Global Goals changing the way corporations talk about Sustainability nowadays?*

The Sustainable Development Goals (SDGs) represent a common global framework developed with the participation of countries, the business sector and civil society, and in which corporations are expected to play a leading role, given their potential to innovate and scale impact. The SDGs constitute a new reference framework for organizations, they indicate priorities and are expected to guide sustainability goals setting, accountability and communication with relevant stakeholders. Applying Computer-Aided Text Analysis (CATA) to the sustainability reports of 164 large corporations from the S&P Global Sustainability Yearbook we systematically examine changes in their sustainability reporting following the SDGs' introduction in 2015. The results show significant positive changes and alignment for some of the SDGs (such as SDG 12 and SDG 13), but not for others (such as SDG 1 and SDG 4). We further analyse changes across industries and geo-institutional groups, showing different engagement patterns with the SDGs that suggest mechanisms of adoption as business orients towards addressing pressing sustainable development priorities.

Valentin Held (Universitat Ramon Llull), *The governance of social enterprises: A literature review*

Social enterprises play a crucial role in addressing the UN sustainable development goals, and policy makers such as the European Commission endorse social enterprises as part of a social economy. Against this background, there is consensus among scholars about the importance of governance in social enterprises. Yet, existing literature reviews have refrained from addressing social enterprise governance. This review inquires about the unique governance challenges that social enterprises face and how they address them. Based on a systematically collected and analyzed sample of 72 peer-reviewed journal articles across multiple disciplines, the review identifies accountabilities to multiple principal stakeholders, agents that combine altruism and self-interestedness, and the paradoxical relationship between social and commercial objectives as fundamental governance challenges in social businesses. ‘Hard’ governance, comprising formal structure and control addresses these challenges to some extent. However, impediments related to a mismatch between the assumptions of agency-based governance mechanisms and the context of social enterprises, the insufficiency of differentiated governance structures to balance social and commercial objectives over time, and technical and ideological difficulties of social measurement and reporting limit the applicability and effectivity of ‘hard’ governance. ‘Soft’ governance, comprising organizational culture, identity, socio-psychological mechanisms, and subtle mediation forces circumvent some of these impediments, making them a necessary supplement for social enterprise governance. The review concludes with suggestions for future research that may draw on social capital, social-identity, and stewardship theories.

Maurice Abayo (Sophia University), *Consideration of “environmental preservation factor” as an indicator when classifying countries in different levels of development (developed countries and developing countries)*

Referring at both initiatives, the Sustainable Development Goals (SDGs) and the Laudato’ Si goals, they have good ambitions of having a better future towards a sustainable development and many countries are committed to achieve them at their best. But there is one contradiction to how development is looked

at, globally. Looking at how countries are classified in terms of their level of development from developing countries to developed countries, the common indicator of measurement is Gross National Income (GDI) per capita, and they ignore whether that development is sustainable or not. Therefore, that contradiction of two stand-alone aspects, one for sustainable development and the other one for countries' development classification ignoring whether it is sustainable or not, leaves a big gap and makes countries not harmonizing their developments with the environmental preservation and leads us to the deterioration of our world's environment. My research proposal is to analyze the gap or contradiction between the two mentioned-above initiatives and the way countries are economically classified. And my expected output is to create environmental indicators which can be added when classifying countries but this time "sustainable development". And the new indicators together with existing indicators will be weighted differently before being summed up and produce one real image of how sustainably each country is. The intention of my research is to make the two mentioned-above initiatives being achievable on time, before being trapped into serious global environmental disasters which may occur soon if we do not change our working/thinking behaviors.

Alessandro Iuffmann Ghezzi (Università Cattolica del Sacro Cuore), *C2C E-commerce of second-hand goods: are users greedy money-savers or conscious adopters of a new and sustainable lifestyle?*

The meteoric rise of e-commerce during the Covid-19 pandemic is a matter of facts which also boosted by 14 percent the digital adoption in Europe, an increment that would have taken two or more years at pre-pandemic growth rates. B2C marketplaces such as Amazon have prospered³ while physical retailers struggled being short on stock, slow to deliver, or even entirely missing the online opportunity. There has been another e-commerce history of success much less commonly told: the growth and the newfound popularity of C2C⁴ marketplaces hosting buying and selling activities of secondhand goods both on horizontal sites such as Facebook Marketplace and vertical ones like Vinted for fashion items only. The surge has been driven by millions of people who spent time during lockdowns clearing out wardrobes and basements, selling online the unwanted; it is no short-term trend and is now estimated to be worth 6 billion Euro, having doubled in 2020⁵ and expected to grow at a double-digit rate in the next years. People are buying more secondhand goods online primarily to save money but creating less waste and adopting a new sustainable lifestyle is also driving this "behavioral shift". The present investigates the main shopping motives on C2C e-commerce platforms and demonstrates how making the users aware of the positive impact of recycling could further fuel growth in C2C transactions beyond mere money saving motives.

Juan Pablo Casadiego G. (Universitat Ramon Llull), *A first attempt in abstracting a regenerative business model framework*

Even though companies are adopting sustainability, there is a growing threat of abrupt and irreversible changes across the Earth System. This paradox questions the effectiveness of existing corporate sustainability practices. The private sector is called to be a key factor in fostering and achieving the Sustainable Development Goals (SDGs). Especially to directly target goals in relation to production and consumption patterns (SDG 12), industry innovation and infrastructure (SDG 9) and creation of decent jobs (SDG 9). However, there are two main issues that hinder adequate private sector engagement into the 2030 Sustainable Development Agenda. First, there is a lack of understanding between macro-level development models (SDGs) with micro-level organizational aspects (managerial action). Second, interdependencies between SDGs are not clear, limiting our knowledge in how to systematically attend complex linked phenomena. Willing to tackle both issues, I aim to unfold knowledge in how the private sector can effectively manage social-ecological systems (SES) by operationalizing regenerative business models. Ecosystem restoration and regeneration require deeper exploration in the light of business models, given the fact that both provide science-based solutions to tackle climate change and biodiversity loss. Biodiversity conservation and ecosystem resilience are at the core of the SDGs interdependencies (without biodiversity we cannot

³ In 2020, Amazon sales soared in the United Kingdom by 51 percent, to a record \$26.5 billion, and in Germany by 32 percent, to a record \$29.5 billion

⁴ Customer to customer, a business model that enables customers to trade with each other, frequently in an online environment

⁵ McKinsey & Company, C2C e-commerce: Could a new business model sell more old goods? (2021)

ensure food provision, diminishing SDG 2 efforts, for example). Consequently, I aim to adopt a systems lens to better understand how firms can operationalize the SDGs through regenerative business model innovation. Especially, to understand feedback loops across SES that provide vital ecosystem services while preserving biogeochemical cycles. Contributions directly attends the call of the following SDGs: 12, 13 and 15, among others. Knowledge co-creation along with other stakeholders also promotes enforcing SDG 17.