

Ferrara - Italy
 November 11th, 2021
ONLINE WORKSHOP
FREE-OF-CHARGE
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“A Resilient and Sustainable World: Contributions of Cleaner Production, Circular Economy, and Eco-Innovation”

INTERNATIONAL WORKSHOP ON ADVANCES IN CLEANER PRODUCTION

Realization by



Organized by



Boosting Knowledge Exchange Seeking Sustainability

In participation with





Technical Report

Responsible for the information:

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<http://www.advancesincleanerproduction.net>

“A RESILIENT AND SUSTAINABLE WORLD: CONTRIBUTIONS OF CLEANER PRODUCTION, CIRCULAR ECONOMY AND ECO INNOVATION”

Ferrara - Italy – November 11th, 2021

Due to COVID-19 pandemics, the **10th IWACP** occurred in a different way. The topic of the **10th International Workshop Advances in Cleaner Production (IWACP): A Resilient and Sustainable World: Contributions of Cleaner Production, Circular Economy and Eco Innovation** was discussed totally **ONLINE**. The event was hosted in Ferrara, Italy, by University of Ferrara. All the content of **10th IWACP** (Conferences, Plenary and Oral Presentations, etc.) are available in the events' website since November, 11th, 2021.

The international conference was organized by the Postgraduate Program in Production Engineering (Master's and Doctoral Program) and Co-organized by inno4SD (Innovation for Sustainable Development Network) and University of Ferrara. The event counted with the partnership of the Stellenbosch University (South Africa), University of Kent (UK), BNU (Beijing Normal University, China), UNIFI (University of Firenze, Italy), SEEDS (Sustainability Environmental Economics and Dynamic Studies), Illinois Institute of Technology (USA), the University of Manitoba (Canada), CUC (Universidad de la Costa, Colombia), UNISON (Universidad de Sonora, México), Deakin University (Australia), the scientific journals Journal of Cleaner Production, Cleaner and Responsible Consumption, Cleaner Waste Systems, and the ACPN (Advances in Cleaner Production Network). The Vice Dean for Post-Graduate Studies and Scientific Research of UNIP had the merit of the conference success, having been responsible for infrastructure support.

The partnership with the Journal of Cleaner Production (<https://www.journals.elsevier.com/journal-of-cleaner-production/>) that started during the 1st IWACP was maintained with the support of the Co-Editors in Chief: Prof. Cecilia M. V. B. Almeida, Prof Yutao Wang and Prof. Jiri Klemes. This year, the conference received also support from Cleaner and Responsible Consumption, Cleaner Waste Systems. Three special Issues will account for the contributions of the 10th IWACP participants.

In the third event organized outside Brazil, the organizing Committee considered that all the pre-established goals for the 10th IWACP were fully reached:

(1) The academic information exchange - It was significant the number of participating academic institutions (163 universities and colleges that reflected in the 197 academic contributions presented. The excellent quality of the contributions presented, in a process of continuous improvement as was seen edition by edition, resulted in another invitation by the Journal of Cleaner Production (JCLP), for a ninth special issue and special issues in Cleaner and Responsible Consumption and Cleaner Waste Systems.

(2) Presentations of recent achievements in CP were made by a significant number of participants. In this event, the participants with the best papers received a 'Special Mention Award' and were invited to record their presentations. All these presentations are available in 10th IWACP's website via streaming.

(3) The common problems and routing of solutions was extensively and deeply discussed at plenary sessions and oral presentations.

(4) The increase in international relationship through individual and institutional contact was a goal achieved. Participants of 45 countries attended the conference.

(5) The deepening of the discussion on the fundamental theme of the conference: A Resilient and Sustainable World: Contributions of Cleaner Production, Circular Economy and Eco Innovation was the concern of the conference. Given these impressive results, the Organizing Committee is honored for having organized the 10th International **IWACP**.

Presentation

The **10th IWACP** was carried out with the participation of a group of people committed to the success of the conference. This team consisted of guest speakers, lecturers, presenters of academic and organizational experiences and sessions' coordinators.

The institutions represented at the event through active participants are listed below. The list evidences the broad institutional representation at the conference.

Aarhus University	ENSA AGADIR
Abdul wali khan university mardan, Pakistan	Escola Eleva Barra da Tijuca
Agricultural University of Tirana	Faculdades Integradas de Jaú
Anna University	Fatec Baixada Santista - Rubens Lara
Asian University for Women	Federal Institute of Education, Science and Technology of Goiás
Assam Don Bosco University	Federal Institute of Education, Science and Technology of São Paulo
BA School of Business and Finance	Federal Rural University of Pernambuco - UFRPE
Bangladesh Agricultural Research Council	Federal University of Alagoas - UFAL
Bangladesh University of Engineering and Technology	Federal University of Amazonas - UFAM
Beijing Normal University	Federal University of Bahia - UFBA
BlindSpot Think Tank	Federal University of Goias - UFG
Catholic University of Louvain	Federal University of Paraiba - UFPA
CEFET/RJ	Federal University of Parana - UFPR
Centro Universitário FEI	Federal University of Rio de Janeiro - UFRJ
Centro Universitário para o Desenvolvimento do Alto Vale do Itajaí - UNIDAVI	Federal University of Rio Grande do Sul - UFRGS
Chemistry for Technologies Laboratory	Federal University of Santa Catarina - UFSC
Chikkanna Govt Arts College	Federal University of São Carlos - UFSCar
CIRCE - Parque Empresarial Dinamiza	Federal University of São Paulo - UNIFESP
Cotton Development Board	Fundação Hermínio Ometto
Ecole des Mines de Saint-Etienne	Group Nemory
Ege University	Guangdong University of Technology
EIT InnoEnergy	

Holistic Actions!
 IBN ZOHR UNIVERSITY
 Indian Institute of Technology Bombay
 INGEOS SAS
 Instituto de Pesquisas Tecnológicas de São Paulo - INPE
 Instituto Nacional de Tecnología Agropecuaria INTA
 Instituto Politécnico Nacional
 Instituto Tecnológico de Aguascalientes
 Instituto Tecnológico Metropolitano de Medellín
 INSTM
 JEMCO & Associados Serviços Técnicos Ltda
 Kasetsart University
 Kuwait Univeristy
 Kwame Nkrumah University of Science and Technology
 Kyngpook National University
 Le Qui Don Technical University
 Loyola Institute of Technology
 Lund University
 Mae Fah Luang University
 Mediterranean Institute for Agriculture, Environment and Development
 Mehran University of Engineering and Technology
 Murdoch University
 National Agriculture and Food Research Organization
 National Institute for Textiles & Leather
 NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR
 Necmettin Erbakan University
 Panaiyaanmai - Centre for Self Reliance and Sustainable Development
 Parthenope University of Naples
 Paulista University - UNIP
 Polish Academy of Sciences
 Polytechnic Institute of Leiria
 Pontifical Catholic University of Campinas
 Pontifícia Universidade Católica de Minas Gerais
 Pontifícia Universidade Católica do Paraná
 Research Institute of Petroleum Industry
 Rey Juan Carlos University
 Riga Technical University
 San Cristóbal of Huamanga University - UNSCH
 São Paulo State University - UNESP
 Sapienza University of Rome
 Sardar Swaran Singh National Institute of Bio-Energy
 Selcuk University
 Slovenian National Building and Civil Engineering Institute - ZAG
 Southwestern University of Finance and Economics
 State University of Pará - UEPA
 State University of Santa Catarina - UDESC
 State University of Santa Cruz - UESC
 Stellenbosch University
 Technical University of Denmark
 UCSI University
 Universidad Rey Juan Carlos
 Universidad America
 Universidad Católica del Norte
 Universidad de Sonora
 Universidad Militar Nueva Granada
 Universidad Peruana de Ciencias Aplicadas
 Universidad Tecnológica del Valle del Mequital
 Universidade Autónoma de Lisboa
 Universidade Católica Portuguesa
 Universidade de Lisboa
 Universidade de Pernambuco - UPE
 Universidade de São Paulo - USP
 Universidade do Estado do Amazonas - UEA
 Universidade do Sul de Santa Catarina - UNISUL
 Universidade do Vale do Rio dos Sinos - UNISINOS
 Universidade Estadual de Campinas - UNICAMP
 Universidade Estadual de Maringá - UEM
 Universidade Estadual de Mato Grosso do Sul - UEMS
 Universidade Estadual de Santa Cruz - UESC
 Universidade Estadual do Sudoeste da Bahia - UESB
 Universidade Federal da Grande Dourados - UFGD
 Universidade Federal de Minas Gerais - UFMG
 Universidade Federal de Pernambuco - UFPR
 Universidade Federal de São João del Rei - UFSJ
 Universidade Federal de Viçosa - UFV
 Universidade Federal do Rio de Janeiro - UFRJ
 Universidade Federal do Sul da Bahia - UFSB
 Universidade Nove de Julho - UNINOVE
 Universidade Paulista - UNIP
 Universidade Tecnológica Federal do Paraná - UTFPR
 Università degli Studi di Roma Tor Vergata
 Universitat Politècnica de Catalunya
 Université Catholique de Bukavu
 Universiti Malaysia Pahang
 Universiti Malaysia Terengganu
 University of Bologna
 University of Brasília - UnB
 University of Calabria
 University of Calgary
 University of Canterbury
 University of Catania
 University of Chieti-Pescara
 University of Coimbra
 University of Florence
 University of Kassel
 University of Kufa
 University of L'Aquila
 University of Macedonia
 University of Malaya
 University of Milano Bicocca
 University of Regina
 University of Rio Grande do Sul - UFRGS
 University of San Diego
 University of Santa Cruz do Sul - UNISC
 University of São Carlos - UFSCar
 University of São Paulo - USP
 University of Sfax
 University of Sheffield
 University of Siena
 University of Siena - UNISI
 University of South Carolina
 University of Sri Jayewardenapura
 University of Tehran
 University of Waterloo
 University of West Paulista - UNOESTE
 Universty of Parma
 Volta Redonda University Center - UniFOA
 Xi'an University fo Technology
 Yunnan Normal University
 Zhengzhou University

The ACPN Award

For the **10th IWACP**, two researchers representing the new and the senior generation of Advances in Cleaner Production Network (ACPN) were chosen: Daniela Pigosso (Technical university of Denmark) and Linda Hancock (Deakin University).

The ACPN Award is to recognize the contribution of young and experienced researchers to the advances of cleaner production and to the preservation of the environment. The medal is inspired by the logo of the International Workshop on Advances in Cleaner Production 2007. Elements of the biosphere - nature and society - are represented in trees and buildings. The main driving force of the natural services used by society, renewable solar energy, transforms and circulates within the ecosystem. The arrow represents the ideal flow of resources in the biosphere as the basis of the planet's sustainability.

The tallest building is the icon building of the Paulista University, symbolically representing a teaching and research institution not only as the highest and most prominent institution of a sustainable society, but also the institution where the International Workshop and Advances in Cleaner Production Network was founded.

Participants Profile

The **10th IWACP** had 623 participants from various sectors committed with the theme: **A Resilient and Sustainable World: Contributions of Cleaner Production, Circular Economy and Eco Innovation** (Figure 1). The 59 best papers, of 197 submitted, were organized in six oral presentations sessions, totaling 10 hours of activities with intense and pro-active information exchange among participants.

As expected, the participants of Asia were mainly from China, but there were also participants from, Japan, Malaysia, Pakistan, Thailand, Sri Lanka, Vietnam and a high participation of Bangladesh (Figure 1). In the same way, Brazil (with an expressive number) was the leading country from Americas, but there were also participants from Argentina, Canada, Chile, Colombia, Peru and USA. Also, a massive participation of Mexico was noted. The participation of European Union was also significant, especially from Portugal, Spain and Italy. The number of different EU countries increased with the participation of researchers from Albania, Belgium, Denmark, France, Germany, Greece, Latvia, Netherlands, Poland, Romania, Slovenia, Sweden, Turkey and UK. In this edition, an increased participation of Middle-East and African countries was also noticed and welcome.

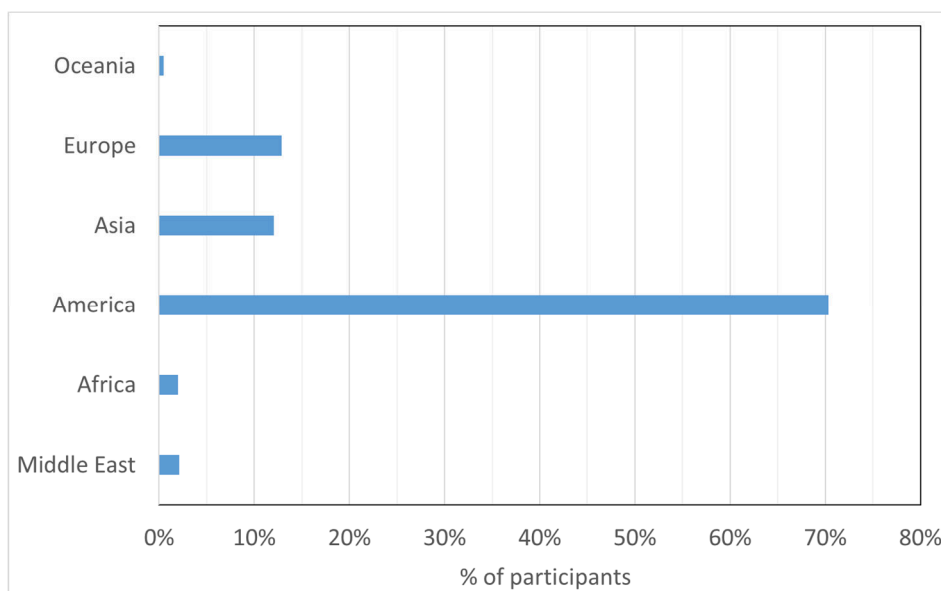


Figure 1. Participants of the 10th IWACP profile according to geographical origin.

Plenary Sessions

Besides the webinar with live broadcasting by Dr. Roberto Zoboli, 9 conferences focused on new approaches towards the advancement of cleaner production and sustainability were presented (Table 1).

Table 1 Invited speakers, topic addressed and speakers' institution.

Speaker	Topic addressed	Institution	Country
Linda Hancock	Interdisciplinary? What Can Political Science Bring to Electromaterials Solar, Batteries and Hydrogen?	Deakin University	Australia
Daniela Pigozzo	Enhancing the Sustainability of Circular Economy	Technical University of Denmark	Denmark
Cecília Almeida	Assessing Sustainability	Paulista University	Brazil
Linda Wollersheim	Mapping the Main Discourses in Approaches to Climate Resilience and Sustainable Development	Deakin University	Australia
Glória Rótolo	Study of Circular Economy Approach in an Agricultural Cooperative Context	INTA	Argentina

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Alan Brent	Materials cycles and the low carbon transition of the energy sector: Considerations for Aotearoa - New Zealand	University of Wellington	New Zealand
Alessio D'Amato	Economic Policy for the Circular Economy transition in the EU	University of Rome Tor Vergata	Italy
Giovanni Marin	The Employment Impact of a Green Fiscal Push: Evidence from the American Recovery and Reinvestment Act	University of Urbino	Italy
Massimiliano Mazzanti	The Ecological and Just Transitions through Innovations and Policies	University of Ferrara	Italy

Quality of work

The high number of citations of the previous issues, allied with the high quality of the participants' contributions, resulted in invitations by the Journal of Cleaner Production, Cleaner and Responsible Consumption and Cleaner Waste Systems.

Visibility

The visibility of the event and the search for information through the website increased significantly till 2011 and stabilized for the fourth event. The increase of the number of visits to the website can be evidenced by the crescent trend of graphic (Figure 2). The first peak with 10.732 visits is simultaneous to the **1st IWACP**, held in November 2007. Subsequent peaks are related to the Call for Papers for the **1st Special Issue** – Journal of Cleaner Production. The peak that corresponds to 20.515 is related to the **2nd IWACP** (May 2009) and the subsequent ones to the Call for Papers for the **2nd Special Issue** – Journal of Cleaner Production. The 37.047 peak corresponds to the Call for Papers of the **3rd Special Issue** and this high number of visits is in agreement to the number of manuscripts sent (more than 250) and the number of papers effectively published (48 papers). The peak 32.276 is simultaneous to the occurrence of the **4th IWACP** (18, 19 and 20 May 2011), and a higher peak is expect regarding the Call for papers of the **4th Special Issue** in the next months. The peak of 2015 is related to the **5th IWACP** and the subsequent ones to the Call for Papers for the **5th Special Issue** – Journal of Cleaner Production, which was published with 43 articles. For the **6th IWACP**, the number of visits to the website, related to the **5th IWACP**, increased. The Call for Papers for the **6th Special Issue** – Journal of Cleaner Production was published in 2019 with 38 articles. The **7th Special Issue** - Journal of Cleaner production will be launched in 2020. The **8th IWACP** will have Special Issues in three different scientific journals: Journal of Cleaner Production, Journal of Environmental Accounting and Management and Energy

The fall of visits in the website, from **8th IWACP** onwards, can be justified by the partnership in the organization. In these two last editions some pages – mainly the submission and registration – were in charge of the host institution. Figure 3 shows that, from July/2018 to December/2019 the website had 41,437 page views. Also, in this period the number of new visitors increased from 72.4% to 75.2%. For the **9th IWACP** the website, even with some pages had been in charge of the host institution, the website had some improvement in its peaks of views. 5,482 views in April/2020 and 5,623 in May/2020.

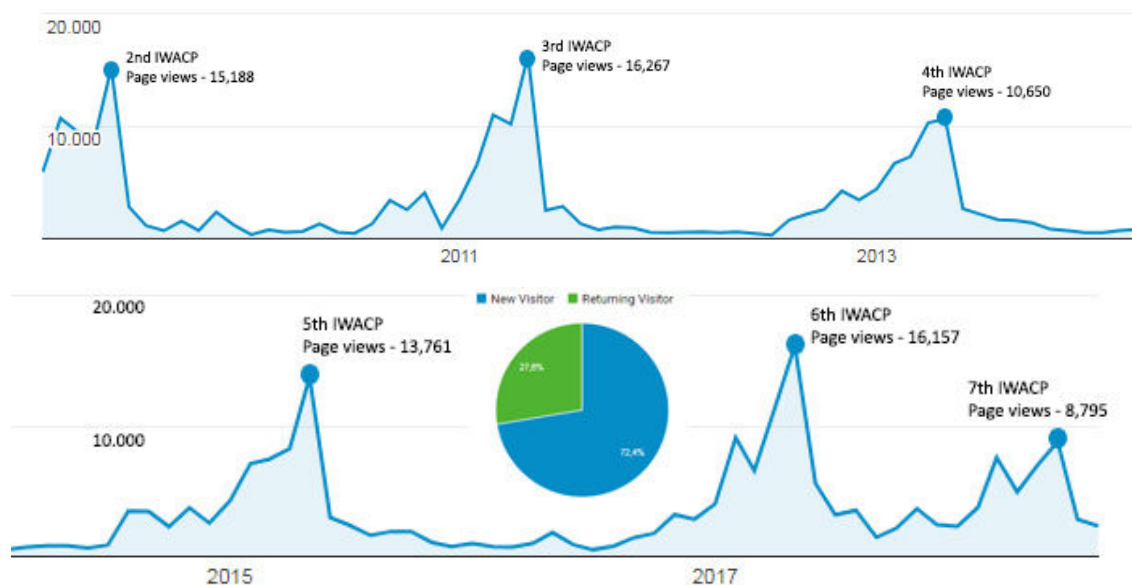


Figure 2. Number of visits to the website www.advancesincleanerproduction.net from January 2009 to June 2018.

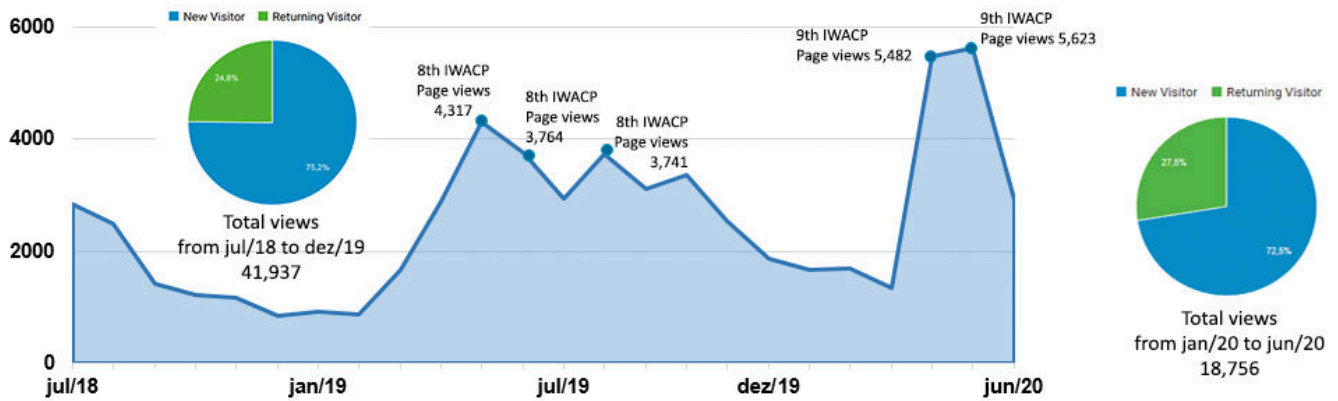


Figure 3. Number of visits to the website www.advancesincleanerproduction.net from July 2018 to June 2020.

The Figure 4 shows the website visits after the ninth edition of IWACP. On March and April/2021, respectively, the website had 3,228 and 4,369 views. The **special volumes (SV's) of 9th IWACP**, on Journal of Cleaner Production and Journal of Environmental Accounting and Management, are responsible for these peaks outside the 'IWACP's season'. The period of 10th IWACP had more new visitors in comparison with 9th IWACP. The tenth edition of IWACP had 75.9% new visitors against 72.5% the previous one. The highest peak of visits in 10th IWACP was slightly bigger (5,679) than 9th IWACP's peak (5,623).

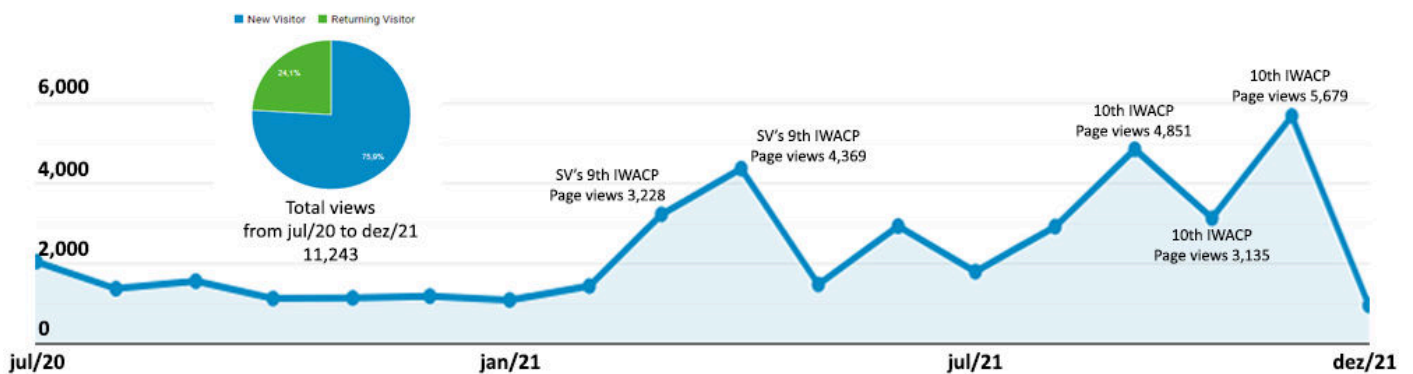


Figure 4. Number of visits to the website www.advancesincleanerproduction.net from July 2020 to December 2021.

Evaluation of the conference according to the goals

It is considered that the conference was a great success reaching fully its objectives, namely:

- ✓ The goal of academic information exchange has been fully achieved, by the significant number of participating academic institutions (163 universities and colleges and the presentation of 197 academic contributions).
- ✓ The discussion of common problems and routing of solutions was extensively covered by the plenary sessions, oral presentations.
- ✓ The increase in international relationship through individual and institutional contact was a goal achieved. Participants of 45 countries attended the conference.
- ✓ The deepening of the discussion on the fundamental theme of the event "**A Resilient and Sustainable World: Contributions of Cleaner Production, Circular Economy and Eco Innovation**"

Evaluation of the conference according to audience

The audience of 10th IWACP received, by e-mail, an evaluation formulary edited In Google Forms (Figure 4).

10th IWACP - Event's Impressions

In order to improve the next edition of IWACP, we kindly ask you to respond the questions below. Your impressions about the event is very important to us. We hope to see you in the next edition of IWACP



* Required

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Figure 5. Partial view of evaluation form sent to participants of the 10th IWACP.

According to the evaluation 50% of the respondents, considered that their event's goals were fully reached. 75% of the respondents considered that the event reached more than 90% of their goals. The 10th IWACP met audience expectations in all responses.

Regarding the organization of the conference, 75% consider this item as excellent and 25% as good. The website was unanimously considered excellent, covering properly the event. The respondents highlighted the recording and availability – in streaming format - of oral presentations and conferences. There were no insufficient or bad assessments. All the respondents intend to join in the next IWACP.

Acknowledgments

The success of the **10th IWACP** would not have been possible without the support of important partners such the Co-organizing Institutions: inno4SD (Innovation for Sustainable Development Network) and University of Ferrara, which significantly contributed to the event's achievement.

Special thanks are addressed to Fernando Díaz López and Massimiliano Mazzanti who, from the beginning, as co-organizers, fully supported this project. Thanks to the Rector of the University of Ferrara Prof. Laura Ramaciotti and to staff who assisted on the organization and technical side of converting a land-based conference to on-line.

Finally, thanks to Dr. João Carlos Di Genio, the Rector of Post Graduation and Research of Universidade Paulista, Dr. Marília Ancona-Lopez, the Vice-Rector of Graduation of Universidade Paulista, and to Dr. Marina Soligo, Main Coordinator of Post Graduation and Research of Universidade Paulista, for their unconditional support since the first event in 2007.