



European Commission - Horizon 2020

PACHAMAMA - 101062179 — HE-MSCA-PF-2021

Dissemination and Communication Plan

Name of fellow: **Luis Nicanor Pezo Lanfranco**.

Website: <https://www.researchgate.net/profile/Luis-Lanfranco>

Orcid: <https://orcid.org/0000-0003-3163-5984>

CV Lattes: <http://lattes.cnpq.br/0949460440547327>

Project: Paleodietary analyses of the first Andean cities: high-resolution assessment to macronutrients using a multiproxy approach - **PACHAMAMA** - 101062179 — HE-MSCA-PF-2021.

Affiliation: **Institute of Environmental Science and Technology (ICTA)**, Universitat Autònoma de Barcelona.

Name of Supervisor: **André Carlo Colonese**.

Project start date: 01/10/2022

Project end date: 30/09/2024

DCP Last modification date: 25/01/2023

Following the principles of the MSCA Guidelines on Supervision, into the framework program for research and innovation of the European Union (EU), and Horizon 2020 Program, my supervisory team and I have designed this **Dissemination and Communication Plan (DCP)**, which will be submitted as additional requirement for the development of PACHAMAMA Project (101062179 — HE-MSCA-PF-2021).

In this DCP we provide information about our actions for spread the scientific results and other and achievements of the PACHAMAMA Project. This DCP is focused on how making our target audiences aware of the Project objectives, findings, outcomes, and initiatives by using marketing and communicative strategies.

The DCP is based on the prescriptions of the Research Dissemination tools of the Virginia Commonwealth University (<https://guides.library.vcu.edu/>), and include measurable objectives, a brief description of our target audiences and tools necessary to attain our goals, a detailed timetable of planned activities and the indicators to evaluate the DCP outcomes and the social impact of the Project.

Brief overview of Research Project and major accomplishments expected

The origin of the first urban centres and their associated social complexity are among the most debated topics in prehistoric archaeology. In the Central Andes, these processes have their antecedents in coastal settlements with impressive signs of monumentality, dating from at least the third millennium BC. According to a seminal 1975 publication, these societies would have developed complex systems of socio-political organization, which eventually led to States and Empires, sustained by the exploitation of the rich shoals of endemic marine species. On the other hand, newer archaeological evidence suggests that the adoption of plants in the region precedes in at least 3 millennia the rise of monumental architecture. Further, archaeological research conducted in the Peruvian North-Central coast (PNCC) for the last two decades has drastically changed our knowledge about the trajectory of early urban developments. At least 35 planned sites integrated into intra-valley hierarchical systems of settlements in the PNCC (i.e., Huaura, Supe, Fortaleza, and Pativilca valleys), dating between 4100-1800 BCE, came to reinforce the hypothesis that early civilization, based on powerful agricultural development, arose in the middle valleys rather than on the coastline. However, several major questions are still unanswered: 1) What food sources characterized the diets of the earliest urban populations of the Central Andes during the Initial Formative period (3000-1800 BCE)? 2) What were the roles of plant and marine resources in the diet of coastal and inland emergent urban sites? 3) How did these diets change over time? With the support of the Marie Skłodowska-Curie Actions program, the PACHAMAMA project will analyse paleodiet using a multiproxy approach (stable isotopes, Bayesian mixing models, and palaeoproteomic analyses of dental calculus) aiming to identify the main macronutrients of the diet, to unlock diet composition among early urban groups in coastal Peru. To identify dietary food molecules, we will use stable carbon and nitrogen isotope analyses

of bulk collagen from bone and teeth using gas chromatography combustion isotope ratio mass spectrometry (GC-C-IRMS), the analysis of stable carbon and nitrogen isotopes on single amino acids (AA) from bone collagen using liquid chromatograph-IRMS (LC-IRMS). Palaeoproteomics will be applied to identify specific food molecules and diet-correlated pathogens in the oral microbiome. The integration of palaeodietary isotopic reconstruction, palaeoproteomics, and other bioarchaeological (i.e., oral pathology) data is the most innovative component of PACHAMAMA.

1. DCP Aims

The objectives of the proposed DCP, linked to the main scientific aims of the PACHAMAMA Project, are:

1. To spread PACHAMAMA Project results to wider audiences aiming to increase the social impact of the Project.
2. To stimulate public engaging and social actions for the protection of archaeological sites in Peru and other countries through the popularization of scientific knowledge.
3. To contribute with the implementation of Peruvian policies linked to the protection of the prehistorical heritage, particularly in the studied region.
4. To raise the quality project and brand identity by sharing appropriate and trusted content through the media.
5. To expand our scientific collaborators network and institutional partnerships, and strength our academic prestige.

2. Target Audiences

The research findings and results produced by PACHAMAMA will be share basically with six kinds of audience:

1. **Academic Audience**, composed by national and international academic researchers (scholars or several knowledge areas, mainly archaeologists and anthropologists and students of any country), the professional staff of the Caral Project (archaeologists, managers, technicians, fieldworkers, and touristic guides linked to the Caral Project services).

2. **Community members**, composed by Supe Valley villagers directly involved in Caral Project's archaeological research or living in the surrounding area of the studied archaeological sites.
3. **Touristic service providers**, composed by the staff of local, national, and international tourism operators, and other correlated services providers.
4. **End consumers and stakeholders**, composed by local (villagers and citizens of the studied region), national (Peruvian citizens from other regions), and international audiences (stakeholders from other countries), of every age and gender.
5. **Internal statutory organizations**, composed by personnel directly involved with the archaeological heritage policies and administration of archaeological projects in the region, such as the Peruvian Ministry of Culture and the own ZAC Direction and employers.
6. **External statutory organizations**, composed by personnel of Funding Agencies, NGOs, national and supranational institutions related to archaeological heritage protection etc.

3. Defining the content that we want to share

PACHAMAMA Project won't produce sensitive data. Thus, all the produced data can be adapted, using a non-technical language, to be shared to different audiences.

The results that we want to share with our target audiences are archaeological data related to diet and social life of the ancient populations that inhabit the Supe Valley, especially those from the Initial Formative (3000-1800 BC), when the Caral city was in activity.

However, apart from data of archaeological interest and the knowledge derived from, which should be shared with the scientific community, there are other intangible results possible to be shared with the non-scientific community, such as messages for the valorization and strength of cultural identity, and messages directed to increase the interest and engagement of the community around our local traditions and cultural heritage, as well as promoting awareness about the importance of the protection of archaeological sites.

From our previous experience sharing science to the wider public, especially school students, we are convinced that science can be accessible to everyone through

the translation of specialized knowledge into easy-to-understand information, without loss of scientific rigor. Thus, in our opinion, the best way to disseminate and communicate our research findings to different kinds of audience requires different strategies, accordingly.

4. Defining particular strategies of dissemination and communication for target audiences

Considering that different individuals have different levels of interest, previous knowledge, and background to understand archaeological data, a variety of communication activities will be implemented for each target audience. This approach aims to increase the suitability and quality of the actions proposed to maximize the impacts in dissemination and communication.

1) Academic Audience

The research results from PACHAMAMA will be of special interest of the academic Scientific community (academic researchers, archaeologists, students). Thus, communication and dissemination of our results to this audience will be performed through the following actions:

- a) The sharing of scientific research results through conferences, seminars, podium presentations in congresses, etc.
- b) The writing and submission of academic papers and books/book chapters followed by adequate outreach. As mentioned in the Career Development Plan (DMP), the results of PACHAMAMA action should be published as research articles in prestigious high-impact peer-reviewed journals. At least two scientific reports are planned to be published as results of PACHAMAMA MSCA. After the publication of our scientific articles, media releases will be planned with the UAB's Public Information Office and the ICTA's Press-Office to be published as media reports in the Catalan, Spanish, and European media outlets. Our partner, the Caral Project, will provide contact with journalists of magazines, journals, and TV, in Peru and Spain, to release short journalistic reports of the results. The press-

office of the Caral Project should help PACHAMAMA Project during the development of this actions.

- c) As mentioned in the Data Management Plan (DMP), all the research outputs generated by PACHAMAMA will be shared published in open access repositories (e.g., the UAB's Digital Documents Deposit, Open Research Europe-ORE and European Open Science Cloud-EOSC, Zenodo.org, etc.) following UAB's and the EU's open access policies.
- d) We also will upload our scientific production (articles, podium presentations, data) in online vehicles such as ResearchGate Academia, and Orcid for wider diffusion among scholars.

2) Community members and Touristic Service providers

To share our results with Supe Valley community members, particularly those directly involved in the Caral Project's research program, the best way to communicate our findings is through face-to-face communication events, such as seminars, conferences, workshops, and presential training sessions. These activities should be implemented and coordinated by the Caral Project, our partner, with the Supe Valley communities.

For other audiences, such as services providers or tourism operators, the best strategy is sharing the knowledge directly through open access webinars organized by the Caral Project and promoted by its press-office.

Finally, to share science to the wider public, especially local students, we have projected, along with the Caral Project Direction, the publication of a **divulgation book for students** about bioarchaeological research in the valley. This book must be written by me and edited by the Caral Project. The physical version will be distributed, for free, **to basic education schools** and citizens from the main cities and villages of the Supe Valley and the neighbor valleys of the PNCC region. The preliminary title of this "diffusion book" for school students is "*La Ciencia Arqueológica por detrás de los descubrimientos de la Civilización Caral*", and its production (text writing, coordination with illustrators and editors), is already ongoing.

In this case, thanks to the infrastructure of Caral Project and its Publication Office that will provide book's organization and impression preparing, the budget is relatively low. We expect to distribute the online version, for free, through the ICTA, the ZAC and the *Ministerio de Cultura del Perú* webpages for everyone under a Creative Commons License.

3) End users and stakeholders

Communication to this specific target audience requires to spread the outcomes in an easy and non-technical way to engage public of different ages through the media. The aim is to promote public understanding of our study field to promote social actions directed to the protection of cultural heritage and boost positive perception about the value of archaeological work.

For generic stakeholders and the wider public, we consider that the best tools are audiovisual sources (videos, images), and short texts shared with everyone through social media. The Andean prehistory, and especially the data related to the Caral civilization, are attractive topics for magazines, journals, and TV reports everywhere.

We will create **projects' social media walls/profiles** in LinkedIn, and Instagram, that will be a central point for dissemination and online engagement. Social media walls/profiles will act as repositories of information, digital stories, and other outputs. We will create media content (i.e., messages, stories, and comments) or disseminate news, comments and other content provided by partners' walls (ERC-Tradition, ICTA, UAB, MinCu, and ZAC). Additional co-related tools such as hashtags and QR codes should be of impair help for diffusion of our results through these sources. The extent of the content shared will depend on the conditions or restrictions imposed by the used social networks or social media vehicles.

The websites of the ICTA (UAB), *Departamento de Prehistoria, Zona Arqueológica Caral* and *Ministerio de Cultura del Perú*, will supply additional support. These platforms can be helpful to publicize the action and spread the main findings among different target audiences. Digital stories should be published as soon as results are produced. The information will be redistributed to the Caral Project, ERC-Tradition (ICTA), Pezo-Lanfranco and Colonese lists of contacts (around 1500 individuals) and WhatsApp groups, and eventually routed to YouTube archaeological channels and other appropriate outlets.

Additional activities, which aim to bring science to the community and public engagement include our **participation in a series of periodic events**, in the region of Supe, but also in Catalunya that hosts the PACHAMAMA Project.

4) Internal and External statutory organizations

The reaction that we want to produce in these specific audiences (i.e., government authorities, congress members, majors, councils, public employers, civil authorities etc.), as political actors, is a more active engagement in the defense and protection of the archaeological heritage, especially by the local authorities.

We expect a more active participation of local statutory organizations in discussions about the importance of protecting the archaeological richness of the Supe Valley, in seminars, congresses, festivals, and political meetings, and expansions of that interest to the national government and other External statutory organizations.

In this case, the resources available for dissemination are the personnel of the Caral Project, communitarian agents, and civilian authorities from valley villages or bigger cities like Supe and Barranca. Caral Project should provide fundings, skills, and logistic facilities, and specially its capacity of organization and interaction with community representants. The press-offices of the Caral Project and the *Ministerio de Cultura* can be especially helpful to promote these kinds of events.

Additional actions will be discussed with the UAB's Public Information Office and the Supervisory team, specifically, communication/dissemination activities on gender related results and other discoveries relevant for engagement in social causes, especially the Human Rights defense, the fight against poverty, and economic sustainability.

Only with a fair balance between high-impact academic publications, regular production of adequate media content, and appropriate participation in diffusion vehicles, we will be able to strength our image of serious and trusted providers of high-quality scientific information.

One of the main challenges of the DCP is how to identify potential issues related to adequate dissemination, for instance, to facilitate the data access and reuse, all our results will be open access, however, open access data can be subject of misuse or misappropriation by internet content producers, to avoid this situation we will use a

Creative Commons By license and upload strong recommendations for best practices of science sharing in the same repositories.

5. Programmed dissemination and communication activities

As mentioned in the Career Development Plan (DCP), we propose a package of realistic actions programmed to attain the goals during the period of the MSCA, among them, our participation in academic and public-engaged activities, the production and dissemination-communication of educative material to different audiences, according to the attached timetable (Table 1).

The fellow, Luis Nicanor Pezo-Lanfranco, is the responsible for the planning and execution of the tasks proposed in this DCP, during and after the MSCA period. The Supervisor should provide advice and supervision during the process. We share with the direction of the Caral Project, our main dissemination partner, the same objectives, and they should be aware of every step of the plan proposed and collaborate with resources (raising appropriate budget, and logistic facilities) to develop the actions proposed in this DCP.

The fellow will spend three hours by week to produce and share media content through social networks. According to the Guidelines for MSCA beneficiaries, all communication and promotional material produced by PACHAMAMA Project will use the European Union and MSCA-Horizon 2020 Program emblems. The sponsoring of EU funding will be also mentioned in acknowledgments of any material produced.

6. Expected outcomes and further assess

6.1. Societal Impact of the actions proposed

Apart from the expected scientific impact, the magnitude and importance of the actions proposed in this DCP should be reflected in the project's societal and economic impacts. At the global level, disseminating the results of PACHAMAMA action to scientists and communicating to wider public may be significant to create consciousness on the importance of sustainable agricultural practices in the contemporary world and the necessity of appeal to traditional knowledge on sustainable farming practices and ancient technologies to stimulate economic development in the arid PNCC valleys.

PACHAMAMA's results can be relevant to promote government policies and implement local programs and activities aligned with SDG 12 (UN), which aims to ensure sustainable consumption and production patterns as a prerequisite for achieving global sustainable development and reduce future economic, environmental, and social costs.

In other avenues, adequate diffusion of results from PACHAMAMA can generate high visibility of the region in EU countries and promote sustainable archaeological tourism and linked economic activities in Supe Valley.

6.2. Dissemination Indicators

The impact or success of the actions proposed in this DCP can be measure through the following indicators:

a) Quantitative indicators:

- To evaluate Project's visibility in the social media: absolute and relative numbers of participants in the sessions, number of followers and visitors, number of likes or other responses to updates, number of users sharing our content etc.
- To evaluate participation in meetings with different kinds of audiences: absolute and relative numbers of participants, and number of participants involved in discussions, number of positive evaluations in feedback surveys.

b) Qualitative indicators:

- To evaluate the quality of the experience expressed by the participants: commentaries expressed in the social media or feedback surveys, the persistence of the discussions about our online content over the time (i.e., ongoing discussions for months or years).
- To evaluate social actions derived from DCP actions: social actions promoted in the region by other actors than the Caral Project personnel, in Supe communities, and presence of other local and national actors to promote community engagement, and changes in policies to protect Caral and other archaeological sites.
- To evaluate the impact of DCP in our academic image: invitations to participate in public events, media coverage (writing articles in specialized press newsletters, interviews etc.), and invitations to collaborated with NGOs and public institutions.

We will report a critical appraisal of our DCP every six months to evaluate performance. Feedback mechanisms can be useful to a) determine how best we translate research findings into useful outputs for the community; b) produce more adequate content for each type of audience to maximize time and resources; c) provide guidance for the development of improved strategies in communication and dissemination of archaeological information.

The periodic assessment of our DCP will also enable us a better measure of the image and role of the Caral Project archaeologists in the Supe Valley to maintain an equilibrated relationship with the community and avoid potential conflicts. Our statistics will also be published, enabling commoners, policy makers, touristic operators, and community service providers, to make evidence-based decisions in their own communicative strategies.

PACHAMAMA Project, plans long-term communication and diffusion of the results to ensure the sustainability of the project's impact over time, and should continue sharing information online for a long time. The success of this DCP will be measured by identifying positive impacts and policy changes derived from our ideas in the long-term.

Bellaterra, January 25th, 2023.

Signature of fellow

Signature of supervisor

Timetable of proposed activities in the Dissemination and Communication Plan of PACHAMAMA Project

Action/Activity	Target Audience	Vehicle of communication and diffusion	Programed date/Periodicity	Responsible/Partners
Publication of scientific articles and media releases	Academic Audience	Scientific Journals, ResearchGate, Academia, and Media outlets	2 or 3 expected articles/irregular	LPL-AC/ZAC
The 10 th Paleopathology Association Meeting in South America (PAMinSA-X)	Academic Audience	Webpages of the congress, ResearchGate, Academia	9-11 August 2023, Cochabamba - Bolivia.	LPL-AC/ZAC
<i>The X Congreso Nacional de Arqueología del Perú</i>	Academic Audience	Webpages of the congress, ResearchGate, Academia	21-26 August 2023, Lima–Peru.	LPL-AC/ZAC
The 10 th International Symposium on Biomolecular Archaeology (ISBA-10,	Academic Audience	Webpages of the congress, ResearchGate, Academia	13-16 September 2023, Tartu - Estonia.	LPL-AC/ZAC
The regular update of PACHAMAMA results in free-access repositories.	Academic Audience	UAB’s DDD, ORE, EOSC, Zenodo.org,	Continuous	LPL-AC
Participation in TRADITION, DP, ICTA, UAB meetings and seminars.	Academic Audience	ERC-TRADITION, DP, ICTA, UAB websites, press-offices, and WhatsApp lists	Variable/weekly and monthly	LPL-AC/ERC-TRADITION, DP, ICTA, UAB
<i>16° Festa de la Ciència – Rambla Prim</i>	Stakeholders Audience	<i>16° Festa de la Ciència – Rambla Prim webpage</i>	Barcelona, June 2024	LPL-AC/ ICTA, UAB

Catalan Science Week	Stakeholders Audience	Catalan Science Week webpage	Barcelona, November 2023	LPL-AC/ ICTA, UAB
Promoting research to prospective students in University Open Days	Stakeholders Audience	UAB, ICTA webpages	Barcelona, Variable/once a year	LPL-AC/ ICTA, UAB
Participation in <i>Semana del 30° Aniversario del Proyecto Caral</i>	Stakeholders Audience	ZAC and Ministerio de Cultura webpages	Caral-Supe, October 2023.	LPL-AC/ZAC
Participation in other activities and series of events sponsored by the Caral Project (ZAC) which aims to bring science to the community	Community, touristic operators, statutory organizations	ZAC and Ministerio de Cultura webpages	Caral-Supe, Variable/conditional to invitation	LPL-AC/ZAC
Opening of walls/profiles in social networks	Stakeholders Audience	PACHAMAMA profiles in LinkedIn, and Instagram	Programmed February 2023	LPL-AC/ZAC
Participation in social networks and upload of informative content in the walls/profiles	Stakeholders Audience	PACHAMAMA profiles in LinkedIn, and Instagram	Continuous	LPL-AC
Divulcation book for children	Community, stakeholders Audience	Physical book for school children from Supe Valley, Virtual free access book	Programmed February 2024	LPL-AC/ZAC

