

RENÉ ZAMORA CRISTALES

Global Policy Accelerator Program Coordinator & Senior Forest Economist

Global Restoration Initiative

Education

PhD. Forest Engineering, Oregon State University Research: Economic optimization of forest biomass processing and transport for aviation biofuel	2013
Master of Science in Forest Resources, Applied Economics and Wood Technology Austral University of Chile, Cum Laude	2006
BS Forest Engineering Cum Laude Del Valle University of Guatemala	2003

Scholarships distinctions and professional service

Outstanding Global Doctoral Research Award, International Union of Forest Research Organizations	2019
Deputy Coordinator IUFRO Task Force on Forest Education	2021-Actual
Member of IUFRO Task force on Transforming Forest Landscapes For Futures Climates and Human Well-Being	2019-Actual
Courtesy Assistant Professor, Oregon State University	2019-Actual
Tropical Americas Representative, International Society of Tropical Foresters	2019-Actual
Coordinator IUFRO Unit Sustainable Forest Operations for Landscape Restoration 3.01.09	2019-Actual
IUFRO division 3 Communications Coordinator	2021-Actual
Initiative 20x20 Representative to the UN Decade on Ecosystem Restoration's Task Forces	2021-Actual
<i>Schulz family Graduate Fellowship</i>	2012
<i>Richard Strachan Forest Engineering Graduate Fellowship,</i> College of Forestry, Oregon State University	2011
Scholarship Program OAS placed Organization of American States LASPAU-Harvard for Postgraduate studies	2005-2006

Scholarship Agronomical Center of Tropical Research CATIE Best undergraduate Research	2002
Scholarship Exxon Standard Oil for undergraduate studies	1998-2003

Other Skills

Languages: Professional working proficiency in oral and written Spanish, English and Portuguese
Programming: Python, JAVA, Visual Basic

Funded Research and development projects

- **International Climate Initiative (IKI) BMU Germany:** Supporting Initiative 20 by 20: A country-led effort to bring 20 million hectares of degraded lands in Latin America and the Caribbean into restoration by 2020 (PI) – 4.2 M Euros
- **Good Energies Foundation** Accelerating frontrunners in restoration implementation grant addressing the identification of innovative policies and design a Policy Accelerator (Co-PI) – 1 M Euros
- **Luxembourg Ministry of Climate and Sustainable Development,** Recover and and mainitng fundtionality on Degraded land in Latin America. (Co-PI) - 500,000 Euros
- **HSBC Nature based solutions accelerator:** Restoration Policy Acceleration to scale-up restoration implementation. (Co-PI) – 4.25 Million USD

Employment record

Global Policy Accelerator Program Coordinator & Senior Forest Economist Global Restoration Initiative <i>Initiative 20x20, Department of Food Forest and Water</i> <i>World Resources Institute, Washington DC, USA</i>	2015-Actual
Postdoctoral Researcher, Economic Optimization Models <i>Department of Forest Engineering Resources and Management</i> <i>Oregon State University, Northwest Advanced Renewables Alliance (NARA)</i> http://www.nararenewables.org/	2013-2015
Graduate Researcher <i>Department of Forest Engineering Resources and Management</i> <i>Oregon State University</i> <i>Northwest Advanced Renewables Alliance (NARA)</i>	2011-2013
FAO-National Forest Service INAB	

Improvement of Forest Supply Chain of Guatemala	2010
Forestry Division Manager Mozambique, Africa <i>Tectona Forest of Zambezia</i> , Mozambique, Southern Africa	2009-2010
Forest-Economic Planning Manager <i>Interforest Limited</i> Guatemala Central America	2007-2009
Forestry Research Extension Small Forest enterprise development <i>VLIR (Vlamesse interuniversitaire raad) Belgium, Rafael Landivar University</i>	2006-2007
FAO. Improvement of Forest Education in Verapaces Region Guatemala, Central America	2007
General Manager Wood preservation and Drying Department <i>Maderas y Machihembres S.A.</i> Guatemala, Central America	2002-2005
Assistant Professor of Forest Products, and Economics (Forest Engineering program) <i>Del Valle University of Guatemala</i>	2007-2009
Assistant Professor of Forest Financial Models (Forest Management program) <i>Rafael Landivar University, Guatemala</i>	2007-2008

Publications

Zamora-Cristales R., Gonzalez M., Rachmaninnof V., Franco M., Vergara W., De Camino R., Miljanic A., Sanchez M., Hilton L., and Carazo F., 2021. Healing the wounded land: The role of public economic incentives in scaling up restoration efforts in six Latin American countries.. World Resources Institute Issue Brief 32 p.. Accepted.

Firebanks-Quevedo, D., Planas, J., Buckingham, K., Taylor, C., Silva, D., Naydenova, G. and **Zamora-Cristales, R., 2022. Using machine learning to identify incentives in forestry policy: Towards a new paradigm in policy analysis.** *Forest Policy and Economics*, 134, p.102624.

Zamora-Cristales R. 2021. Financial Strategies for Forest and Landscape Restoration. In book: Ghazoul J. and Schweizer D. (eds) (2021) *Forests for the future: Restoration success at landscape scale - what will it take and what have we learned?* Prince Bernhard Chair Reports (issue 1). Series editors Almond, R.E.A., Grooten, M. and Van Kuijk, M., WWF-Netherlands, Zeist and Utrecht University, Netherlands. Publisher: WWF Nederland & Prince Bernhard Chair for International Nature Conservation, Utrecht University

Zamora-Cristales R. 2021 Building Bridges that bring together impact investors and landscape restoration. In book: *Mobilising climate finance experiences and lessons learned from IKI projects in*

Central America and the Caribbean Edition: First; Chapter: 2; Publisher: Ann-Kathrin Schloenvoigt (GIZ), David J. Alfaro Obando (GIZ), Mariana Cerdas Gutiérrez (GIZ)

Zamora-Cristales R., Buckingham K., Anderson W. 2021. How mapping the social landscape can accelerate forest and landscape restoration: case of studies from Chile and Honduras. In book: Forest Landscape Restoration and Social Opportunities in the Tropical World Edition: First Chapter: 4 Publisher: Editors: Fabiane Carolyne Santos, Severino R. Ribeiro Pinto and Cindy E. Prescott. -- 1. ed. -- Recife, PE : Centro de Pesquisas Ambientais do Nordeste - Cepam, 2020.

Reytar, K., Martin, D., Landsberg, F., Ray, S., Granizo, C.G., **Zamora-Cristales, R.**, Duraisami, M., Kanchana, C.B., Woldemariam, T., Stolle, F. and Arakwiye, B., 2021. **Mapping Together: A Guide to Monitoring Forest and Landscape Restoration Using Collect Earth Mapathons.** World Resources Institute Guidebook.

Atkinson, R.J., Thomas, E., Roscioli, F., Cornelius, J.P., **Zamora-Cristales, R.**, Franco Chuaire, M., Alcázar, C., Mesén, F., Lopez, H., Ipinza, R. and Donoso, P.J., 2021. **Seeding resilient restoration: An indicator system for the analysis of tree seed systems.** Diversity, 13(8), p.367. <https://doi.org/10.3390/d13080367>

Zamora-Cristales, R., Liere, M.A. and Hernández, E.A.S., 2020. **Economic Prioritization and optimization of public incentives for riparian forest restoration.** Revista Mesoamericana de Biodiversidad y Cambio Climático, 4(1), pp.23-43. <https://www.revistayuam.com/priorizacion-y-optimizacion-economica-de-los-incentivos-publicos-para-la-restauracion-de-bosques-riparios/>

Zamora-Cristales R., Herrador D., Cuellar N., Díaz O., Kandel S., Quezada J., De Larios S., Molina G., Rivera M., Morán_ramirez W., Jimenez A., Flores E., Franco Chuaire M., Gallardo Lomeli L., Vergara W. 2020. **Landscape Sustainability Index for Restoration.** World Resources Institute Report, 68p.

Reytar, K., Buckingham, K., Stolle, F., Brandt, J., **Zamora-Cristales, R.**, Landsberg, F., Singh, R., Streck, C., Saint-Laurent, C., Tucker, C.J. and Henry, M., 2020. **Measuring progress in forest and landscape restoration.** Unasylva, 71(252), pp.62-70.

Buckingham, K., Ray, S., Granizo, C.G., Toh, L., Stolle, F., Zoveda, F., Reytar, K., **Zamora-Cristales, R.**, Landsberg, F., Matsumoto, M. and Brandt, J., 2019. **The Road to Restoration.** World Resources Institute Guidebook.

Acuna, M., Sessions, J., Zamora, R., Boston, K., Brown, M., & Ghaffariyan, M. R. (2019). **Methods to manage and optimize forest biomass supply chains: A review.** *Current Forestry Reports*, 5(3), 124-141.

Petitmermet, J., Sessions, J., Bailey, J., & Zamora-Cristales, R. (2019). **Cost and Productivity of Tethered Cut-to-Length Systems in a Dry-Forest Fuel-Reduction Treatment: A Case Study.** *Forest Science*, 65(5), 581-592.

Daugherty B., Sessions J., Zamora-Cristales R. Wing. M. 2018. **Improving Large Trailer Access for Biomass Recovery in Steep Terrain.** *Journal of Forest Science.* <https://doi.org/10.1093/forsci/fxx020>

Ding H., Faruqi S., Wu A., Anchondo A., Altamirano J., Verdone M., **Zamora-Cristales R.** Chazdon R., Vergara W., 2017. **Roots for Prosperity: the Economics and Finance of restoring degraded**

lands. World Resources Institute, Washington DC., 8op.
<https://www.wri.org/sites/default/files/roots-of-prosperity.pdf>

Zamora-Cristales R. 2016. **Resource Allocation model for public incentives for forest landscape restoration in Latin America.** Land Economics; In preparation

Zamora-Cristales R. 2016. **Economic optimization of restoring riparian forest.** Forest Policy and Economics; In preparation

Chen C., Pierobon F., Zamora-Cristales R., Ganguly I., Sessions J., and Eastin I. 2016. **Modeling the processing and transportation logistics of forest residues using Life Cycle Assessment (LCA).** Journal of Forestry, 115 (2): 86-94

Zamora-Cristales R., J. Sessions, and G. Marrs. 2016. **Economic implications of processing and transporting wet versus dry forest residues for biofuel production.** Canadian Journal of Forest Research <http://www.nrcresearchpress.com/doi/pdf/10.1139/cjfr-2016-0221>

Marrs G., R. Zamora-Cristales, J. Sessions. 2016. **Forest Biomass Feedstock Cost Sensitivity to Grinding Parameters for Bio-jet Fuel Production** *Renewable Energy*.
<http://dx.doi.org/10.1016/j.renene.2016.07.071>

Zamora-Cristales R., J. Sessions, 2015. **Modeling forest residue collection for bioenergy production.** *Croatian Journal of Forest Engineering*, http://www.crojfe.com/rji/crojfe_37-2_2016/Zamora.pdf

Zamora-Cristales R., J. Sessions. 2015. **Are double trailers cost effective for transporting forest biomass on steep terrain?** *California Agriculture* 69(3):177-183 DOI: 10.3733/ca.v069n03p177

Zamora-Cristales R., J. Sessions, D. Smith. 2015. **Effect of grinder configuration on forest biomass bulk density, particle size distribution and fuel consumption.** *Biomass and Bioenergy*, 81: 44-54
<http://dx.doi.org/10.1016/j.biombioe.2015.05.025>

Zamora-Cristales, R., J. Sessions, K. Boston and G. Murphy 2014. **Economic Optimization of Forest Biomass Processing and Transport in the Pacific Northwest.** *Forest Science*.
<http://dx.doi.org/10.5849/forsci.13-158>

Zamora-Cristales R., J. Sessions, D. Smith, and G. Marrs. 2014. **Effect of high speed blowing on bulk density of ground residues.** *Forest Products Journal* 64 (7/8) 290-299: .
<http://dx.doi.org/10.13073/FPJ-D-14-00005>

Zamora-Cristales, R., P. Adams, and J. Sessions. 2014. **Ground-based thinning on steep slopes in Western Oregon: Soil compaction and disturbance effects.** *Forest Science* 60(2):1-7
<http://dx.doi.org/10.5849/forsci.12-525>

Zamora-Cristales, R., K. Boston, J. Sessions, and G. Murphy. 2013. **Stochastic simulation and optimization of mobile chipping economics in processing and transport of forest biomass from residues.** *Silva Fennica* 47(5):1-21. <http://dx.doi.org/10.14214/sf.937>

Zamora-Cristales, R., J. Sessions, G. Murphy and K. Boston. 2013. **Economic impact of truck-machine interference in forest biomass recovery operations on steep terrain.** *Forest Products Journal* 63(56):162-173; <http://dx.doi.org/10.13073/FPJ-D-13-00031>

Sessions, J. and R. Zamora-Cristales. 2013. **Cost Effective Logistics For Forest Harvest Residuals: The Upstream Part of the Sugar Stream.** In Proceedings of the Seventh National New Crops Symposium "New Crops: Bioenergy, Biomaterials, and Sustainability" Association for the Advancement of Industrial Crops (AAIC), October 13-16, . Renaissance Hotel, DuPont Circle, Washington D.C.

Zamora-Cristales, Rene. 2013. **Economic Optimization of Forest Biomass Processing and Transport.** *PhD. Oregon State University, 196 pp.* <http://hdl.handle.net/1957/39180>

Sessions, J., K. Tuers, K. Boston, R. Zamora and R. Anderson. 2012. **Pricing Forest Biomass for Power Generation.** *Western J. of Applied Forestry 28(2):51-56;* <http://dx.doi.org/10.5849/wjaf.12-012>

Zamora R. 2008. **Forest certification Financial Analysis: Teak Plantations.** Cape Town Southafrica. *ASDI, Sweden.*

Aguilera A. Zamora R. **Surface roughness in sapwood and heartwood of Blackwood (*Acacia melanoxylon* R. Br.) machined in 90-o direction,** *European Journal of Wood and Wood Products* Springer Berlin / Heidelberg ISSN0018-3768 (Print) 1436-736X (Online) Volume 67, Number 3 / agosto de 2009. www.springerlink.com/content/6184oh80480002to/

Aguilera A. Zamora R. 2007 **Wood Machining process monitoring of Blackwood (*Acacia Melanoxylon*) with acoustic emission technique and his relationship with resulting surface roughness** Scielo, Revista Maderas Ciencia y Tecnología 9(3): 323-332.
www.scielo.cl/scielo.php?script=sci_isoref&pid=So718-221X2007000300011&lng=es&tlng=en

Zamora R. 2006. **Effect of machining sapwood and heartwood of *Acacia melanoxylon* in sound and acoustic emission.** *Tesis de grado Master en ciencias mención recursos forestales Valdivia 104p.*

Zamora R. 2004. **Economic and Technical feasibility of construction low cost Dry wood Kilns for the development of a Dry lumber Market in small sawmills.** *Guatemala Forestal (1)1, Gremial forestal.*

Zamora R. 2004. **Effect of forest economic Incentives in rural communities of the central part of Guatemala.** *Ciencia Forestal 2(4) 15-18.*

Zamora R. Alvarado S. Castañeda C. 2003 **Economic and Technical Evaluation of Forest Incentives Program in Guatemala.** *Centro Agronómico de Investigación tropical CATIE – Instituto Nacional de Bosques INAB 120p.*

Project Management

Coordinating a Policy aceleration program on Incentives for Forest and Landscape Retoration.
Preparing the proposal funding and executing the budget/managing deliverables

Supporting Initiative 20x20. International Climate Initiative (IKI), BMUB, Germany. Writing the proposal and budgets, Managing Workplans and budgets as well as implementing activities in Mexico, Peru, Colombia, Costa Rica, Guatemala, Chile, Argentina, Uruguay and Ecuador.

Monitoring Landscape Restoration, International Climate Initiative (IKI), BMUB, Germany. Writing the proposal and budgets, Managing Workplans and budgets as well as implementing activities in El Salvador, Nicaragua and Honduras.

Resource allocation for Public Incentives, International Climate Initiative (IKI), BMUB, Germany. Leading research efforts to allocate public resources for restoration.

Economic Supply Chain Analysis, United States Department of Agriculture, Lead the design of a landscape model to optimize the forest biomass supply chain.

Recent Presentations in Conferences and Conventions

*Global Policy Dialog Series Strong Public Policies to Restore Land: Breaking Through the Barriers to Success, **Accelerating public incentives in FLR. September 2021***

*Global Policy Dialog Series How Carbon Taxes And Markets Can Scale Up Landscape Restoration:, **The nexus between Carbon and taxes for a resilience economy October 2021***

*World Forestry Congress 2022. **Business Innovation Ecosystem and public incentives to streamline Forest Landscape Restoration in Latin America.** Accepted and to be presented at World Congress in South Korea in 2022.*

*Society of Ecological Restoration World Congress 2021. **The investment ecosystem in Latin America.** Virtual Format, June, 2021*

*The 43rd annual meeting of the Council on Forest Engineering (COFE) and the 53rd annual meeting of the International Symposium on Forest Mechanization (FORMEC), Keynote: **How forest engineering can help to curb climate change.** September 2021*

*Latin American Forum on Impact Investment. **"Impact Investments in Landscape Restoration"** Merida Yucatan, Mexico. February 2020*

*International Conference on Tropical Forests, Yale School of Forestry, **"Monitoring and Transparency of Landscape Restoration"**, Washington DC, February 2020, USA.*

*Wilson Center for International Scholars **"Healthy Landscapes for Prosperity: Land Restoration in El Salvador"**, New Haven, CT, February 2018, USA.*

*IUFRO World Congress. **"Catalog of Ecosystem Services from Restoration in Latin America"** Curitiba, Brazil, October 2019*

*International Association of Landscape Ecology **"Economics and Finance of landscape restoration in Latin America"** Concepcion, Chile, May 2018.*

*International Conference on Tropical Forests, Yale School of Forestry, **"Multi-objective optimization of indicators for Monitoring impacts of Restoration"**, New Haven, CT, February 2018, USA.*

*International Union of Forest Resource Economist annual meeting **"Optimizing public resources for landscape restoration at scale in Latin America"** New Orleans, LA, USA, 2017.*

*Congreso de la red chilena de restauración ecológica, **Iniciativa 20x20 for Restoration of Degraded lands in Latin America**, La Serena, Chile, 2016*

*Congreso de la red colombiana de restauración ecológica **Economic modeling of Riparian Forest Restoration in Guatemala**, Medellin, Colombia, 2016*

*The second Northwest Wood-Based Biofuels + Co-Products Conference, **Economics of wet vs fresh material for biofuel production**. Seattle, WA, USA, 2016*

*Wood to Biofuel Webinar Series, Northwest Advanced Renewables Alliance, **"Decision support for forest harvest residue collection"**. October 15, 2015.*

*Western Forest Economics and International Union of Forest Resource Economist annual meeting **"Resource allocation for public incentives in Latin America"** Seattle, WA, USA, 2015.*

*Western Forest Economics and International Union of Forest Resource Economist annual meeting **"Forward reaching optimization to increase the value of wood poles"** Vancouver BC, Canada, May, 2015.*

*International Union of Forest Research Organizations IUFRO world congress 2014. **"Economics of forest biomass processing and transport on steep terrain"** Salt Lake City Utah, USA, October, 2014.*

*Council of Forest Engineering Annual Meeting 2014, **"A simulation model for forest biomass collection"**, Moline, IL, USA*

*Washington Contract Loggers Association, Annual Meeting 2014. **"Improving Efficiencies in Forest Biomass in Biomass Collection and Transportation"** Spokane, Washington, USA, March 2014*

*15th Symposium in System Analysis in Forest Resources, **"A Decision Support System for the Economic Optimization of Forest Biomass Processing and Transportation"** Quebec City, Canada, August, 2013.*

*Council of Forest Engineering Annual Meeting 2013, **"RENO: A Computerized Solution Procedure and Decision Support System for Forest Biomass Recovery Operations"**, Missoula, Montana USA*

*Western Forestry Graduate Symposium, **"Economic optimization of mobile chippers for biomass processing"**, April 24, 2013 Corvallis, Oregon USA.*

*CAMCORE, **Data management for Forest Genetic Trials**, 26 July-2 August 2009, Sabie, South Africa.*

*Swedish International Development agency **Forest Certification Training Program First Part** Sweden 14-30 May 2008. **Second part** 5-20 November South Africa 2008.*

*National Forestry Congress Guatemala 2008 Keynote speaker: **"Optimal Cutting Age for Pine. Plantations in Guatemala: An Economic Analysis"**. Guatemala 2008.*

*Central America Forestry Congress. Oral presentation: **"Wood machining Process"** San Salvador El Salvador 2007*

Software Development

- AURORA Assessment, Understanding and Resproting of Restoration Actions, Application Web <http://restoration-projects-tool.vielca-ingenieros.com/#/>
- Sustainability Index for Landscpae restoration Monitoring WebApp <http://simulador-isr.vielca-ingenieros.com/#/>
- RENO: Residue Evaluation and Network Optimization program: Optimizing the economics of forest biomass processing and transport
- POLEBUCK: Maximizing the value of a tree for wood poles and sawlog production.

Reviewer

- Perspectives in Ecology and Conservation
- Forest Science, Society of American Foresters
- Canadian Journal of Forest Research
- Forest Policy and Economics
- Journal of Forestry, Society of American Foresters
- Silva Fennica, The Finnish Society of Forest Science and the Finish Forest Research Institute
- Forest Products Journal, Forest Products Society
- Biomass and Bioenergy Journal, Elsevier.
- International Journal of Forestry Research, Hindawi.
- California Agriculture Journal
- Forests
- Biofuels
- Energies
- World Resources Institute internal reports
- UN Decade on Ecosystem Restoration

Professional References

David Kaimowitz, Manager of Forest Farm Facility. FAO . **Italy** David.Kaimowitz@fao.org

John Sessions PhD, Professor and International Consultant, College of Forestry, Oregon State University, Corvallis, **USA**, john.sessions@oregonstate.edu Tel. +1 541-737-2818

Maria Ines Miranda, Managing Director SSC AMERICAS; miranda@ssc-americas.com
m.+569 78627270, **Chile**

Ronnie De Camino. Advisor Forestry and Climate Change Fund decamino.ronnie@gmail.com
+506 8849-8266

Sun Joseph Chang, Professor, Director of International Society of Forest Resource Economist
Room 319, Renewable Natural Resource Bldg. Louisiana State University, Baton Rouge, LA 70803;
Phone:(225) 578-4167 Fax: (225) 578-4227 email: xp2610@lsu.edu