



**HAL**  
open science

# Social capital, biocultural heritage and commoning for ethical and inclusive sustainability of peasant agriculture: three case studies in Argentina, Bolivia and Chile

Lizbeth Núñez-Carrasco, Jorge Cladera, Pablo José Cruz, Nancy Egan, Gabriela Andrea Figlioli, Gastón Godoy-Garraza, Celeste Golsberg, Ximena Quiñones-Díaz, Luis Sáez-Tonacca, Manuela Vieira-Pak, et al.

## ► To cite this version:

Lizbeth Núñez-Carrasco, Jorge Cladera, Pablo José Cruz, Nancy Egan, Gabriela Andrea Figlioli, et al.. Social capital, biocultural heritage and commoning for ethical and inclusive sustainability of peasant agriculture: three case studies in Argentina, Bolivia and Chile. 2022. ird-03721798

**HAL Id: ird-03721798**

**<https://ird.hal.science/ird-03721798v1>**

Preprint submitted on 13 Jul 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## 2 Title

3 Social capital, biocultural heritage and commoning for ethical and inclusive sustainability of peasant  
4 agriculture: three case studies in Argentina, Bolivia and Chile

## 6 Authors and affiliations

5 Lizbeth Núñez-Carrasco (1)\*, Jorge Cladera (2), Pablo José Cruz (3), Nancy Egan (3), Gabriela Andrea Figlioli  
6 (4), Gastón Godoy-Garraza (5), Celeste Golsberg (5), Ximena Quiñones-Díaz (6), Luis Sáez-Tonacca (7),  
7 Manuela Vieira-Pak (8), Thierry Winkel (9)\*

10

11 (1) Departamento de Ciencias Sociales, Facultad de Ciencias Sociales y Económicas, Universidad Católica  
12 del Maule (UCM), Curicó, Chile. Email: [lnunez@ucm.cl](mailto:lnunez@ucm.cl)

13 (2) Universidad de Buenos Aires (UBA), Buenos Aires, Argentina. Email: [chorchcladera@gmail.com](mailto:chorchcladera@gmail.com)

14 (3) UE CISOR CONICET, Universidad Nacional de Jujuy, Jujuy, Argentina. Email: [pablocruz@conicet.gov.ar](mailto:pablocruz@conicet.gov.ar) /  
15 [nancyegan1@gmail.com](mailto:nancyegan1@gmail.com)

16 (4) Ministerio de Agricultura, Ganadería y Pesca (MAGyP), Jujuy, Argentina. Email: [gafiglioli@gmail.com](mailto:gafiglioli@gmail.com)

17 (5) Instituto de Investigación y Desarrollo Tecnológico para la Agricultura Familiar, Región NOA (IPAF-NOA),  
18 Maimará, Jujuy, Argentina. Email: [godoygarraza.gaston@inta.gob.ar](mailto:godoygarraza.gaston@inta.gob.ar) / [golsberg.celeste@inta.gob.ar](mailto:golsberg.celeste@inta.gob.ar)

19 (6) Facultad de Ciencias Agrarias y Forestales, Universidad Católica del Maule (UCM), Curicó, Chile. Email:  
20 [xquinones@ucm.cl](mailto:xquinones@ucm.cl)

21 (7) Universidad de Santiago de Chile (USACH), Santiago, Chile. Email: [luis.saez@usach.cl](mailto:luis.saez@usach.cl)

22 (8) Independant Consultant associated to LISODE, Montpellier, France. Email: [manuelka79@hotmail.com](mailto:manuelka79@hotmail.com)

23 (9) Centre d'Écologie Fonctionnelle et Évolutive (CEFE), Institut de Recherche pour le Développement  
24 (IRD), CNRS, EHESS, Univ Montpellier, Montpellier, France. Email: [thierry.winkel@ird.fr](mailto:thierry.winkel@ird.fr)

\* Corresponding authors

## 26 Acknowledgements

27 This work received financial support from ANID (National Agency for Research and Development, Chile),  
28 UCM (Chile) and IRD (Francia) through the projects PAI-MEC-80160043-BAQUIANA and PAI-MEC-  
29 80190087-PABIOCA, ECOS-SUD (project ARCHIPA 2020-2022, Argentina/France), and MSH-SUD (Maison  
30 des Sciences de l'Homme SUD, project PANARCHI 2017-2021, IRD/CNRS/UCM/UNJU, France). We thank  
31 Pablo Jara-Valdivia for his contributions to the participatory process with the Lipimávida community, and  
32 Mathieu Dionnet, co-organizer of the workshop "Common goods and participatory methods" (MSH-SUD,  
33 16-18/05/2018, Montpellier, France). Thanks are due to all the producers, development agents and local  
34 authorities involved with us in these projects.

36 **ABSTRACT**

38 *Societal issue and theoretical background:* The sustainability of human societies relies on the  
40 intergenerational transmission of capital stocks, whether natural, social, or economic. With ever more  
42 competition for economic resources, the sustainability of societies must increasingly focus on the mutual  
44 reinforcement of social and natural capitals. This perspective is particularly relevant for peasant  
agriculture, under constant threat of social and economic exclusion, but whose social and natural capitals  
remain important though often underused by the peasants themselves. The concepts of commoning and  
social capital are useful for addressing these issues and activating biocultural heritage from an inclusive  
sustainability perspective.

*Objectives and methods:* We seek to understand how peasants organize themselves to collectively achieve  
46 social and economic inclusion goals that could promote their sustainability and resilience in the face of  
48 economic constraints. Using field surveys and participatory-action research, we analyzed the social,  
economic, and environmental factors that foster the emergence and sustainability of producer  
organizations and their value chains. We did so in three peasant organizations in Argentina, Bolivia and  
50 Chile, which share a common starting point around valorisation of traditional quinoa crops, but vary  
greatly in terms of size, internal dynamics, and subsequent organisational trajectories.

52 *Results:* The successes and challenges of the social innovations implemented in the three cases studied  
provide lessons on how farmers mobilise their social capital and harness the resources of their cultural  
54 and natural capital to achieve inclusive sustainability. While some lessons remain context-specific, others  
appear to be independent of the size and place of the organizations, and several demonstrate the  
56 importance of the social interactions maintained both within the organizations and with the end  
consumers.

58 **Keywords:** collective action; commons; ethical values; inclusive agriculture; participatory-action  
research; peasant farmers; quinoa

60

# 1. INTRODUCTION

62 Socio-ecological sustainability is systemic in nature, as it crosses and integrates environment, society and  
64 economy. It is also transtemporal, as it focuses primarily on maintaining the integrity of these three  
66 components over time. Socio-ecological sustainability thus fits a heritage perspective as it involves the  
68 intergenerational transmission of three forms of capital respectively associated with nature, society and  
70 economy. Natural capital includes all the raw materials and resources that are useful to human  
72 populations, either to satisfy their basic needs in the short term (food, clothing, housing, health) or for  
74 more sophisticated activities, in the short or long term (culture, ecological conservation). Because it is  
valued through human activities of harvesting, extraction, transformation, work, trade, and because it is  
the object of ecological, cultural, or aesthetic concerns, natural capital is closely associated with the other  
two forms of capital. Social capital encompasses all the abilities, knowledge and skills, including  
organizational, learning, and relational skills, that enable people to live together and take advantage of  
their environment. Economic capital is the sum of assets that can be produced or exchanged in the  
markets that sustain human societies (Rivera *et al.*, 2019).

By extending to natural and social capitals the functions that Piketty (2014) attributes to economic capital  
alone, we can say that the three forms of capital serve both as stocks of value (wealth) and as factors of  
production. This sharing of the same functions of use further underlines their interdependencies.  
Moreover, these different categories of assets can be tangible (land, plants, animals, infrastructures,  
equipments, inputs...), or intangible (amenities, skills and knowledges, brands, intellectual property rights,  
financial securities...), with definitions and scope that have changed according to the complexity and  
historical transformations of societies.

82 Today, due to financial concentration, intensification, and globalization of trade, economic capital is  
84 increasingly competitive and difficult to control locally. Considering the pre-eminence given for decades to  
86 economic assets which are less and less rooted in the territories, this open competition generates  
88 vulnerabilities in all components of the socio-ecological systems, in particular at the local level (Sen, 2000).  
90 Well-known examples of this are rural exodus and industrial relocation due to massive imports of  
92 competitive products from abroad, or deforestation and over exploitation of land by productive systems  
94 under the control of deterritorialized financial interests. In a world that simultaneously and permanently  
shows low growth rates and high returns on capital, the divergent forces that prevail in capitalism amplify  
wealth inequalities and social exclusion (Piketty, 2014). This form of globalized economy not only  
delocalizes production, leaving the poorest excluded, it also promotes a budgetary approach to territorial  
management, impoverishing the rural world socially, economically and environmentally. Its current  
version, preferably virtual, puts more distance from local realities, which requires re-creating and co-  
constructing alternative approaches of sustainable territorial development.

To address the vulnerabilities in the economic sector, there is a renewed interest in both natural and social  
capitals, which are inherently rooted in local territories and can thus balance out certain negative impacts  
of globalization. Furthermore, natural and social capitals show many interrelations—partially encapsulated  
in the term "biocultural"—and therefore can reinforce each other and generate synergies for action  
(Hanspach *et al.*, 2020).

100 These natural and social resources are of critical importance in peasant agriculture. Sustainably produced  
102 and transmitted by peasant farmers for millennia, these forms of capital make up the biocultural heritage  
104 of agriculture, often in the form of tangible or intangible commons of land, genetic resources, local  
106 knowledge, collective norms, etc. This shared heritage suffered an accelerated depreciation throughout  
108 the 20th century, accompanied by the increasing marginalization of peasant agriculture to the benefit of  
110 the agro-industrial sector. However, with the successive economic crises in the agricultural and agri-food  
sectors (Ioris, 2016), several authors argue that natural and social capitals have great value and potential  
to ensure the sustainability of these activities vital to the global society (FAO (Food and Agriculture  
Organization), 2021; Milbank *et al.*, 2021). Strengthening these synergies between nature, society and  
economy for sustainable agriculture are advocated by several approaches such as nature-based agriculture  
(Sumberg, 2022), holistic management (Gosnell *et al.*, 2020; Hawkins *et al.*, 2022), or regenerative  
agriculture (Newton *et al.*, 2020; Gordon *et al.*, 2022).

112 As a depository of the biocultural heritage, peasant agriculture holds an opportunity to gain recognition of  
114 its value and its role for the food sovereignty and security, and overall socio-ecological sustainability of the  
116 territories. We posit that collectively strengthening the natural and social capitals of peasant agriculture  
118 gives it greater degrees of autonomy, thus reducing the economic and environmental costs of global  
120 society's food and commodity supply chains. Simultaneously, strengthening the peasant agriculture could  
122 improve both its autonomy and participation in productive and commercial chains of food and goods. To  
124 account for this increased prominence, international agencies involved in poverty reduction have  
126 developed the concept of inclusive business (Alliance for Inclusive Business, 2011; Kelly *et al.*, 2015). This  
notion is debated as it relates to the structural adjustment policies of the 1990s and is sometimes  
restricted to the inclusion of those at the "base of the pyramid" as mere suppliers of raw materials or  
labour power (Hahn, 2012; Likoko & Kini, 2017). But we argue that market inclusion can also be based on  
socio-ethical values that support a genuine bottom-up process for the social and economic advancement  
of small producers, reducing inequalities with the rest of society through transformation towards greater  
justice, solidarity and participation in the conditions of production, marketing and consumption. In this  
article, we focus on the expansion of the role of peasant producers in the supply chains and consumption  
circuits of global society.

128 Our analysis is based on two sets of concepts and methods detailed below. In the conceptual plan, the  
130 notions of social capital, biocultural heritage, and commons are mobilised in their relation to the model of  
132 ethical socio-economic inclusion. In the operational plan, we used the approach of participatory action  
research to guide the set-up, accompaniment, and post-project analysis of three action research initiatives  
with peasant communities in South America.

## 134 **2. CONCEPTUAL BASES**

### **2.1. Social capital and socio-economic inclusion**

136 Following the culturalist school, we consider social capital as the sum of collective resources such as  
138 networks, knowledge and trust that facilitate coordination and cooperation for a mutual benefit among  
the members of a social organization (Siisiäinen, 2003). We thus leave aside the structuralist approach of  
social capital conceived essentially as an individual resource derived from participation in elitist networks

140 (Bourdieu, 1980). In this view, social capital as an individual resource reinforces the effects of domination  
142 of economic and cultural capitals with the consequent exclusion of those at the bottom of the social  
pyramid. On the contrary, social capital as a collective resource mitigates these effects of economic and  
144 cultural domination (Siisiäinen, 2003). Aiming at mutual benefit, social capital naturally serves the social  
and economic inclusion of farmers who, by grouping, cooperating and activating their biocultural capital,  
146 agree on production objectives and norms, generate production volumes, and thus strengthen their  
commercial capacity and economic protagonism (Grivins & Tisenkopfs, 2018). The social capital  
accumulated by peasant producers then appears as the key to building a redistributive model that  
148 improves both their economic income and socio-economic inclusion (Macías Vázquez & Alonso González,  
2015). Short trade circuits are examples of such inclusive, stable, and fair arrangements by which peasant  
150 farmers can access even globalised markets while maintaining some control over their production (Davies  
& Ryals, 2010; Grivins & Tisenkopfs, 2018). Activating the symbolic value of their biocultural heritage  
152 through product labeling is another way for peasants to gain social recognition and inclusion, while  
strengthening the protection and sustainability of their cultural and natural capital (Vanhulst, 2015; Essex  
154 & Read, 2016).

## 2.2. Biocultural heritage

156 Biocultural heritage comprises a set of natural resources –from genes to landscapes–, knowledge and  
practices related to the historical and ecological contexts of human societies (Gavin *et al.*, 2015). Whether  
158 tangible or intangible, biocultural heritage is both a heritage of the past (even recent) and a legacy for the  
future. This value of transmission between the past and the future makes heritage a transgenerational  
160 object which, therefore, embeds a component of sustainability (Winkel *et al.*, 2020). Besides, biocultural  
heritage objects –for example: handicrafts, vernacular architecture, or gastronomy– are also distinctive of  
162 the territory and, thus, are vectors of social identity for the peasant communities who live there. At the  
same time, they constitute opportunities for their territorial and economic dynamics (Núñez-Carrasco *et al.*,  
164 2021), both locally in tourism, farmers fairs, or community supported agriculture, and non-locally in  
external markets.

166 As part of the biocultural heritage for millennia, peasant agriculture meets the food needs of humanity,  
shapes rural landscapes, generates and maintains agrobiodiversity. It has recently been recognised by  
168 international organisations –the MERCOSUR included family farming in his agenda since 2005, and the  
FAO declared 2014 "International Year of Family Farming"– and by consumers who express a continuous  
170 demand for food with quality or origin certification (Autio *et al.*, 2013). However, peasant agriculture  
remains marginal in public policies, which mostly continue to favour individualism and the fragmentation  
172 of family farms in favour of the agribusiness sector (Murray, 2002). Human and environmental health are  
sacrificed for the sake of short-term profitability, while the pillars of sustainable agriculture –land and  
174 water, biodiversity, local knowledge and social cohesion– are made vulnerable (Gosnell *et al.*, 2020). For its  
part, the agro-industrial sector is discovering its own vulnerability to the crises it generates (zoonoses, soil  
176 degradation, water pollution and restriction, pollinator extinction, farmers indebtedness, speculation...),  
not to mention its social and aesthetic impacts (farmer proletarianization, rural exodus, consumer  
178 distrust, destruction of amenities...) (Ioris, 2016).

Hence our proposal, from a perspective of sustainable and ethically inclusive agriculture, to collectively  
180 activate the biocultural heritage in order to strengthen the identity and social cohesion and, therefore, the  
social and economic inclusion of the peasant sector.

## 182 **2.3. From commons to commoning**

Often, commons are still considered as simple material or immaterial shared resources such as water, land,  
184 seeds, or artistic designs, working techniques, traditional knowledge, etc. These common goods are  
differentiated from private goods (i.e. exposed to rivalry and exclusivity among users) or from public goods  
186 (without rivalry or exclusivity) because they are rivalrous but not exclusive (at least within a community).  
However, considering that the previous definition ignores the social and dynamic dimensions of common  
188 goods, some authors stress that there is no common without community (Ostrom, 1990). Thus, a common  
is not only a resource but also the set of rules and values mobilised by the community of users who care  
190 for that resource (Gibson-Graham *et al.*, 2013; Bollier, 2021). The expression "commoning" has been  
coined by Bollier (2015) to include the dimensions of production, governance, culture and personal  
192 interests that are mobilised by responsible local communities for the dynamic management of shared  
resources.

194 In order to govern the commons, commoning seeks to avoid both the traps of mercantile and  
unsustainable selfishness and the difficulties of inflexible, remote, and bureaucratic –if not corrupt or  
196 corporatist– institutional control (Bollier, 2021). In particular, supporting institutions –governmental or  
otherwise– prone to the "pathology of command and control" (Cox, 2016) should avoid undermining the  
198 autonomy and empowerment of responsible local communities since countless examples of commoning –  
from land and water for cultivation to open-source technologies– disprove the purely theoretical case  
200 envisioned by Hardin (1968) of actors who, unable to communicate and driven by their self-interest alone,  
would over-exploit an unrestricted resource.

202 Commoning brings ethical social inclusion since it requires cooperative governance and, thereby, builds a  
mutually safe space for trust and reciprocity (Ostrom, 1998). It also empowers local actors through  
204 collective learning of common skills in management, negotiating, marketing or communication.

## 206 **3. METHODS AND AREAS OF ACTION**

The approach of participatory action research was used to mobilise the notions of biocultural heritage and  
208 commoning in processes of action research aimed at the inclusive sustainability of peasant farmers in local  
or regional contexts in Argentina, Bolivia, and Chile.

### 210 **3.1. Participative action research**

In order to improve the capacity of local producers to decide and act together to change their reality,  
212 participatory action research (PAR) promotes dialogue between science and society to co-construct  
knowledge and socio-technical innovation in an ethical perspective of empowerment of local actors  
214 (Wittmayer & Schöpke, 2014; Biggs *et al.*, 2021). The model of social work with rural communities makes it  
possible to base the complex understanding of the territories at different scales and at different times, in  
216 order to build social situations in dialogue with the triad of civil society, the state and the market.

Even when initially designed by academic actors, the PAR process must be flexible in the face of a possible  
218 change in the project's initial goals, since local stakeholders –rather than mere beneficiaries or passive  
subjects– are protagonists in the implementation, evaluation and possible projections of the PAR. This  
220 "constructive friction" between different actors rationales and goals is the condition of the interactive,  
non-linear process of socio-technical innovation, while expressing a true ethics of science for action. The  
222 same constructive friction between different cultures operates in the dialogue between social sciences  
and natural sciences. This is another valuable contribution made by PAR to interdisciplinarity, which is  
224 essential for understanding the complexity of socio-environmental systems.

Our approach of socio-environmental complexity is both systemic –seeking to identify the structures that  
226 determine social action– and constructivist –analysing society as a product of social action. In the end, the  
innovation by which the change in reality takes place can be more or less radical, from the simple  
228 adaptation to a changing local or foreign context, to the creation of an unprecedented socio-economic or  
territorial device.

Through the articulated work between communities, technical and academic bodies, the three PAR cases  
230 presented here have sought to promote the valorisation of agricultural products that have an  
unquestionable heritage character. Through multiple meetings –some individual but most collective–,  
232 workshops, feedback sessions and, in some cases, role playing games, a dialog of knowledge was opened  
and diverse perspectives were discussed. We have set ourselves the goal of providing local producers with  
234 tools so that they can: i) evaluate the options for valorising their biocultural heritage in the current  
context, and ii) access marketing channels and markets that value products with a biocultural heritage  
236 identity. At the same time, knowledge was generated in and from action that is useful for science and  
238 society.

### 3.2. Areas of action

240 In order to analyse in all its diversity the issue of the inclusion of peasant farming through the valorisation  
of biocultural heritage, quinoa (*Chenopodium quinoa* Willd.) offers exemplary cases. This ancestral grain  
242 from the Andes and the Chilean coast is emblematic of the rescue and valorisation of the agri-food  
heritage in Bolivia since the 1970s (Winkel *et al.*, 2014, 2016; Barrientos *et al.*, 2017) and more recently in  
244 neighbouring countries such as Chile and Argentina (Núñez Carrasco & Bazile, 2009; Andrade *et al.*, 2015;  
Bazile *et al.*, 2015; Daza *et al.*, 2015; Lacoste *et al.*, 2017). In fact, quinoa has been globalised by the media  
246 with an image of superfood, healthy (high in protein, gluten-free) and authentic (sometime under the  
controversial slogan of "Inca rice"). Its production process, by small, mostly organic producers, further  
248 increases the appeal of quinoa to consumers. While the success of quinoa has enabled many small-scale  
producers to gain access to the global market and thus achieve economic and social inclusion, it also poses  
250 real or potential environmental, social and economic risks that could lead to the exclusion of small-scale  
producers to the benefit of economic actors better equipped to deal with these risks. In fact, there has  
252 been a proliferation of actors (the state, development agencies, NGOs, transnational corporations, etc.)  
with different motivations and priorities that question the relative control of small producers and their  
254 organisations over production and marketing (Zandstra, 2015).

The growing complexity of the quinoa production chain has led to reflections on economic models that  
256 are inclusive of peasant producers and that can generate social, environmental and economic benefits for



all actors in the value chain. Studies focusing on Bolivia and Peru –the world's leading quinoa exporters–  
258 point to producer associations and partnerships between producers, processors, marketers and  
consumers as levers of an inclusive model (Padulosi *et al.*, 2014; Zandstra, 2015; Böhm, 2016; Bedoya-  
260 Perales *et al.*, 2018).

In Bolivia, whose quinoa exports dominated the world market for more than four decades from the 1970s  
262 onwards, quinoa production remained in the hands of small farmers' organisations and received only late  
support from the state (Laguna, 2011; Zandstra, 2015). In Chile and Argentina, the recent rescue of quinoa  
264 has been driven by state institutions providing technical assistance, training and credit, and involved not  
only small producers but also a dynamic agribusiness sector (Andrade *et al.*, 2015; Vidueiros *et al.*, 2015;  
266 PUC (Pontificia Universidad Católica de Chile), 2017; Golsberg, 2021). Despite this socio-economic  
contrast, in all three countries the industrial-productivist model still predominates in the agricultural  
268 economy, and peasant family agriculture remains marginal in terms of GDP and exposed to structural  
conditions of poverty and social exclusion (Salcedo & Guzmán, 2014).

270 Analyzing, within the same theoretical framework, three territorial experiences of social capital  
mobilisation motivated by the promotion of quinoa production, but following different paths and  
272 purposes, we seek to identify the rationales activated by local actors and institutions to promote  
agricultural biocultural heritage for the benefit of peasant communities.

274

## 4. RESULTS

276 Table 1 gives a summary of the main features of the three case studies developed below.

### 4.1. Case 1: Quebrada de Humahuaca, Argentina

278 4.1.1. Geographical and social context

The Quebrada de Humahuaca (hereinafter "Humahuaca"), in the northwestern province of Jujuy, is a  
280 territory of great symbolic weight for the social imaginary of Argentina. It combines an imposing mountain  
landscape with ancient and uninterrupted links with the cultural trajectories of its Andean neighbours,  
282 Bolivia and Chile. The rural communities of Humahuaca have their origin in the demographic  
concentrations (the colonial *reducciones*) forced by the Spanish crown to facilitate the Christianisation and  
284 tax control of the indigenous populations. This process did not prevent the territory from remaining  
mainly under the administration of the indigenous communities themselves until the declaration of  
286 independence and the establishment of the Republic in the 19th century, when new laws of liberal  
inspiration promoted the distribution of lands to private smallholders. As a consequence of this historical  
288 process, both individual and collective land control mechanisms coexist until today in Humahuaca, with  
different degrees of validity according to the norms prevailing in each locality.

290 Until the end of the 19th century, the valley of Humahuaca was a communication and commercial route,  
which developed a specific production of fodder for the maintenance of the cattle troops and the mule  
292 trains that circulated between the Andean mining centres in the north or west (including Bolivia and  
Chile), and the ports of the Rio de la Plata. At the beginning of the 20th century, fruit production made its  
294 reputation, followed from 1980 onwards by vegetable production to supply the urban markets of

northwest Argentina. During all these moments, the local farming families never stopped maintaining a parallel agricultural activity aimed at self-supply or barter of a multiplicity of traditional products, such as corn, creole wheat, creole barley, quinoa, Andean tubers, legumes, fruits, sheep and goat cheeses, or *charqui* (dry meat).

The continuity of the original populations since pre-Hispanic times and their recent yet vigorous ethnic re-emergence, the validity of traditional artistic and ritual expressions, the importance of their archaeological sites for the interpretation of pre-Hispanic cultural trajectories, their architecture and sacred art linked to successive American Christian traditions, and their leading role during the period of American independence, led to the Quebrada de Humahuaca being declared a World Heritage Site (UNESCO, 2003). The traditional agricultural practices then underwent an ambiguous process, due to the increase in land property prices on the one hand, and tourist and gastronomic development on the other. One consequence of this process has been the demographic concentration in the urban peripheries of populations coming from the surrounding rural areas, and the consequent incorporation of peri-urban activities into the occupations of traditional rural families.

#### 4.1.2. The PRODERI project "Rescue and revaluation of organic quinoa production" as a participatory action experience

From 2008 onwards, the global surge in quinoa and its repercussions among the Bolivian high-Andean communities, led a conglomerate of public and private organisations in the province of Jujuy to incorporate into this process the local rural areas, which, like their Bolivian counterparts, have preserved quinoa agricultural traditions. This enthusiasm first crystallised in a public-private program: the Program for Strengthening Quinoa in Northwest Argentina (Daza *et al.*, 2015), which was based on a methodology inspired by certain Bolivian experiences: skill-based training, which, by proposing the replacement of the classical pedagogical process by a theoretical and practical knowledge generated through on-site workshops (Daza *et al.*, 2015), facilitated the development of participative research action experiences.

Under this methodological premise, different local experiences have gained strength since 2013, articulating technical teams from public bodies with social groups in various Andean territories in northwest Argentina. In Humahuaca, the experience that showed the greatest validity and continuity over time was facilitated by an indigenous peasant organisation, the Union of Small Aboriginal Producers of Jujuy (UPPAJ). It received the cooperation of both a technical staff of the Secretariat of Family Agriculture (SsAF) of the Ministry of Agriculture, and an academic staff from the Interdisciplinary Institute of Tilcara, of the University of Buenos Aires. The initial diagnosis suggested that, in order to achieve marketable volumes of quinoa in the region, it was necessary to consolidate family farming as well as to speed up the post-harvest processing of the grains through its mechanization. This is how the project "Rescue and revaluation of organic quinoa production" came about, which was presented to a national funding portfolio called the Program for Inclusive Rural Development (PRODERI). This project was designed to benefit 40 peasant families from 14 different rural communities in the department of Humahuaca. It was formulated and implemented under the sponsorship of the Mallku Andina Foundation between August 2014 and July 2016, consolidating an associative group—the Quineros de la Quebrada de Humahuaca—that is still active today.

While the Program to Strengthen Quinoa in Northwest Argentina aimed to achieve competitive marketable volumes in national and international grain markets, its top-down approach came up against

336 very divergent local criteria regarding the values placed on agricultural diversification. The Quinueros de la  
338 Quebrada de Humahuaca Group gained legitimacy by adopting a participatory action methodology, which  
340 allowed the technical proposals to be adapted at any time to the priorities decided in the farmers'  
342 assemblies. After a few initial attempts at collective marketing, the Group decided to prioritise the  
344 consolidation of each family farm rather than sales strategies. The scale of local production and native  
346 expectations –which were more concerned with ensuring the survival of ancestral agricultural varieties  
348 than with obtaining quick profits– were better conveyed through traditional systems of food exchange  
350 (seed fairs, *cambalaches*, i.e. barter of work for seed on a local scale) than through the management of  
large-volume markets. Thus, the enthusiasm for a programme to stimulate quinoa production is explained  
less by an economic interest than by the demand for local cultural identity, and in line with this, by access  
to material conditions to improve the agricultural activity of each family. Finally, the associative group  
constituted the most important human nucleus –because of the number of members, the territorial  
expansion, and the experience in collective action it provided– of a new space for corporate  
representation of quinoa producers throughout the region: the Quinoa Producers' Table, which involves 83  
peasant families from three departments in the province of Jujuy.

## 4.2. Case 2: Salar de Uyuni, Bolivia

### 352 4.2.1. Geographical and social context

The following observations and data describe the situation in the area with the highest commercial  
354 production of quinoa in the world between 2007 and 2010, as analysed in the framework of the Equeco  
project (from the acronym in spanish "*Emergencia de la quinua en el comercio mundial*").

356 This area is located in the southern highlands of Bolivia, on the banks of the Salar de Uyuni (hereinafter  
"Uyuni"), where plains at 3,600 masl alternate with volcanic relief culminating at over 6,000 masl. This  
358 extreme high desert environment has been occupied for millennia by farmers who raise camelids and  
grow quinoa and potatoes (Cruz *et al.*, 2017). Generally, pastures are located on the plains, while crops  
360 were traditionally grown on hillsides, less exposed to frost than the plains (Pouteau *et al.*, 2011).

In Bolivia, since 2006, a nationalist left policy has sought to reduce poverty in the rural sector, in particular  
362 through legal recognition of community lands and the creation of electricity, telephone and road  
infrastructures (Vieira-Pak, 2015; Vassas-Toral, 2016). At the same time, a national agricultural policy was  
364 launched in favour of high Andean production of camelids and quinoa. But this happened more than 30  
years after the first peasant initiatives, supported by foreign NGOs, took the gamble in the early 1970s to  
366 create an export market for quinoa from scratch to offset the social impact of the country's economic  
situation at that time (Laguna, 2011).

368 Despite its extreme geographical conditions, this high altitude desert was traditionally connected to the  
Andean "archipelago" (Murra, 1985) by the intense trade in salt, minerals, wool, quinoa, and meat from  
370 the Salar in exchange for corn, coca, cloth, etc. from the Andean valleys and the Pacific coast. These  
exchanges correspond to an ancestral practice of temporary migration either for commercial caravans or  
372 for seasonal work in mines, agriculture, and more or less distant cities. Common land tenure, with  
community use for pastures on the one hand, and family usufruct without private land property for crops  
374 on the other hand (Vassas-Toral, 2016), confers a degree of social equity in access to land. Because of the

376 absence of a land market, this common land tenure system still in force protects communities from the  
risks of excessive land concentration or grabbing by foreigners (Winkel *et al.*, 2016).

378 The global success in commercial quinoa production that began in this region in the early 1970s has  
generated a strong territorial dynamic due to: i) the partial mechanization of quinoa cultivation, which  
380 required converting to crops of a large part of the flatland pastures, the only spaces accessible to tractors,  
ii) the replacement of the distant and prolonged emigration of the inhabitants by various forms of  
382 seasonal mobility to nearby urban centres which, for many quinoa producers, have become their main  
place of residence.

384 In the observation period (2007-2010), the study area was populated by approximately 12,000 quinoa-  
producing families, most of them with a deep Aymara or Quechua cultural identity (Vieira-Pak, 2015;  
Vassas-Toral, 2016). This factor of social cohesion can be seen, among other traits, in the rotating positions  
386 by which each member of the community in turn assumes responsibilities of common interest. For each  
producer, complying with these community obligations and paying the local land taxes guarantees his right  
388 to access the land, even if his residence in the community is intermittent (Vassas-Toral, 2016).

390 In relation to this lively tradition of self-management and participation in collective life, local populations  
have demonstrated their organisational and negotiating capacity by forming, with the incentive of  
European NGOs, powerful associations of thousands of family producers such as CECAOT (*Central de*  
392 *Cooperativas Agropecuarias Operación Tierra*, founded in 1974) or ANAPQUI (*Asociación Nacional de*  
*Productores de Quinoa*, founded in 1983) to promote the production, processing and marketing of quinoa,  
394 including exports to new niche markets with organic certification and fair trade (Laguna, 2011; Tschopp *et*  
*al.*, 2018). This export marketing, initially focused on sales in solidarity channels and fair trade shops in  
396 Europe, North America and Japan, has expanded since the 2000s with large volume sales in the  
supermarkets of multinational chains, in a transition to a broader scale similar to that of other smallholder  
398 products such as coffee (Guerrero-Jiménez & Herrero-Hernández, 2021).

400 As a corollary to their success in commercial quinoa production, local producers have promoted a  
rebalancing of regional territorial development, investing their new income not so much in rural  
communities but rather in nearby cities –Salinas de Garcí Mendoza, Llica, Uyuni, Challapata, Oruro, etc.—  
402 where life is more attractive to their families. In particular, the services of education, health, electricity,  
water, transport, and connection in the urban area allows them to improve their children's training and  
404 professional insertion compared to the rural area (Vassas-Toral, 2016).

406 To limit the socio-economic risks inherent to agricultural production in an extreme environment, local  
populations maintain ancestral life strategies based on agricultural and non-agricultural, local and non-  
local multi-activities. Taking advantage of their dual residence between the countryside and the city, most  
408 families combine two or more activities in agriculture and livestock, crafts, transport, trade, mining, urban  
jobs, tourism, etc. (Vassas-Toral, 2016). Among their agricultural activities, families maintain a self-  
410 consumption production of quinoa and potatoes, while camelid and sheep breeding –less profitable and  
hardly compatible with urban residency– decreases to the benefit of commercial quinoa cultivation. Craft  
412 activities (wool) and tourism (accommodation, driver-guide) remain marginal. The main non-agricultural  
activities take place in the city where families, especially those with children in school, prefer to live. Non-  
414 agricultural income provides a guarantee against the volatility of the price of quinoa, which peaked in  
January 2014 (about 6,000 USD/tonne) and then stabilised at around 1,200-1,600 USD/tonne.

416 While assessing the income of farming families remains hazardous, a survey of 36 households in the study  
418 area in 2007 (when quinoa was paid to the producer at about USD 750/tonne) reveals the large disparity  
420 within the same community, with incomes ranging from USD 200 to USD 18,000 per year (Winkel *et al.*,  
2016). This disparity in household income reflects differences in social status (e.g. single mothers vs.  
422 extended families) and inequalities in economic power, both of which influence access to land since, in the  
region, the inheritance of land use is generally patrilineal and the extent of cultivated land depends on  
each producer's ability to hire manual labour or a tractor driver to till and sew the land.

#### 4.2.2. Equeco: a participative project of action research

424 The Equeco project was launched in 2007, more than three decades after the start of quinoa production  
for export in the Salar de Uyuni region, a process that can be dated back to late 1969, when European  
426 NGOs supported the arrival of the first agricultural tractors (Laguna, 2011). Questioning the sustainability  
of a process that has been underway for more than 30 years, the project researchers examined the social  
428 and environmental history of local quinoa production (for more details, see Winkel *et al.*, 2014, 2016,  
2020). The focus groups were quinoa producers from various rural communities around the Salar de Uyuni  
430 as well as the NGO AVSF ("Agronomists & Veterinarians Without Frontiers"), involved in a regional project  
on sustainable management of local agro-pastoral systems. Based on the social and environmental  
432 assessment of quinoa production in the area, the researchers supported the communities and the NGO in  
a process of consensual redefinition of community standards for access and use of land (AVSF, 2010). This  
434 renewal of collective territorial rules, which existed in the oral tradition but had to be reactivated and  
formalised in writing, was an innovation that was essentially adaptive to the new reality of the commercial  
436 surge in quinoa.

In terms of participation, in addition to a long phase of participant observation in farm and community  
438 activities, the project methodology was based, in particular, on role-playing workshops followed by group  
analysis sessions to discuss with the participating producers what happened during the game and to  
440 analyse the similarity between game and reality (Vieira-Pak, 2015). In terms of action, the researchers  
issued recommendations for local development agents (producers, authorities, NGOs) and accompanied  
442 the process of renegotiation between producer organisations and international certification entities such  
as FairTrade International on new fair trade standards for quinoa (Salliou, 2011).

### 444 **4.3. Case 3: Lipimávida, Chile**

#### 4.3.1. Geographical and social context

446 Lipimávida, a small town on the Pacific coast, belongs to the commune of Vichuquén, in the Maule  
Region, central Chile. In 2010, according to the national policy for isolated localities, Vichuquén was the  
448 most isolated commune in the Maule Region, in critical conditions for access to services, education and  
economic capacity for consumption (Cubillos-Celis *et al.*, 2018). The February 2010 earthquake and  
450 tsunami were devastating in Lipimávida. Subsequently, this exiguous coastal area –inhabited although not  
buildable according to civil security standards— experienced a strong territorial dynamics with the  
452 multiplication of constructions and tourist lodges on previously cultivated coastal land and the building of  
a new district in a upper sector of the town.

454 The coastal sector is a resort that offers long beaches, with a settlement of inhabitants traditionally  
dedicated to family agriculture, along with traditional crafts in ceramics (*gredas*) and looms typical of the  
456 area. The location at the end of the J-60 coastal route gives Lipimávida a certain uniqueness and isolation,  
especially attractive for tourists looking for peaceful seascapes and a pleasant Mediterranean climate.

458 Among the gastronomic attractions of the town is the papaya (*Carica* sp.), whose high stems crowned with  
broad leaves are part of the local landscape in courtyards and orchards. With these fruits, women prepare  
460 preserves, jams and desserts that, together with the country cuisine, characterize the table of Lipimávida.  
The successful experience in the production, transformation, and commercialisation of papaya has proved  
462 very useful when it came to launching a pilot project around the bio-cultural heritage of the town.

Quinoa is another crop that stands out in the memory of the people of Lipimávida. Its annual harvest  
464 ensured food for the winter in the times of their parents who remember the agricultural practices of  
sowing, harvesting and post-harvesting, in particular the desaponification known as "seven waters", a task  
466 in the hands of women (Cubillos-Celis *et al.*, 2018). The time and labour required for this processing are  
the main reasons cited by producers and consumers when asked about the decline in quinoa in their  
468 meals. Therefore, although quinoa has been part of the local diet and history, nowadays few farmers  
produce it and few people consume it. However, with the growing reputation of quinoa as a superfood in  
470 the media, the inhabitants of these rural areas are beginning to recover it as part of their traditions, seeing  
this as an opportunity to improve and diversify their family income.

472 At the regional level, extensive forest monocultures, water scarcity, arable soil pollution, rural and urban  
landscapes degradation, recurrent droughts and wildfires are associated with an economic and social  
474 model that destroys the natural and cultural heritage. However, there is growing awareness of biocultural  
heritage as an economic resource for tourism, which is illustrated by the architectural restoration of the  
476 ancient town of Vichuquén after the 2010 earthquake (Cruz, 2014) or the agreement for the local  
watershed management implemented since 2017 by the Agency for Sustainability and Climate Change.

478 In Lipimávida, despite the individualism that underpins the institutional and political context of elective  
democracy, widespread private property and a neo-liberal economy, the vitality and cultural identity of  
480 local associations generate a high degree of solidarity and social cohesion among their members. Some  
people in Lipimávida also have experiences of international commercial exchange, such as the marketing  
482 of papaya to Belgium (carried out through an alliance with a Fairtrade labelled farmer's company) and the  
promotion and sale of loom crafts in several European countries.

#### 484 4.3.2. Baquiana: a participative project of action research

The setting up of the pilot project has been a process of co-construction between researchers and local  
486 stakeholders. In June 2017, on the basis of a proposal by the research team of Baquiana (from its acronym  
in spanish "Social and ecological bases for the participatory management of quinoa genetic resources in  
488 family farming communities in the Maule region"), a relationship of collaboration and exchange of  
knowledge and experience was established with a group of a dozen local inhabitants, mostly women.  
490 Focusing on quinoa production, the preliminary diagnosis established the heritage character of this  
product in the area and, in addition, its potential for the economic inclusion of peasant families (Cubillos-  
492 Celis *et al.*, 2018).

However, in the course of the participatory consultation, the initial focus on quinoa was redirected and refined towards the valorisation of other food and craft products of local peasant biocultural heritage, namely: papaya, weaves, *greda*, medicinal plants. In addition, local actors expressed that although most of them did not grow quinoa, their problem was not the rescue of this crop, since they could buy quinoa from other communities, particularly from the neighbouring region of O'Higgins (Núñez Carrasco & Bazile, 2009; Lacoste *et al.*, 2017). On the other hand, in their meeting with an expert in quinoa threshing and desaponification invited by the project, they were convinced that cleaning the grain is a complex process and that it was better for them to buy quinoa from other producers. Similarly, after a participatory workshop with a socioeconomist who is an expert in co-designing agricultural development projects, they felt that, for them, the innovation of producing quinoa as a vegetable (Sáez-Tonacca *et al.*, 2018) was still premature and risky. On the contrary, they saw a promising opportunity in the proposal by the same expert to activate their local production and human capacities through short value chain trading.

Thus, analysing their strengths and weaknesses, and based on their previous experience in the production and sale of papaya and handicrafts, the local actors decided at their fourth meeting to value quinoa and other heritage products through a free fair (*feria libre*), taking advantage of the presence of tourists in their resort during the summer season and long weekends. In this way, two of their main objectives were met: to value their resources and local knowledge, and to meet with consumers. This process of social innovation and inclusion took place between June and November 2017, a period in which the researchers convened, listened to, and brought together networks and experts appropriate to the local reality and who were identified in workshop instances. It was clear that there was a latent need in the community to unite individual enterprises, as the leaders of the group, with previous experience in production and sales, had expressed interest in carrying out collective actions and installing their products in the locality.

From the beginning, the researchers prepared the articulation of interests, positions, and wills with regional and local actors of the state and the market. This made it possible to meet the basic conditions for having professionals from the Local Development Programme (PRODESAL), which depends on the National Institute for Agricultural Development (INDAP). This was possible thanks to the support of the authorities of the Commune of Vichuquén. Both the Mayor of Vichuquén and the professionals of PRODESAL showed flexibility to welcome this unexpected citizen and academic initiative, including it in their agenda and supporting it with time dedicated, and socio-technical knowledge.

After opening in January 2018, the Lipimávida Heritage Fair (*Feria Patrimonial de Lipimávida*) has been operating regularly, not only in the summer season, but also at all times when tourists are received. The members of the group are thus fulfilling a commitment that makes sense of their interests and capacities, preparing their handicrafts and harvesting their vegetable gardens, in order to offer fresh and innovative products, as well as affordable to the diverse public that visits them. By combining different products in a unique offer, the heritage character of these local agricultural and craft products has been enhanced, making known the knowledge and know-how of the inhabitants of Lipimávida. The change in the initial objective of the project reflects the caution of local actors in the face of the uncertainties of the local production and market for quinoa as well as a certain pragmatism which induces them to "work with what is there" in order to quickly realise their project. However, caution and pragmatism did not prevent creative innovation with an unprecedented heritage product fair. Giving satisfaction to its protagonists in the economic plan, the fair was also constituted as a meeting place between producers and consumers, between countryside and city. This need for a direct link between producers and consumers is so strong

536 that it was renewed as soon as the containment measures linked to the COVID-19 pandemic were loosened.

538 With the return to democracy in Chile in the 1990s, the state initiated a policy of productive promotion for the peasants, considered a form of inclusive business. However, the commercial subordination of peasants to the value chains of the conventional agro-food industry, which is generally characterized by a high level of concentration, has prevented them from accessing the benefits of economic growth (De Kartzow, 2016).  
540 In this context, the state has deployed policies that promote the insertion of peasants in markets through strategies such as (1) formalization and specialization of farmers as suppliers of raw materials for large agro-industrial corporations, (2) formation of associative farmers' enterprises, focused on exports, and (3)  
542 creation and strengthening of local farmers' markets of a boutique type, linked to local festivals, or in areas of tourist interest.  
544



546 **Table 1. Main descriptors of the three case studies.**

Item	Case 1: Humahuaca	Case 2: Uyuni	Case 3: Lipimávida
Geographic territory	Quebrada de Humahuaca (Jujuy province, NW Argentina), dry Andean valley, world heritage and tourist area	Area surrounding the Salar de Uyuni (Potosi and Oruro departments, SW Bolivia), semiarid region of ancestral commercial production	Locality of Lipimávida (Vichuquén municipality, Maule region, central Chile), coastal dryland of tourist interest
Biocultural heritage	Quinoa and traditional agrosystems	Quinoa Real	Local processed foods, medicinal plants, wool crafts, ceramics...
Organisation name	Grupo Asociativo los Quineros de la Quebrada de Humahuaca	CECAOT, ANAPQUI	Feria Patrimonial de Lipimávida
Producer organisation	Producers association and territorial boards	Regional producers associations and their national federations	Informal group of farmers and artisans
Participant type	Smallholder farmers living in indigenous peasant communities	Producer associations, NGOs, neighbourhood councils, municipalities	Mostly women farmers
Number of participants	40 people in the producers association, 83 in the board of territorial organisations	several thousands	12 people in 2017, 15 in 2022
Type of agriculture and land tenure system	Peasant agriculture with tradition in partial collective land tenure	Peasant agriculture with collective control on land access and use	Peasant agriculture with full private land property
Related institutions	Cluster of local and regional institutions, Ministry of Agriculture (SsAF), University (UBA)	Municipalities, international NGO (AVSF), and foreign research institutes (IRD and Equeco consortium)	Municipality, University (UCM), Ministry de Agriculture (INDAP, PRODESAL) and foreign research institute (IRD)
Markets	Local consumption fairs (seed fairs, peasant fairs, barter fairs)	National and international niche markets of health, gluten-free, organic, fairtrade food	Turistic fairs of local foods and crafts
Labels and certifications	Family Agriculture label in process of being obtained	Organic and/or fairtrade certifications based on international standards	n/a
Public policy	Promotion of national and regional quinoa production and farmer's markets	Promotion of the national quinoa export industry	Promotion of farmer's markets
Main bibliographic sources	(Cladera, 2020, 2022)	(Laguna, 2011; Winkel <i>et al.</i> , 2012, 2016, 2020)	(Winkel <i>et al.</i> , 2020)

## 548 **5. DISCUSSION AND CONCLUSION**

550 The three cases presented here illustrate how the mobilisation of social capital by farmers can  
552 contribute to the inclusive sustainability of their communities, particularly through the  
554 promotion of their common biocultural heritage of food and craft production. The mobilisation of  
556 social capital calls for producers' cooperation and self-organisation, which are also essential to  
558 the process of commoning, and which can lead to more or less formally constituted local groups  
(cases 1 and 3) or to the formation of powerful national associations (case 2). Although social  
capital mobilisation and commoning are essentially local processes, they take place in a wider  
context of public policy –or lack of it... – which we will discuss before examining their local ins  
and outs. From this, we will propose a conceptual framework for a strategy of inclusive  
sustainability for peasant agriculture activating biocultural heritage, social capital, and  
commoning.

### 560 **5.1. Social capital and public policy for empowerment and social inclusion of peasant farmers**

562 Social capital is the asset that enables the collective action of communities (Durstun, 2000) but,  
564 like other types of capital, it is not equally distributed in society. The initial endowment of social  
566 capital is related to cultural environment and history and the creation of cooperatives or  
568 associations may be particularly favored by this factor, since, where associative density is high  
and long standing, individuals will have values and capacities that make them more likely to  
cooperate and participate democratically (Saz-Gil *et al.*, 2021). Was this the case in the three  
communities studied here, and how did it affect their capacity to trigger collective action,  
generate new social capital and leverage external resources for their initiatives?

570 In Uyuni, the communities had a greater initial endowment of social capital based on the vivid  
572 indigenous tradition of collective management of the land and other common resources (Laguna,  
2011; Winkel *et al.*, 2016). In Humahuaca, the quinoa strengthening programme was  
574 implemented with a pre-existing organisation -UPPAJ- which had a social recognition and  
convening capacity in the province. In this territory, the initial social capital endowment of  
today's farmers can also be explained by the persistence of collective and autonomous resource  
576 management systems by their ancestors in colonial times and up to the early 19th century. Later  
on, they incorporated cash crops, but preserved ancestral crops and practices, showing a cultural  
578 continuity with their ancestors (Cladera, 2020, 2022). Compared to Uyuni and Humahuaca,  
Lipimávida may have had a lower initial endowment of social capital as a consequence of the  
580 social system of submission of indigenous populations maintained from the beginning of the  
Republic until the Agrarian Reform of the 1950's-60's (Murray, 2002; Robles-Ortiz, 2009), and still  
582 reinforced by the repression exercised by the Chilean dictatorship on rural organisations in the  
1970s-90s and the subsequent three decades of neoliberalism in democracy (Murray, 2002; Pisani  
584 & Micheletti, 2020).

The state can thus act as a promoter of social capital in development programmes or, on the  
586 opposite, as a nullifier of social capital, by fostering clientelistic relationships or promoting  
588 distrust among people, thereby eroding the constituent elements of social capital (Arriagada,  
2003; Pisani & Micheletti, 2020; Saz-Gil *et al.*, 2021). In this regard, in the case of Uyuni, the  
590 producers' collective action to revalue quinoa was initiated in the 1970s, supported by foreign  
NGOs and later consolidated without significant state assistance. The state only took significant  
592 action in the 2010s, when a strong development dynamic had already been underway for four  
decades, and had to adjust its policy objectives to those of the powerful producer organisations  
(Laguna, 2011; Zandstra, 2015). In this perspective, the Bolivian government, jointly with Peru  
594 and Ecuador, spearheaded the process of declaring 2013 the International Year of the Quinoa at  
the United Nations (United Nations, 2012).

596 In Humahuaca, collective action was triggered by a public-private project. The intervention  
methodology of this project, developed in the light of the Bolivian experience, has been based on  
598 participation and the valuation of local knowledge. In this way, the project was rooted in pre-  
existing local social capital, marginally benefiting from public policy programs launched in the  
600 2010s to support peasant agriculture (Daza *et al.*, 2015; Golsberg, 2021).

In the case of Lipimávida, collective action was triggered by a research-action project financed  
602 with public resources, and co-led by a national private university and a foreign research institute.  
In this case, an intervention methodology of territorial social work with rural communities was  
604 used, whose central axis was the interests of the local community and which promoted  
collaboration between public and private agents in the territory. Once collective action was  
606 triggered, Lipimávida received from his first months some support from the municipal  
government because the project was consistent with public policies in favour of family farming. In  
608 fact, in Chile, municipalities are the preferred level of intervention for public policies to support  
self-consumption or marketing, implemented locally by technical support agencies like PRODESAL  
610 and coordinated at national level by INDAP and a set of other institutions. Yet, these  
interventions are not specifically oriented towards associative or collective projects and, in fact,  
612 support mostly individual producers, addressing technical problems such as product quality,  
sanitary standards or packaging (De Kartzow, 2016). Hence, the objective of peasant farmers  
614 inclusion appears essentially limited to productive and economic issues, making peasant farmers  
mere suppliers of products at the base of the agrifood value chains.

616 In all three cases, therefore, the state has supported pre-existing collective or associative projects  
rooted in social and cultural capitals without causing significant disruption, perhaps mainly  
618 because of the limited ambitions of the public policies in terms of collective action.

## 5.2. Social capital and local actions of commoning for inclusive sustainability

620 The social capital, understood as a collective feature, is created and developed within social networks that  
622 are more or less extensive –from the local to the global level– and more or less tightly knit –from the  
immediate family to the international export chains (McShane *et al.*, 2016). When analysing social  
624 networks, a distinction is usually made between strong ties arising from family, friends and even  
professional relationships, and weak ties corresponding to more casual relationships. Weak ties provide  
626 other information than strong ties –these latter often already known to stakeholders– and thus serve as  
"bridges" to different networks giving access to brand new information and new contacts (Deshpande &  
628 Khanna, 2020). Besides, weak ties allows for a balance of trust and control between the groups forming the  
networks as well as between individuals within the groups themselves.

630 In Uyuni, strong ties between community members is a tradition since, for generations, people have  
exchanged work —a practice called *ayni*— and renegotiated access to common land every year. Yet, these  
632 ties, which go far beyond the cultivation of quinoa, are more easily centred today on family or kin  
members. Furthermore, dissension may have arisen with community members who had migrated out of  
634 their locality of origin for too long and who, nevertheless, claimed land for cultivation when the quinoa  
trade began to flourish. Another source of conflict arose when some community members equipped with  
636 tractors claimed to plough large areas of common pasture and thus acquire the usufruct of it, failing full  
individual land ownership, which does not exist in this area (Walsh-Dilley, 2016). After an initial phase of  
638 *laissez-faire*, local communities regained control over the land by reactivating ancestral community rules  
of access to land subject to the fulfilment of common obligations, and by issuing new consensual norms  
640 taking into account the innovation of mechanisation (Winkel *et al.*, 2016). They did this with the support  
of the regional and national producers organisations as well as external NGOs and certification bodies  
642 (AVSF, 2010). The new, weaker ties with external actors have thus made it possible to locally reactivate  
strong ancestral ties. In fact all these supra-local actors and organisations opened up new spaces for  
644 relations at the regional and national levels, certainly less personalised at first, but which united producers  
in their struggle for recognition as interlocutors with trade negotiators on the one hand and the state on  
646 the other (Zandstra 2015). Trade negotiations, including those for fair trade or organic production  
certifications, are played out at the international level, which is even more remote and impersonal, but is  
648 nonetheless a form of inclusive relationship, contractualised by mutually binding fairtrade agreements  
(Salliou, 2011). As for the quinoa producers who, remaining outside the international export circuit,  
650 dedicate themselves to small-scale local production, an interesting case of social links is constituted by  
their relationship with middlemen, sometimes considered to be profiteers, but whose role in the social  
652 and economic inclusion of the most marginal producers is nonetheless decisive (Ofstehage, 2011).

In Humahuaca and Lipimávida, local producer associations do not have yet ties as the national or  
654 international level. Starting from the ground up, they have created new links based on their common and  
immediate economic interests, with no basis in any active tradition of collective land resource governance.  
656 In both cases, the collective action was first oriented towards opening up commercial opportunities, for  
example by negotiating with local authorities for access to a market place for the producer association,  
658 thus gaining a visibility with customers that each individual producer could not hope for. In Humahuaca,

collective action was also necessary to obtain shared access to essential technical means of production  
660 such as a quinoa seed thresher.

In economic terms, the links between producers and consumers have taken the form of commercial  
662 circuits, either local (in Humahuaca and Lipimávida) or international (in Uyuni) which, in all cases,  
constitute short value chains as they include a reduced number of intermediaries. In addition to  
664 distributing added value more equitably, short value chains support the autonomous organization of  
producers (Macías Vázquez & Alonso González, 2015). Formal certification standards (in Uyuni) or mere  
666 ethical criteria (in Humahuaca, Lipimávida) also promote awareness among producers, decision makers,  
and consumers of the social and environmental challenges of the agroecological transition. For example,  
668 practical training workshops and the provision of crop inputs in Humahuaca, or discussion groups with  
sustainability researchers in Lipimávida, have consolidated the farmers' traditional agroecological systems.  
670 In Uyuni, intense dialogue within each community has raised awareness of the environmental and social  
challenges of expanding quinoa cultivation, leading to the renewal of local standards for the sustainable  
672 use of land resources, thereby building the confidence and commitment of end consumers in importing  
countries. At the community level, these internationally certified standards have validated the ancestral  
674 model of common land ownership as a guarantee of environmental sustainability and social equity, thus  
addressing the ethical concerns shared by producers and consumers.

In all three cases, short circuits have led peasant producers to shift from trade relations with conventional  
676 distributors who focus on sales volume and margins, to direct links with nearby intermediaries and various  
678 end consumers –local urban consumers, foreign eco-responsible consumers, tourists– who are more  
sensitive to the criteria of product quality and authenticity, social justice, or respect for the environment  
680 (Castaldo *et al.*, 2009; Matta, 2019; Discetti, 2020). Such criteria carry obvious ethical values of respect for  
the peasant people, their work, and their products (Davies & Ryals, 2010). However, as well described in  
682 the case of coffee (e.g. McMurtry, 2009; Guerrero-Jiménez & Herrero-Hernández, 2021), the inclusion of  
small producer organisations in the international market carries the risks of making fairtrade more  
684 impersonal for both local producers and end consumers, of losing control of trade negotiations for small  
producers, or of information asymmetries to the benefit of transnational companies that sell both  
686 fairtrade and conventional products.

But interventions from outside the communities are not only synonymous with dependence and loss of  
688 autonomy. They can also be levers for rebalancing the power games within communities. This was the  
case in Uyuni, where new land use standards supported by foreign NGOs curbed the land grabbing  
690 ambitions of some local actors. Tourism, often blamed for introducing serious socio-cultural and economic  
imbalances, can also be a means of risk dispersion, economic redistribution and social justice, and even a  
692 factor of resilience, as illustrated by the case of Lipimávida or by the communities of small-scale producers  
in Peru faced with the health and socio-economic shock of the COVID-19 pandemic (Gascón & Mamani,  
694 2021).

These three cases, different in size and level of formalisation of their producer organisations, illustrate  
696 how the socio-economic inclusion of peasant farming through the valorisation of local biocultural products  
activates links of varying intensity between producers, and with their environment and end consumers.  
698 The intensity of these links remains independent of the level of organisation considered –from local

association to national confederation— and rather reflects the pragmatic arrangements and innovations  
700 necessary for the commoning, protection and valorisation of biocultural resources.

### 702 **5.3. A conceptual frame for an inclusive sustainability strategy in peasant agriculture**

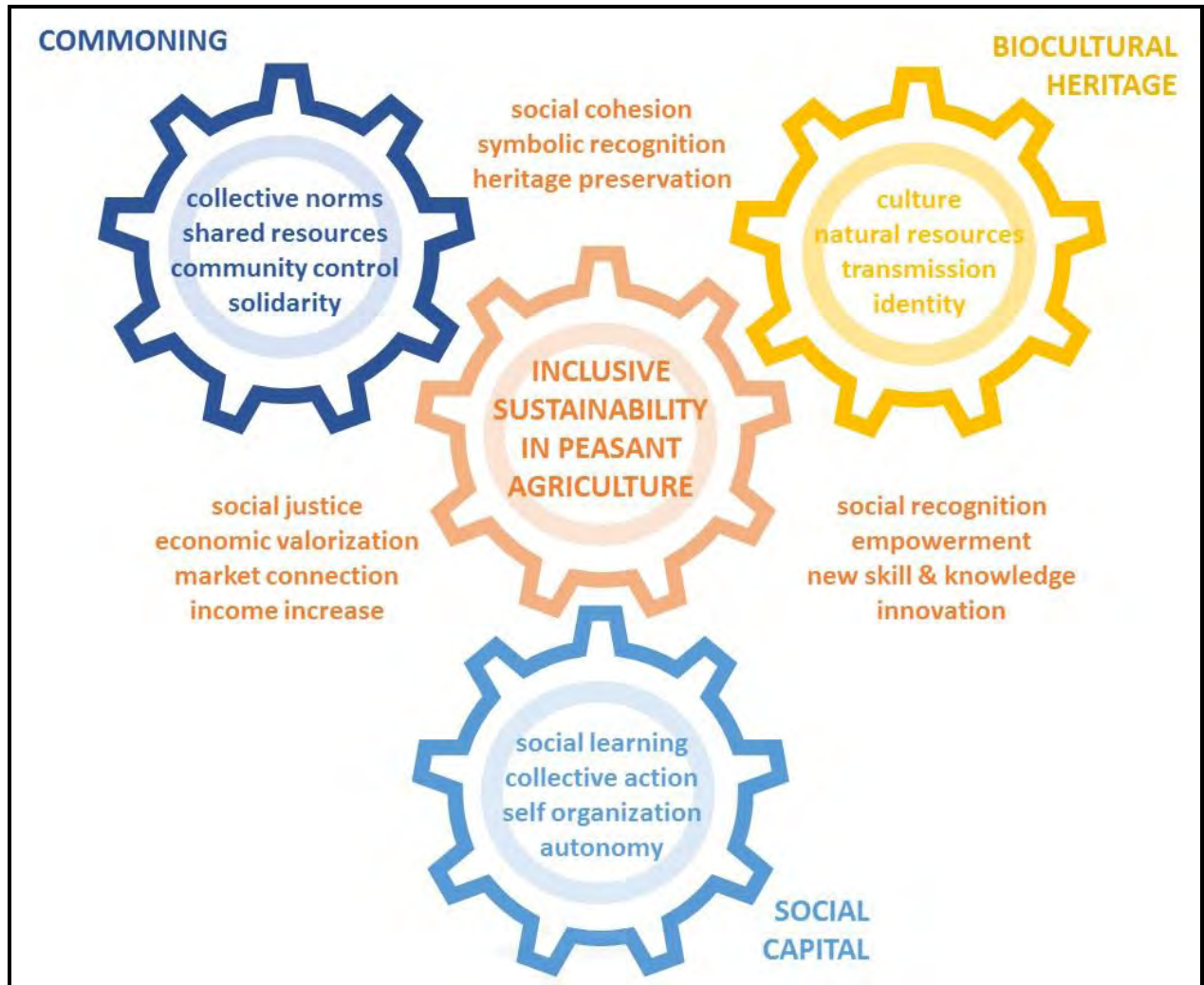
704 The transformative potential of valorising biocultural heritage for the benefit of peasant agriculture has  
been little explored (but see: Hart *et al.*, 2016; Morales, 2020). We contribute to filling this research gap by  
706 examining three transformative entry points. First, biocultural heritage itself as a resource of tangible and  
intangible assets rooted in the local environment and society. Second, social capital as a collective  
708 resource used by a group of people or an organisation to autonomously construct social and economic  
protagonism for the mutual benefit of its members. Thirdly, commoning as the set of collective decisions  
and actions aimed at managing local social and natural resources in a perspective of social justice,  
710 environmental sustainability and economic viability.

712 The case studies presented here allow us to examine the interaction between social capital and  
commoning related to the biocultural heritage of peasant communities, and to identify possible levers of  
transformation to be activated for its valorisation towards a more inclusive and sustainable agriculture.  
714 Since this systemic approach is place- and problem-specific, farmer producers, as well as other  
stakeholders in the desired transformation project, have to identify themselves the components that they  
716 believe should be activated as levers of change, and specify the outcomes they wish to achieve.

718 Figure 1 illustrates how these levers of change relate to each other, as well as some of their potential  
components and outcomes of interest, in line with the objective of collective valorisation of biocultural  
heritage. Some components can be shared between two entry points, such as the "identity" that  
720 characterises any biocultural heritage object rooted in its territory and local society and, at the same time,  
cements the social capital of any community. Moreover, these components activated by the  
722 transformation process often also become one of its results, since their activation reinforces or even  
reactivates them after a time of dormancy. This is how identity or autonomy, for example, are maintained  
724 and developed by the very fact of being activated as levers of change.

726 Similarly, outcomes can be multidimensional, such as social cohesion, which is supposed to be stimulated  
when social capital is mobilised through a process of commoning, but which also results from and  
becomes a component of biocultural heritage. Furthermore, synergistic effects between the outcomes  
728 occur when, for example, the preservation of heritage through socio-environmental standards also leads  
to its recognition through sustainability certificates which, in turn, facilitate access to high-value niche  
730 markets, as observed in the Uyuni case presented here.

732 Future research could focus on outcomes that can be used as indicators of social justice (e.g. social  
cohesion or recognition), environmental sustainability (e.g. heritage preservation) or economic viability  
(e.g. increased income, market connection, socio-economic resilience). Research could also go beyond  
734 components and outcomes, and examine how the transformative strategy illustrated here might fit into  
broader models of sustainability science, such as regenerative agriculture (Gordon *et al.*, 2022) or the  
736 economic approach to socio-environmental boundaries, the so-called "doughnut economics" (Raworth,  
2017).



740 **Fig. 1. Framing diagram for a strategy of inclusive sustainability in peasant agriculture activating**  
 742 **biocultural heritage, social capital, and commoning practices.** Based on our experience with three case  
 744 studies in contrasting agri-food systems, this diagram shows three transformative levers (peripheral gear  
 wheels) with their major components (within wheels), and some potential outcomes (between wheels) to  
 be considered in seeking an inclusive sustainability of peasant agriculture (central gear wheel).

746

## REFERENCES (lista conectada con ZOTERO)

748 *88 references... should be reduced to less than 60!*

**Alliance for Inclusive Business. 2011.** *Inclusive business: creating value in Latin America*. WBCSD/SNV.

750 **Andrade AJ, Babot MP, Bertero HD, Costa-Tártara S, Curti RN, Manifesto MM. 2015.** Argentina. In: Bazile  
D, Bertero D, Nieto C, eds. State of the art report on quinoa around the world in 2013. Santiago, Chile:  
752 FAO/Cirad, 422-433. URL: <http://www.fao.org/3/a-i4042e.pdf>.

**Arriagada I. 2003.** Capital social: potencialidades y limitaciones analíticas de un concepto. *Estudios  
754 Sociológicos (México)* **21**: 553-584. URL: <http://www.jstor.org/stable/40420794>.

**Autio M, Collins R, Wahlen S, Anttila M. 2013.** Consuming nostalgia? The appreciation of authenticity in  
756 local food production. *International Journal of Consumer Studies* **37**: 564-568. URL:  
<https://doi.org/10.1111/ijcs.12029>.

758 **AVSF. 2010.** *Pauta metodológica para la elaboración de las normas comunales y sus planes de  
cumplimiento*. La Paz, Bolivia: Agronomes & Vétérinaires sans Frontières.

760 **Barrientos E, Carevic F, Delatorre J. 2017.** La sustentabilidad del altiplano sur de Bolivia y su relación con  
la ampliación de superficies de cultivo de quinua. *Idesia (Chile)* **35**: 7-15. URL:  
762 <https://doi.org/10.4067/S0718-34292017005000024>.

**Bazile D, Martínez E, Fuentes FF, Chia E, Namdar-Irani M, Olguín P, Saa C, Thomet M, Vidal A. 2015.**  
764 Quinoa in Chile. In: Bazile D, Bertero D, Nieto C, eds. State of the art report on quinoa around the world in  
2013. Rome, Italy: FAO, 401-421. URL: <http://www.fao.org/3/a-i4042e.pdf>.

766 **Bedoya-Perales N, Pumi G, Mujica A, Talamini E, Domingos Padula A. 2018.** Quinoa expansion in Peru  
and its implications for land use management. *Sustainability* **10**: 532. URL:  
768 <https://doi.org/10.3390/su10020532>.

**Biggs R, De Vos A, Preiser R, Clements H, Maciejewski K, Schlüter M. 2021.** *The Routledge handbook of  
770 research methods for social-ecological systems*. London, UK: Routledge.

**Böhm F. 2016.** The grain of the gods against poverty: approaching the quinoa value chain in Bolivia and  
772 Peru with inclusive business models.

**Bollier D. 2021.** Commoning as a transformative social paradigm. In: Speth JG, Courrier K, eds. *The New  
774 Systems Reader: Alternatives to a Failed Economy*. New York, USA: Routledge, 348–361.

**Bourdieu P. 1980.** Le capital social. Notes provisoires. *Actes de la Recherche en Sciences Sociales* **31**: 2-3.  
776 URL: [https://www.persee.fr/doc/arss\\_0335-5322\\_1980\\_num\\_31\\_1\\_2069](https://www.persee.fr/doc/arss_0335-5322_1980_num_31_1_2069).

**Castaldo S, Perrini F, Misani N, Tencati A. 2009.** The missing link between corporate social responsibility  
778 and consumer trust: the case of fair trade products. *Journal of Business Ethics* **84**: 1-15. URL:  
<https://doi.org/10.1007/s10551-008-9669-4>.



- 780 **Cladera JL. 2020.** Rural development projects, schooling and territorial transformations: a case study in  
indigenous communities of Andean Argentina. *Journal of Cultural Analysis and Social Change* **5**: art.5. URL:  
782 <https://doi.org/10.20897/jcasc/8297>.
- Cladera JL. 2022.** Guardar la quipa para semilla. Las prácticas y sentidos de la agricultura familiar en la  
784 Quebrada de Humahuaca durante el Programa de Fortalecimiento de la Quinoa.
- Cox M. 2016.** The pathology of command and control: a formal synthesis. *Ecology and Society* **21**: 33. URL:  
786 <https://doi.org/10.5751/ES-08698-210333>.
- Cruz E. 2014.** *Vichuquén, Terremoto y Reconstrucción*. Santiago, Chile: Corporación del Patrimonio Cultural  
788 de Chile.
- Cruz P, Winkel T, Ledru MP, Bernard C, Egan N, Swingedouw D, Joffre R. 2017.** Rain-fed agriculture thrived  
790 despite climate degradation in the pre-Hispanic arid Andes. *Science Advances* **3**: e1701740. URL:  
<https://doi.org/10.1126/sciadv.1701740>.
- 792 **Cubillos-Celis PE, Poblete-Olivera CJ, Zavalla-Nanco NO. 2018.** Contribución de la agricultura familiar  
campesina a la preservación y salvaguardia del patrimonio cultural y natural de la quinoa en Lipimávida.
- 794 **Davies IA, Ryals LJ. 2010.** The role of social capital in the success of fair trade. *Journal of Business Ethics*  
**96**: 317-338. URL: <https://doi.org/10.1007/s10551-010-0468-3>.
- 796 **Daza R, Pereyra E, Burin D, Heras AI. 2015.** *Quinoa regalo ancestral: historia, contexto, tecnología,*  
*políticas*. Palpalá, Argentina: Ediciones Nueva Gestión.
- 798 **De Kartzow RG. 2016.** *Situación de la institucionalidad de apoyo a la innovación comercial de la*  
*agricultura familiar y de los procesos de gestión comercial de la agricultura familiar en Chile*. Buenos Aires,  
800 Argentina: IICA (Instituto Interamericano de Cooperación para la Agricultura).
- Deshpande A, Khanna S. 2020.** *Can weak ties create social capital? Evidence from self-help groups in rural*  
802 *India*. India: Ashoka University.
- Discetti R. 2020.** Campaigning for sustainable food: sustainably certified consumer communities. *British*  
804 *Food Journal* **123**: 958-973. URL: <https://doi.org/10.1108/BFJ-06-2020-0457>.
- Durston J. 2000.** *¿Qué es el capital social comunitario?* Santiago, Chile: CEPAL (Economic Commission for  
806 Latin America and the Caribbean).
- Essex J, Read R. 2016.** To be truly inclusive, we must stop prioritising 'growth': a critique of the RSA's  
808 'Inclusive Growth Commission'. : URL: <https://www.greenhousethinktank.org/a-critique-of-the-rsas-inclusive-growth-commission/>.
- 810 **FAO (Food and Agriculture Organization). 2021.** *Indigenous peoples' food systems: insights on*  
*sustainability and resilience from the front line of climate change*. Rome, Italy: FAO, Food and Agriculture  
812 Organization of the United Nations.
- Gascón J, Mamani KS. 2021.** Community-based tourism, peasant agriculture and resilience in the face of  
814 COVID-19 in Peru. *Journal of Agrarian Change*: joac.12447. URL: <https://doi.org/10.1111/joac.12447>.

- 816 **Gavin MC, McCarter J, Mead A, Berkes F, Stepp JR, Peterson D, Tang R. 2015.** Defining biocultural approaches to conservation. *Trends in Ecology & Evolution* **30**: 140-145. URL: <http://dx.doi.org/10.1016/j.tree.2014.12.005>.
- 818 **Gibson-Graham JK, Cameron J, Healy S. 2013.** *Take back the economy: an ethical guide for transforming our communities*. St Paul, USA: University of Minnesota Press.
- 820 **Golsberg C. 2021.** Emergencia de un paradigma alternativo de desarrollo tecnológico para la Agricultura Familiar : maquinaria de poscosecha de quinua como bien común (Argentina).
- 822 **Gordon E, Davila F, Riedy C. 2022.** Transforming landscapes and mindscapes through regenerative agriculture. *Agriculture and Human Values* **39**: 809-826. URL: <https://doi.org/10.1007/s10460-021-10276-0>.
- 824 0.
- 826 **Gosnell H, Grimm K, Goldstein BE. 2020.** A half century of Holistic Management: what does the evidence reveal? *Agriculture and Human Values* **37**: 849-867. URL: <https://doi.org/10.1007/s10460-020-10016-w>.
- 828 **Grivins M, Tisenkopfs T. 2018.** Benefitting from the global, protecting the local: The nested markets of wild product trade. *Journal of Rural Studies* **61**: 335-342. URL: <https://doi.org/10.1016/j.jrurstud.2018.01.005>.
- 830 **Guerrero-Jiménez TC, Herrero-Hernández OB. 2021.** The niche-regime transition in fair trade, contributions from Mexico. *Organizações Rurais & Agroindustriais (Lavras, Brazil)* **22**: e1610. URL: <https://doi.org/10.48142/2220201610>.
- 832 <https://doi.org/10.48142/2220201610>.
- 834 **Hahn R. 2012.** Inclusive business, human rights and the dignity of the poor: a glance beyond economic impacts of adapted business models. *Business Ethics: A European Review* **21**: 47-63. URL: <https://doi.org/10.1111/j.1467-8608.2011.01640.x>.
- 836 **Hanspach J, Jamila Haider L, Oteros-Rozas E, Stahl Olafsson A, Gulsrud NM, Raymond CM, Torralba M, Martín-López B, Bieling C, García-Martín M, et al. 2020.** Biocultural approaches to sustainability: A systematic review of the scientific literature. *People and Nature* **2**: 643-659. URL: <https://doi.org/10.1002/pan3.10120>.
- 838 <https://doi.org/10.1002/pan3.10120>.
- 840 **Hardin G. 1968.** The tragedy of the commons. *Science* **162**: 1243-1248. URL: <https://doi.org/10.1126/science.162.3859.1243>.
- 842 **Hart AK, McMichael P, Milder JC, Scherr SJ. 2016.** Multi-functional landscapes from the grassroots ? The role of rural producer movements. *Agriculture and Human Values* **33**: 305-322. URL: <https://doi.org/10.1007/s10460-015-9611-1>.
- 844 <https://doi.org/10.1007/s10460-015-9611-1>.
- 846 **Hawkins H-J, Venter Z-S, Cramer MD. 2022.** A holistic view of Holistic Management: What do farm-scale, carbon, and social studies tell us? *Agriculture, Ecosystems & Environment* **323**: 107702. URL: <https://doi.org/10.1016/j.agee.2021.107702>.
- 848 **Ioris AAR. 2016.** Introduction: underscoring agribusiness failures, environmental controversies, and growing food uncertainties. In: Ioris AAR, ed. *Agriculture, Environment and Development*. Switzerland: Springer Nature, 1-31. URL: <https://doi.org/10.1007/978-3-319-32255-1>.
- 850 <https://doi.org/10.1007/978-3-319-32255-1>.

- 852 **Kelly S, Vergara N, Bammann H. 2015.** *Inclusive business models—Guidelines for improving linkages between producer groups and buyers of agricultural produce.* Rome, Italy: FAO, Food and Agriculture Organization of the United Nations.
- 854 **Lacoste P, Castro A, Mujica F, Lacoste Adunka M. 2017.** *Patrimonio y desarrollo territorial. Productos típicos alimentarios y artesanales de la Región de O'Higgins. Identidad, historia y potencial de desarrollo.*
- 856 Santiago, Chile: Instituto de Estudios Avanzados, Universidad de Santiago de Chile (USACH).
- Laguna P. 2011.** Mallas y flujos: acción colectiva, cambio social, quinua y desarrollo regional indígena en los Andes Bolivianos.
- 858
- Likoko E, Kini J. 2017.** Inclusive business—a business approach to development. *Current Opinion in Environmental Sustainability* **24**: 84-88. URL: <https://doi.org/10.1016/j.cosust.2017.03.001>.
- 860
- Macías Vázquez A, Alonso González P. 2015.** Managing collective symbolic capital through agro-food labelling: Strategies of local communities facing neoliberalism in Spain. *Journal of Rural Studies* **41**: 142-152. URL: <http://dx.doi.org/10.1016/j.jrurstud.2015.08.003>.
- 862
- Matta R. 2019.** Heritage foodways as matrix for cultural resurgence: evidence from rural Peru. *International Journal of Cultural Property* **26**: 49-74. URL: <https://doi.org/10.1017/S094073911900002X>.
- 864
- McMurtry J. 2009.** Ethical value-added: fair trade and the case of Café Femenino. *Journal of Business Ethics* **86**: 27-49.
- 866
- McShane CJ, Turnour J, Thompson M, Dale A, Prideaux B, Atkinson M. 2016.** Connections: the contribution of social capital to regional development. *Rural Society* **25**: 154-169. URL: <https://doi.org/10.1080/10371656.2016.1194326>.
- 868
- Milbank C, Burlingame B, Hunter D, Brunel A, de Larrinoa YF, Eulalia Martinez-Cruz T, Katic P, Aboubakrine MW, Roy P, Rosado-May FJ, et al. 2021.** Rethinking hierarchies of evidence for sustainable food systems. *Nature Food* **2**: 843-845. URL: <https://doi.org/10.1038/s43016-021-00388-5>.
- 872
- Morales A. 2020.** Differentiate or die: reconstructing market(place) economies. *Agriculture and Human Values* **37**: 545-546. URL: <https://doi.org/10.1007/s10460-020-10060-6>.
- 874
- Murra JV. 1985.** The limits and limitations of the 'vertical archipelago' in the Andes. In: Masuda S, et al., eds. *Andean ecology and civilization.* Tokyo, Japan: University of Tokyo Press, 15-20.
- 876
- Murray W. 2002.** From dependency to reform and back again: the Chilean peasantry during the twentieth century. *The Journal of Peasant Studies* **29**: 190-227. URL: <https://doi.org/10.1080/03066150412331311069>.
- 878
- Newton P, Civita N, Frankel-Goldwater L, Bartel K, Johns C. 2020.** What is regenerative agriculture? A review of scholar and practitioner definitions based on processes and outcomes. *Frontiers in Sustainable Food Systems* **4**: URL: <https://doi.org/10.3389/fsufs.2020.577723>.
- 882
- Núñez Carrasco L, Bazile D. 2009.** Cultura campesina en Chile central sobre la producción y consumo de *Chenopodium quinoa* Willd.: el caso de la comuna de Paredones provincia Cardenal Caro, región de O'Higgins. *Revista de Geografía de Valparaíso* **42**: 87-94. URL: <http://www.rgv.ucv.cl/articulos/Articulo42-8.pdf>.
- 884
- 886

- 888 **Núñez-Carrasco L, Quiñones-Díaz XE, Sepúlveda-Olave MC, Torres-Sepúlveda P, Valencia-Salas JM (Eds.).**  
2021. *Culturas ciudadanas, territorio y desarrollo sostenible. Aprendizajes y desafíos desde el Maule*. Talca,  
890 Chile: Universidad Católica del Maule.
- Ofstehage A. 2011.** Nusta Juirá's gift of quinoa: peasants, trademarks, and intermediaries in the  
892 transformation of a Bolivian commodity economy. *Anthropology of Work Review* **32**: 103-114. URL:  
<https://doi.org/10.1111/j.1548-1417.2011.01062.x>.
- 894 **Ostrom E. 1990.** *Governing the commons: the evolution of institutions for collective action*. New York, USA:  
Cambridge University Press.
- 896 **Ostrom E. 1998.** A behavioral approach to the rational choice theory of collective action. *American*  
*Political Science Review* **92**: 1-22. URL: <https://www.jstor.org/stable/2585925>.
- 898 **Padulosi S, Amaya K, Jäger M, Gotor E, Rojas W, Valdivia R. 2014.** A holistic approach to enhance the use  
of neglected and underutilized species: the case of andean grains in Bolivia and Peru. *Sustainability* **6**:  
900 1283-1312. URL: <https://doi.org/10.3390/su6031283>.
- Piketty T. 2014.** *Capital in the Twenty-First Century* (A Goldhammer, Tran.). Cambridge, Massachusetts:  
902 Belknap Press of Harvard University Press.
- Pisani E, Micheletti S. 2020.** Social capital and rural development research in Chile. A qualitative review  
904 and quantitative analysis based on academic articles. *Journal of Rural Studies* **80**: 101-122. URL:  
<https://doi.org/10.1016/j.jrurstud.2020.08.002>.
- 906 **Pouteau R, Rambal S, Ratte JP, Gogé F, Joffre R, Winkel T. 2011.** Downscaling MODIS-derived maps using  
GIS and boosted regression trees: the case of frost occurrence over the arid Andean highlands of Bolivia.  
908 *Remote Sensing of Environment* **115**: 117-129. URL: <https://doi.org/10.1016/j.rse.2010.08.011>.
- PUC (Pontificia Universidad Católica de Chile). 2017.** *Potencial competitivo de la quinua chilena*. Santiago,  
910 Chile: Fundación para la Innovación Agraria (FIA).
- Raworth K. 2017.** A Doughnut for the Anthropocene: humanity's compass in the 21st century. *The Lancet*  
912 *Planetary Health* **1**: e48-e49. URL: [https://doi.org/10.1016/S2542-5196\(17\)30028-1](https://doi.org/10.1016/S2542-5196(17)30028-1).
- Rivera M, Knickel K, Maria Diaz-Puente J, Afonso A. 2019.** The role of social capital in agricultural and  
914 rural development: lessons learnt from case studies in seven countries. *Sociologia Ruralis* **59**: 66-91. URL:  
<https://doi.org/10.1111/soru.12218>.
- 916 **Robles-Ortiz C. 2009.** Agrarian capitalism and rural labour: the hacienda system in Central Chile, 1870–  
1920. *Journal of Latin American Studies* **41**: 493-526. URL: <https://doi.org/10.1017/S0022216X09990162>.
- 918 **Sáez-Tonacca L, Aravena-Narbona A, Díaz Ramírez C. 2018.** Uso de harina de hojas de quínoa  
(*Chenopodium quinoa*) como ingrediente innovador, para la elaboración de alimentos de uso humano.  
920 *Idesia (Chile)* **36**: 233-242. URL: <https://doi.org/10.4067/S0718-34292018005000600>.
- Salcedo S, Guzmán L. 2014.** *Agricultura familiar en América Latina y el Caribe: recomendaciones de*  
922 *políticas*. Santiago, Chile: FAO.
- Salliou N. 2011.** *Rapport final pour la révision des montants de prix minimum et de prime pour le quinoa*  
924 *labélisé Fairtrade Max Havelaar*. Max Havelaar France.

- 926 **Saz-Gil I, Bretos I, Díaz-Foncea M. 2021.** Cooperatives and social capital: a narrative literature review and directions for future research. *Sustainability* **13**: 534. URL: <https://doi.org/10.3390/su13020534>.
- Sen AK. 2000.** *Development as freedom*. New York, USA: Knopf Publ.
- 928 **Siisiäinen M. 2003.** One concept, two approaches: Bourdieu and Putnam on social capital. *International Journal of Contemporary Sociology* **40**: 183–203.
- 930 **Sumberg J. 2022.** Future agricultures: The promise and pitfalls of a (re)turn to nature. *Outlook on Agriculture* **51**: 3-10. URL: <https://doi.org/10.1177/00307270221078027>.
- 932 **Tschopp M, Bieri S, Rist S. 2018.** Quinoa and production rules: How are cooperatives contributing to governance of natural resources? *International Journal of the Commons* **12**: 402-427. URL: <http://doi.org/10.18352/ijc.826>.
- 934 **UNESCO. 2003.** Quebrada de Humahuaca. *World Heritage List*.
- 936 **United Nations. 2012.** *International Year of Quinoa, 2013. Resolution A/RES/66/221 adopted by the General Assembly on 22 December 2011*. New York, USA: United Nations General Assembly.
- 938 **Vanhulst J. 2015.** El laberinto de los discursos del Buen vivir: entre Sumak Kawsay y Socialismo del siglo XXI. *Polis* **14**: 233-261. URL: <https://doi.org/10.4067/S0718-65682015000100020>.
- 940 **Vassas-Toral A. 2016.** *Partir y cultivar: auge de la quinua, movilidad y recomposiciones rurales en Bolivia*. Marseille, France: IRD Éditions / CIDES-UMSA / Plural Editores.
- 942 **Vidueiros SM, Curti RN, Dyner LM, Binaghi MJ, Peterson G, Bertero HD, Pallaro AN. 2015.** Diversity and interrelationships in nutritional traits in cultivated quinoa (*Chenopodium quinoa* Willd.) from Northwest Argentina. *Journal of Cereal Science* **62**: 87-93. URL: <https://doi.org/10.1016/j.jcs.2015.01.001>.
- 946 **Vieira-Pak M. 2015.** El auge de la quinua: visiones de futuro en el Altiplano Sur de Bolivia. In: Cruz P, Joffre R, Winkel T, eds. *Racionalidades campesinas en los Andes del Sur: reflexiones en torno al cultivo de la quinua y otros vegetales andinos*. Jujuy, Argentina: EdiUNJU, Universidad Nacional de Jujuy, 323–353.
- 948 **Walsh-Dilley M. 2016.** Tensions of resilience: collective property, individual gain and the emergent conflicts of the quinoa boom. *Resilience* **4**: 30-43. URL: <https://doi.org/10.1080/21693293.2015.1094168>.
- 950 **Winkel T, Alvarez-Flores R, Bertero D, Cruz P, Del Castillo C, Joffre R, Peredo Parada S, Sáez Tonacca L. 2014.** Calling for a reappraisal of the impact of the quinoa expansion on agricultural sustainability in the Andean highlands. *Idesia (Chile)* **32**: 95-100. URL: <http://dx.doi.org/10.4067/S0718-34292014000400012>.
- 954 **Winkel T, Bertero HD, Bommel P, Chevarría Lazo M, Cortes G, Gasselin P, Geerts S, Joffre R, Léger F, Martínez Avisa B, et al. 2012.** The sustainability of quinoa production in southern Bolivia: from misrepresentations to questionable solutions. Comments on Jacobsen (2011, *J. Agron. Crop Sci.* 197: 390–399). *Journal of Agronomy and Crop Science* **198**: 314-319. URL: <https://doi.org/10.1111/j.1439-037X.2012.00506.x>.
- 958 **Winkel T, Bommel P, Chevarría-Lazo M, Cortes G, Del Castillo C, Gasselin P, Léger F, Nina-Laura JP, Rambal S, Tichit M, et al. 2016.** Panarchy of an indigenous agroecosystem in the globalized market: the quinoa production in the Bolivian Altiplano. *Global Environmental Change* **39**: 195-204. URL: <https://doi.org/10.1016/j.gloenvcha.2016.05.007>.

- 962 **Winkel T, Núñez-Carrasco L, Cruz PJ, Egan N, Sáez-Tonacca L, Cubillos-Celis PE, Poblete-Olivera CJ,**  
964 **Zavalla-Nanco NO, Miño-Baes B, Viedma-Araya MP. 2020.** Mobilising common biocultural heritage for  
the socioeconomic inclusion of small farmers: panarchy of two case studies on quinoa in Chile and Bolivia.  
*Agriculture and Human Values* **37**: 433-447. URL: <https://doi.org/10.1007/s10460-019-09996-1>.
- 966 **Wittmayer JM, Schöpke N. 2014.** Action, research and participation: roles of researchers in sustainability  
transitions. *Sustainability Science* **9**: 483-496. URL: <https://doi.org/10.1007/s11625-014-0258-4>.
- 968 **Zandstra M. 2015.** Powerfood : an analysis of relations between the state, local authorities and  
transnational networks in the production and sales of Quinoa in Bolivia.