



## OPEN ACCESS

## EDITED BY

Rakesh Bhardwaj,  
National Bureau of Plant Genetic  
Resources (ICAR), India

## REVIEWED BY

Solange Parra-Soto,  
University of Glasgow, United Kingdom  
Amritbir Riar,  
Research Institute of Organic  
Agriculture (FiBL), Switzerland

## \*CORRESPONDENCE

Mayari Castillo  
mayari.castillo@umayor.cl

## SPECIALTY SECTION

This article was submitted to  
Nutrition and Sustainable Diets,  
a section of the journal  
Frontiers in Sustainable Food Systems

RECEIVED 15 August 2022

ACCEPTED 22 September 2022

PUBLISHED 12 October 2022

## CITATION

Castillo M, Pérez-Silva R, Chamorro C  
and Sepúlveda M (2022) Public  
policies, sustainability, and smallholder  
producers' access to the market. The  
Productive Alliance Programme in  
Chile: A case study.  
*Front. Sustain. Food Syst.* 6:1020049.  
doi: 10.3389/fsufs.2022.1020049

## COPYRIGHT

© 2022 Castillo, Pérez-Silva,  
Chamorro and Sepúlveda. This is an  
open-access article distributed under  
the terms of the [Creative Commons  
Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use,  
distribution or reproduction in other  
forums is permitted, provided the  
original author(s) and the copyright  
owner(s) are credited and that the  
original publication in this journal is  
cited, in accordance with accepted  
academic practice. No use, distribution  
or reproduction is permitted which  
does not comply with these terms.

# Public policies, sustainability, and smallholder producers' access to the market. The Productive Alliance Programme in Chile: A case study

Mayari Castillo<sup>1,2\*</sup>, Rodrigo Pérez-Silva<sup>1</sup>, Catalina Chamorro<sup>3</sup>  
and Macarena Sepúlveda<sup>4</sup>

<sup>1</sup>Center for Economics and Social Policy, Universidad Mayor, Santiago, Chile, <sup>2</sup>Interdisciplinary Center for Intercultural and Indigenous Studies, Faculty of Social Sciences, Pontifical Catholic University of Chile, Santiago, Chile, <sup>3</sup>School of Psychology, Faculty of Social Sciences, Academy of Christian Humanism University, Santiago, Chile, <sup>4</sup>School of Anthropology, Geography and History, Faculty of Social Sciences, Academy of Christian Humanism University, Santiago, Chile

This study analyses the role of Chile's Productive Alliance Programme (PAP) in increasing welfare and improving access to the market for smallholder producers, by developing a sustainable agriculture in both social and environmental terms. This programme started in 2007 under the Ministry of Agriculture and now serves 3,600 smallholders in Chile. It seeks to create commercial partnerships between these smallholders and large companies, providing subsidies to establish conditions that allow the farmers to build new capabilities and skills. This case study used qualitative methodology and carried out 36 semi-structured interviews over July and August 2020. Interviewees included companies and smallholder producers within different productive chains, as well as public officials. The purpose of this analysis is to discuss the opportunities family farmers have to become a fundamental link in the supply chain of competitive companies at the national and international level. By providing targeted training on market requirements, agricultural management, risk management and sustainable use of resources, the programme enables smallholder producers to establish stable commercial alliances, improving their productive and management capacity. Although the programme's main outcome is not related to a significant increase in smallholders' income, participants perceive more stable earnings, reduced uncertainty, and improve their productive skills, mainly in terms of management and sustainable farming practices.

## KEYWORDS

Chile, sustainability, public policies, qualitative research, small farmers

## Introduction

Sustainable agricultural production and food security are two of the most pressing challenges in the face of the various crises unleashed by global environmental change. With a growing population and increased demand for agricultural goods to produce food, fuel and fibers, these concerns call for investment in agriculture, rural infrastructure, natural resource management and resilience to climate change.

Within this context, constructing public policies for food security has been primarily based on promoting the development of an intensive and territorially extensive agro-industrial sector. This has led to a series of environmental and social impacts that have been widely documented in the literature. The environmental impact of this type of agriculture include the use of agrochemicals, configuration of agro-export enclaves and an intensive use of water, among others. Regarding the social effects, although there has been a sustained increase in income for rural workers, this has tended to be accompanied by labor precariousness and a large-scale urbanization process. In this regard, the question of how to convert family and sustainable agriculture into a scalable food production model that represents an economic and environmental alternative for the territories is of great relevance, particularly in the case of Latin America, a region with a high percentage of rural population and poverty.

This article analyses the effects of the Productive Alliances Programme (PAP), a government training and support program designed to increase human capital and improve the productivity of smallholders in Chile. Using a model of agricultural human capital investment, this programme creates a commercial alliance between purchasing (typically large) companies and smallholder producers that the government mediates through Chile's National Agricultural Development Institute (INDAP in its Spanish acronym). This alliance is strengthened, first, by technical monitoring provided by the purchasing companies and, second, by the government's support to companies and producers to develop skills and capabilities.

## Chile's economy and agricultural support

Chile is one of the fastest-growing economies in Latin America and has reduced poverty significantly over the last three decades (Agostini et al., 2008; Abner Campos and Foster, 2013; Cazzuffi et al., 2017). Between 2006 and 2017, monetary poverty decreased by more than 20 percentage points while extreme poverty fell by ten. However, rural monetary poverty remains high and above the national average at 16.5%. Even though progress has been made in reducing poverty, Chile still has one of the most unequal economies of the Organization for Economic Co-operation and Development (OECD). Despite the still high poverty rate, in recent decades, rural areas have

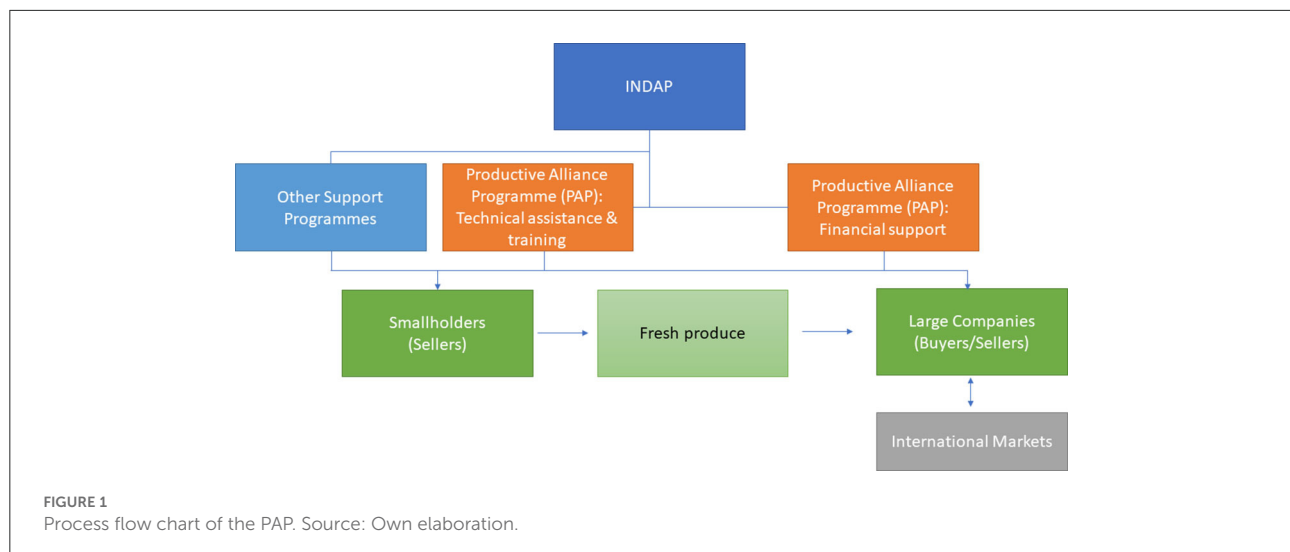
also experienced significant economic growth, a major increase in exports and a marked reduction in poverty (López and Anríquez, 2004; Foster et al., 2016). Overall, rural workers have increased their income around 1.64% between 1990 and 2006 (Valdés et al., 2008) and an average of 2.3% between 1998 and 2017 (Pérez et al., 2020).

The Chilean government's support for agriculture is weak and one of the lowest among OECD countries (Ortega and Valdés, 2019). Spending on agriculture represents 5% of total government spending, and a mere 0.5% of agricultural GDP is allocated to research and development in this sector. Finally, the country does not have a national agricultural investment policy, but several sectoral investment programmes assigned to different government agencies, such as the one implemented by the National Agricultural Development Institute (INDAP) that we analyse here.

## The Productive Alliance Program: Smallholder producers for sustainable development

The National Agricultural Development Institute (INDAP) forms part of the Ministry of Agriculture. It was created in 1962 to promote the economic, social and technological development of smallholder producers. In addition, it works to improve their administrative, organizational and commercial capabilities by promoting their participation in rural development and improving their efficiency in the use of productive resources (INDAP, 2020). INDAP started the Productive Alliances Programme (PAP) in 2007 with the objective of "Creating conditions for smallholders<sup>1</sup> and agricultural producers who are members of INDAP to access better commercial alternatives and new markets in order to contribute to the improvement of sustainable and transparent commercial relations with purchasing groups" (INDAP, 2020). This programme seeks to eliminate informal intermediaries between smallholders and purchasing companies, establishing a direct commercial link between the two. It also aims to strengthen the capacity of smallholders as permanent suppliers to purchasing companies, developing their skills to meet high production and safety standards in accordance with market requirements. A basic depiction of the alliance's structure can be found in Figure 1: smallholders sell fresh produce to larger companies, who in turn provide technical assistance and training to smallholders, for them to maintain their production in both quantity and quality to

1 INDAP defines smallholders are those who work an area of up to 12 hectares with basic irrigation infrastructure and assets with a total value of less than 100 million Chilean pesos (about US\$150,000). Their primary income is from agriculture, and they are directly involved in agricultural production regardless of land ownership (INDAP, 2020).



meet international standards to access international markets. The alliance is created and, to some extent maintained by the government through INDAP, where smallholders participate in PAP and other programmes oriented to the support of small-scale agriculture.

PAP began with a pilot project focussing on technical assistance for two products in three regions: sheep farming in the O'Higgins and Maule regions and berry production in the O'Higgins and Biobío regions. The programme was formally established in 2009 when it began operating with its own regulations and procedures. It expanded in 2010 to cover 10 of the country's 16 administrative regions, from Coquimbo to Los Lagos. Most PAP's users are located in the Maule region, south of the Metropolitan region, where Santiago, the capital, is located (Table 1). In 2018, the programme's regulations changed to increase its size and scope. As a result, the programme has more resources and an investment fund that complements the initial technical assistance and involves value chains outside the food sector, such as rural tourism and handcrafts. The investment fund has a lump sum that PAP users can apply for to help finance investment projects (e.g., irrigation or storage infrastructure) that will enable them to comply better with buyers' requirements. The new regulations also allow PAP users to participate in other INDAP programmes. Thus, in 2019, 43% of PAP users received complementary support from technical assistance programmes such as SAT (Technical Advisory Service), PRODESAL (Local Development Programme), PDTI (Indigenous Territorial Development Programme), PRODEMU (Foundation for the Promotion and Development of Women) and PADIS (Agricultural Programme for the Integral Development of Smallholders). In the same year, about 40% of PAP users also received small-scale loans from INDAP, and 5% obtained funding for irrigation programs (INDAP, 2020). In addition to the programmes, other INDAP

**TABLE 1** PAP users by region, 2019.

Region	Companies <sup>a</sup>	Contracts	Users
Coquimbo	2	2	170
Valparaíso	1	1	48
Metropolitan Region	1	2	66
O'Higgins	1	2	77
Maule	23	42	1,464
Ñuble	11	11	526
Biobío	5	6	242
Araucanía	7	7	336
Los Ríos	10	12	483
Los Lagos	5	5	184
Total	66	90	3,596

Source: INDAP (2020).

<sup>a</sup>In total, 54 individual companies participate in PAP. However, some are present in more than one region simultaneously, which takes the total in the table to 66.

initiatives also interact with PAP in a significant way. Some examples are the Farmers Associative Companies (EAC in Spanish) and the Economic Associativity Programme (PAE), which encourage association among farmers. In 2019, 15 EACs participated as buyers, and six received funding from PAP to provide farmers with specialized technical assistance in management and associativity issues.

PAP farmers are a diverse group in terms of production, with products varying from fruit (in particular berries) to rural tourism, handcrafts, vineyards and others. Despite this heterogeneity, most of PAP producers focus their production on berries (28%), honey (17%), vineyards (11%), dairy products (10%) and cattle (6%). In 2019, 54 buyers and 3,596 smallholder producers were part of the programme, culminating in 90 active

contracts. Many companies have a local presence in various regions through independent contracts.

The agreement consists of a 4-year work plan where all three actors (INDAP, smallholders and purchasing companies) participate. This plan includes organizing various activities for producers, such as technical advice on production management, training activities on commercial and technical issues, laboratory tests to detect pests, international meetings and workshops, all provided for by the purchasing companies. PAP represents the formalization of this commitment, including the financial contribution of each participant to implement the agreement. It should be noted that the agreement is not a binding commercial contract between buyers and small producers, which means neither party is obliged to buy or sell. Even though the producers may leave the alliance at any time and sell to other buyers, in practice, most of them seek stability in the relationship with the purchasing company.

Generating an agreement usually begins with an interested buyer submitting a technical, methodological and financial proposal to INDAP. Once the proposal is approved, INDAP and the buying company work together to find potential partners among local smallholders. Producers are not randomly assigned to the programme but are carefully selected by INDAP and the purchasing companies. Therefore, most selected producers are former INDAP users or smallholders who have already sold to the purchasing companies. This implies that vulnerable smallholders or those not enrolled in any of INDAP's programmes may find it difficult to participate in PAP, as they may lack a general knowledge on how to access government benefits allocated to small agricultural producers or may not have generated the trust within the buying company seeking the establishment of an alliance. Once the alliance is established, each partner has a specific role. Buyers organize training to improve smallholder production to suit companies' requirements. Producers, on the other hand, attend these activities and use them to improve their production. INDAP acts as an intermediary in this relationship, supervising its implementation and funding a large part of the programme (between 40 and 70% of the cost of the alliance, depending on the size of the purchasing company). Today, PAP operates in 16 different products or value chains covering a wide range of economic and productive activities.

## Methodology

This case study uses primary qualitative data to clarify the opportunities and challenges faced by family farmers in the development of sustainable agriculture with better marketing channels, more stability, and stronger territorial roots. The study is based on semi-structured interviews aimed at understanding the perspective of key actors working with the Productive

Alliance Programme (PAP): we conducted 36 interviews with participants selected according to the criteria detailed in [Tables 2, 3](#) in the qualitative sampling section. These interviews were then processed using inductive qualitative content analysis.

## Qualitative sample

Qualitative research implies having a comprehensive and relevant criterion for selecting a sample without being guided by statistical representativeness. In this case, we worked with case-type sampling, a qualitative sampling technique that searches for relevant profiles. This ensured representation of the heterogeneity within the value chains in which the programme operates ([Hsieh and Shannon, 2005](#); [Rapley, 2014](#)). Due to the large number of value chains (16 in total) and the need to narrow down the qualitative sample, these 16 chains were grouped into seven general ones.

Taking into account these groupings, the cases were selected purposefully, distinguishing the different geographical areas where the programme was implemented and paying special attention to the regions of Maule and Los Ríos, where 40.7% and 13.5% of the PAP participants operate, respectively. In addition, PAP users were interviewed in each region where the programme is applied, covering all value chains. [Table 3](#) details the final sample selection.

## Qualitative analysis

The information analysis, carried out through content analysis, had three steps: transcription, coding in matrices and content analysis of each dimension of the matrices. In this final step, the most important elements from each dimension of the analysis were retrieved. These elements have been presented narratively in a synthetic way in this article. Verbatim quotations, duly cited, are only used when needed to illustrate the actors' perspectives.

## Results

While one of the PAP programme's key objectives is to train farmers to provide them with access to the market, its main outcome is providing farmers with a stable income. Producers mention that such market access is only feasible when a commercialization link with the main buyers is established; therefore, this link is vital to PAP producers.

Although the agreement between small producers and buyers is the base of the programme, there is no obligation for companies to buy or for producers to sell. The stability of the alliance is observed when companies show greater commitment to the programme. This commitment to the

TABLE 2 PAP participants by product and product category.

No.	Product grouping		Programme users	
	Category	Product	By product	Category total
1	Fruits	Berries	994	1,094
		Other fruits	100	
2	Apiculture	Honey	623	623
3	Vineyard	Grapes	392	392
4	Oils	Essential oils	40	40
5	Dairy and meat (animal products)	Dairy	348	688
		Beef cattle	219	
		Sheep	75	
		Pigs	46	
6	Vegetables, legumes and cereals	Vegetables and potatoes	193	483
		Beets	172	
		Legumes	46	
		Cereals	72	
7	Farm specialities, handicrafts and rural tourism	Farm specialities	50	276
		Handicrafts	131	
		Rural tourism	95	

Source: INDAP's Users Baseline Survey (2015).

TABLE 3 Sampling criteria for interviewees.

Programme participants	Sampling strategy	Number of interviews
INDAP Professionals (programme executors)	One interview per category, plus one with the general coordinator	8
Buyers (purchasing companies)	One interview per category	7
Smallholders (programme users)	Three interviews per category. At least one of the interviewees must be a woman.	21
Total		36

Source: Own elaboration.

producers translates into high-quality training, support in product delivery management and support when they request investment funds or other funding resources to improve their production. As mentioned by the producers, the companies that show this level of commitment are mainly cooperatives that are part of INDAP's Farmers Associative Companies. These companies have a tradition of working with smallholders, their markets demand small-scale production, or they are companies innovating in fair trade markets or agroecological farming. With respect to the producers' commitment to sell to the buyers with whom they have established their alliance, the qualitative data show different strategies: (A) some farmers sell them all of their production; (B) others sell part of their production, preferring to look for a better price for the remaining goods; (C) a small share of farmers do not commit to sell to the buyer in their alliance, these farmers prefer to look for the best price in other markets. The data indicates that this latter group is a minority and is usually associated with larger production volumes.

## PAP and smallholder farming. Developing commercialization skills

Producers emphasize how important this support has been for improving their productive practices and developing their capabilities, particularly with respect to their *specialized technical skills*. Farmers receive training in input use, pest and disease control, and equipment to improve quality. Training also covers meeting market demands and risk management. Additionally, they highlight their training in planning. Producers are taught to follow protocols that monitor productive activity through recordkeeping: "As farmers, we are sometimes a bit reluctant to keep records, we have had to learn to record, when, for example, a calf dies or similar" (interview with farmer 2, beef producer, August 2020). Developing these skills translates into improved yields and increased capacity to meet certification requirements.

In capacity building, one of the key elements for small-scale producers is specific production methods, such as fair trade



and agroecological agriculture. These two methods are highly compatible with the forms of production of family farming and their productive capacities and therefore represent potentially attractive niches for their products. These markets usually require certification processes from the purchasing companies. The qualitative sample of PAP producers in these alliances showed that they positively evaluated their participation and the development of production skills oriented to these markets. This appraisal is due to the much higher prices paid, as well as the opportunities farmers see for future growth: *“the future of food supply is headed in this direction, and that gives us hope”* (interview with farmer 5, berry producer, August 2020). Training in this direction has an important correlate in terms of sustainable land management, since agroecological market requirements modify cultivation methods: *“We used to burn everything to prune, now we do not burn at all; we have incorporated controlled pruning. We learned how to take care of nature. Before we used to hunt birds, now we realize that we should do quite the opposite; they provide us with a service”* (interview with farmer 8, berries area, August 2020).

A final point highlighted by the farmers is the development of social skills, namely communication and interpersonal skills, particularly among female producers. Although this programme does not target specific groups such as women, youth or people with disabilities, some female participants felt that they particularly benefitted from it. As a result of the programme, they have built up the confidence to participate further, in turn generating a new or more stable source of income. The female participants stated that the programme has been particularly important for women. As a way of example, one woman stated: *“I am one of the women who has dared to go out in the field thanks to this, to have a voice that asks questions and to sign up for projects”* (interview with farmer 14, beekeeping, August 2020).

## PAP. A model that encourages commercial alliances

In this section, we review the core elements of the PAP model that encourage buyers and small producers to participate in the programme.

Regarding the purchasing companies, the interviewees first mention the financial incentives. They receive direct contributions from INDAP for the maintenance of the alliance (from 40 to 70% of the total cost). These incentives are quite significant for small or emerging companies and allow them to face the first stages of cultivation, such as exports or opening new markets. In addition, they reduce the risks involved in implementing the alliance. For this reason, this programme benefits precisely those companies seeking to establish themselves in niche markets such as agroecology and/or organics.

In this line, one of the most important incentives for the purchasing companies is the need to comply with certain quality requirements in international markets. This need can be met through specific training to the producers. Consequently, by participating in the PAP programmes, these companies can improve quality by training smallholders and thus reach the companies' markets of interest. Small producers are key to achieving optimal production and quality in some markets, such as berries, honey, local crafts, domestic potatoes, fruits and organic beef. Therefore, the quality of training, follow-up, and the relationship between the two actors are key to the success of the alliance.

Finally, PAP has allowed for the consolidation of some associative and cooperative models of sustainable family farming. A paradigmatic case is that of the 15 Farmers Associative Companies (EAC), which offer technical assistance and guarantee distribution channels for their members. This helps farmers to improve and increase honey production as well as innovate in the means of production. We also find companies that, despite never having related with the cooperatives or any other productive society, have been working on a distinctive trademark with projects in conjunction with local communities, strengthening their interest in participating in the programme.

In the case of producers, incentives for their participation fall into two areas: firstly, in specialized technical assistance. Producers highlight the importance of improving productivity through more efficient business relationships with buyers. They also value technical field visits, which allow them to address specific production issues (e.g., crop, beehive, or animal diseases), aspects of production, and economic and management areas (e.g., accounting and data records). Second, one of the main attractions of the programmes is the possibility of consolidating their access to markets, thus reducing risk and uncertainty. Although interviewees emphasize that this channel offers lower prices than those encountered outside of the alliance, access to a stable market is the most important factor for producers, given that it guarantees them financial stability. Finally, in terms of investment, the programme has offered producers access to capital, such as trucks, and investments in storage space and other supplies. Funding from other INDAP programmes are complementary and has contributed to increasing producers' production capacity, improving their products, making them more attractive to consumers and enabling them to gain access to previously inaccessible markets.

## Discussion

The research findings indicate that small producers benefit in the following areas:

## Improved productive skills in smallholders in terms of volume and yield

Cereal and vineyard sectors in particular, achieve significant increases in production by providing smallholders with greater land use and investment capacity. In turn, honey and handcraft producers are able to convert their small-scale agricultural activities into their main source of income. We also see producers successfully specializing in production with specific requirements that allow them to participate in alternative business models such as fair trade or agroecological farming. The success of the programme in terms of increased yields was common to all interviewees.

## More stable income

Developing the capacities mentioned above and establishing commercial relationships allowed all producers to improve their incomes. This was achieved not only through increasing income (several cereal, wine and handcraft producers confirmed this) but also by providing stability, formality and a real possibility of earning a living in the countryside with agricultural activities such as berry, honey or beef production. In the case of handcrafts, it is worth mentioning that one reason for the increased income had little to do with improvements in production but was instead due to the programme's opening of a business channel that previously did not exist.

## Promoting associative development

Although not one of its objectives, strengthening producer associations is a third successful result of the programme. Among its producers, PAP has 15 Farmers Associative Companies that operate as cooperatives and were empowered as a result of their participation in the programme. For example, the associative companies in the honey and berry industries, acting as buyers in the PAP programme, could develop as trading companies or become exporters. Producers who were not cooperative members also benefitted from the opportunity to cooperate and coordinate with PAP members because each of the alliances succeeded in generating a stable group of producers who worked together, allowing for peer learning and price negotiation. Likewise, associating and organizing themselves helped them gain access to investment resources or purchase machinery and agricultural inputs for their collective use.

However, three important aspects should be reviewed in order to improve the farmers' long-term sustainability.

First, while the programme improves the quality of the production, this is not necessarily sufficient to significantly increase producers' income. This implies that, without the programme's assistance, producers may not be able to cover

the full cost of maintaining production quantity and quality, for example, paying for the expert advice provided by the programme.

Second, despite successfully introducing producers into the commercialization cycle, the risk for small producers has not diminished. A drought or the wrong decision regarding seeds, fertilizers or other inputs can result in the complete loss of the crop. In fact, producers feel they need permanent assistance. In fact, only a small percentage of participants indicate product diversification as the aspect PAP has improved the most, and several mention that they would like to focus on product diversification in the future, possibly as a way to reduce risk and income fluctuations.

Finally, the programme designs alliances that last 4 years. At the end of the fourth year, producers and buyers who renew their alliance within the PAP have to repeat the same training and progress that were developed during the first alliance, with no recognition of the progress made nor an increase in the depth or complexity of the content taught. A producer may participate in three consecutive alliances and receive similar training each time, which prevents them from advancing their development. To that extent, a programme that incorporates different levels of training, designed to allow for different paths of progress in order to establish long-term alliances, is recommended.

## Conclusions

Given the challenges posed by global environmental changes in the food sector, it is essential to identify and discuss public policy initiatives that seek to strengthen value chains that incorporate sustainable small-scale agriculture.

The PAP programme is successful in guaranteeing a stable income and market access for small producers in such a context. It achieves this by creating alliances with larger export-oriented companies or buyers that produce and export the same product. This is important because the programme improves the welfare of producers and creates conditions for them to remain in agriculture. It does so by consolidating the position of small producers and promoting sustainable forms of production in social and environmental terms.

One of the most pressing issues in Chile's rural areas is the decrease in the number of jobs in agriculture and the urbanization of these territories. By promoting small-scale agriculture, the programme can potentially reduce the outmigration of labor at a rural and sectoral level while, simultaneously, providing a space in the market for fresh and healthy food for the population in and outside rural areas.

Regarding the programme's efficiency, while INDAP promotes the creation of the alliance and actively seeks

participants, the buyer is responsible for training producers and assisting with additional resources for the work of the alliance, which significantly reduces costs for INDAP. This is especially true for larger companies, to whom INDAP offers less financial assistance. If the alliance extends beyond the 4 years of the initial agreement in which INDAP participates, the extension could operate without the government's assistance so that INDAP can include new smallholders or new companies in the same alliance or in others within the programme in general.

However, it is important to consider that, although a significant proportion of producers increase their capacities as a result of participating in the program, this does not seem to create a sufficient accumulation of human capital among smallholders to enable them to maintain the alliance independently of INDAP after the end of the alliance. This could be improved by modifying how the training is structured so that it develops in conjunction with the alliance. The programme has gone from being a local initiative to a national one covering almost all the country's agricultural and productive areas, an important feature and measure of its success. In the same sense, and despite not being a direct objective of the programme, it has enhanced women's empowerment, especially in rural areas, and has consequently helped to reduce poverty.

Finally, and whereas the PAP is not strictly a contract farming programme but resembles one, it is important to highlight that our results are very much in line with those of Masakure and Henson (2005) for Zimbabwe, who found that small-scale farmers see in contract farming a way of improving welfare, but also a way of acquiring knowledge, to reduce uncertainty, and to access alternative markets otherwise unreachable. Similarly, previous studies have reached similar conclusions regarding the benefits of alliances between smallholders and larger companies. These studies have pointed to gains in welfare, mostly associated with income increases (Barrett et al., 2012; Bellemare, 2012) but also with other aspects of welfare, such as improvements in food security (Bellemare and Novak, 2017). Interestingly, some of these studies have noted that these welfare increases are more marked when associated to the production of organic foods (Jouzi et al., 2017), as farmers are more able to reach international markets and sell at higher prices, something also found in our study. Overall, we believe our results are able to show that the PAP programme can serve as an important tool to increase welfare and to generate the necessary conditions for smallholders to access international markets by eliminating important barriers and reducing transaction costs, something proven to be crucial in the success of these kind of initiatives (Pingali et al., 2005).

## Data availability statement

Publicly available datasets were analyzed in this study. This data can be found here: CGIAR Research Programme on Policies.

## Ethics statement

The studies involving human participants were reviewed and approved by CGIAR Research Programme on Policies. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

MC and RP-S: conception, design, and drafting. MC, CC, and MS: analysis and data interpretation. MC: editing. All authors contributed to the article and approved the submitted version.

## Funding

This article is based on part of the findings of Castillo et al. (2021) within the Agriculture Human Capital Investment Study, and funded by the Food and Agriculture Organisation (FAO), the Investment Centre with the support of the International Food Policy Research Institute (IFPRI) and the Consortium of International Agricultural Research Centres (CGIAR) Research Programme of Policies, Institutions and Markets (PIM) and the Research and Extension Unit of FAO, under the direction of RP-S and MC.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.



## References

- Abner Campos, J., and Foster, W. (2013). Medición de la pobreza. Consecuencias de compatibilizar ingresos de encuestas de hogares con cuentas nacionales. *Estudios Públicos* 130, 53–94. doi: 10.38178/cep.vi130.277
- Agostini, C. A., Brown, P. H., and Góngora, D. P. (2008). NOTA técnica: distribución espacial de la pobreza en Chile. *Estudios de Economía* 35, 79–110. doi: 10.4067/S0718-52862008000100005
- Barrett, C. B., Bachke, M. E., Bellemare, M. F., Michelson, H. C., Narayanan, S., Walker, T. F., et al. (2012). Smallholder participation in contract farming: comparative evidence from five countries. *World Dev.* 40, 715–730. doi: 10.1016/j.worlddev.2011.09.006
- Bellemare, M. F. (2012). As you sow, so shall you reap: the welfare impacts of contract farming. *World Dev.* 40, 1418–1434. doi: 10.1016/j.worlddev.2011.12.008
- Bellemare, M. F., and Novak, L. (2017). Contract farming and food security. *Am. J. Agric. Econ.* 99, 357–378. doi: 10.1093/ajae/aaw053
- Castillo, M., Cazzuffi, C., Chamorro, C., Pérez-Silva, R., Sandoval, D., Sepúlveda, M., et al. (2021). *Strengthening Smallholder Producers' Skills and Market Access: Productive Alliance Programme in Chile. Country Investment Highlights 4*. Rome, Italy; and Washington, DC: Food and Agricultural Organization of the United Nations (FAO); and International Food Policy Research Institute (IFPRI).
- Cazzuffi, C., Pereira-López, M., and Soloaga, I. (2017). Local poverty reduction in Chile and Mexico: the role of food manufacturing growth. *Food Policy* 68, 160–185. doi: 10.1016/j.foodpol.2017.02.003
- Foster, W., Anriquez, G., Melo, O., Yupanqui, D., and Ortega, J. (2016). Geographic disparities in rural land appreciation in a transforming economy: Chile, 1980 to 2007. *Land Use Policy* 57, 655–668. doi: 10.1016/j.landusepol.2016.06.025
- Hsieh, H.-F., and Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qual. Health Res.* 15, 1277–1288. doi: 10.1177/1049732305276687
- INDAP (2020). *Informe Gestión 2019*. Programa de Alianzas Productivas.
- INDAP's Users Baseline Survey. (2015). Available online at: <https://www.indap.gob.cl/sites/default/files/2022-07/Bases-datos-e-informes-linea-base-usuarios-indap-2015.rar> (accessed October 25, 2020).
- Jouzi, Z., Azadi, H., Taheri, F., Zarafshani, K., Gebrehiwot, K., Van Passel, S., et al. (2017). Organic farming and small-scale farmers: main opportunities and challenges. *Ecol. Econ.* 132, 144–154. doi: 10.1016/j.ecolecon.2016.10.016
- López, R. E., and Anriquez, G. (2004). "Poverty and agricultural growth: Chile in the 1990s," in *eJADE: electronic Journal of Agricultural and Development Economics*. Available online at: <https://ageconsearch.umn.edu/record/12013> (accessed September 30, 2020).
- Masakure, O., and Henson, S. (2005). Why do small-scale producers choose to produce under contract? Lessons from nontraditional vegetable exports from Zimbabwe. *World Dev.* 33, 1721–1733. doi: 10.1016/j.worlddev.2005.04.016
- Ortega, J., and Valdés, A. (2019). *Nivel y composición del apoyo del Estado a la agricultura en Chile: 1990-2017*. ODEPA.
- Pérez, R., Valdés, A., and Foster, W. (2020). *Empleo y distribución de los ingresos de los trabajadores agrícolas en Chile 1998-2017*. ODEPA.
- Pingali, P., Khwaja, Y., and Meijer, M. (2005). *Commercializing Small Farms: Reducing Transaction Cost*. ESA Working Paper 05-08, FAO. Available online at: <https://www.fao.org/3/af144t/af144t.pdf> (accessed December 12, 2021).
- Rapley, T. (2014). *Sampling Strategies in Qualitative Research. The Sage Handbook of Qualitative Data Analysis*. London, UK: SAGE Publications Ltd. doi: 10.4135/9781446282243.n4
- Valdés, A., Foster, W., Pérez, R., and Rivera, R. (2008). "Evolución del ingreso agrícola real en América Latina, 1990-2005: evidencia en base a cuentas nacionales y encuestas de hogares," in *Revista Española de Estudios Agrosociales y Pesqueros*. Available online at: <https://ageconsearch.umn.edu/record/168092> (accessed September 30, 2020).