Sustainability of the Intelligent Water Management project in Colombia

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1. Introduction

Implementation of the project Intelligent Water Management (IWM, or the Spanish acronym GIA) commenced on 1 July 2013. The first year was a preparatory year in which a detailed planning was made of the activities to be carried out in subsequent years and instruments were developed that were applied in the implementation of the project's activities. The project was formally completed on 30 June 2018. The IWM project's final year report was submitted to RVO in August 2018, while a revised version of this report was submitted in November 2018.[1]

The IWM project claimed to be different from previous projects, in that it promoted a more comprehensive approach of accompanying technical assistance with information and training campaigns, as well as targeting the institutional framework.[2] It intended to contribute to improved water management among coffee farmers by information and sensitisation campaigns, training, hardware investments, creating infrastructure to protect the environment, reforestation activities and an improved institutional environment. The intervention was motivated by the fact that traditional coffee processing in Colombia requires considerable amounts of water after harvesting, while, depending on the processing practices, the wastewater can have considerably elevated organic load, high amounts of suspended solids, and low pH levels.

The project furthermore took a community and landscape perspective ("the river basin"), as opposed to interventions that consider exclusively the individual farmer perspective and expected the bundled promotion to create higher environmental awareness and to produce more sustainable results.

The activities of IWM Colombia encompassed six different components:

- Component 1 was implemented in Year 1 of the project and related to the preparation and planning of the next phases;
- Component 2 included among others the establishment of a Water & Coffee Platform in which at least 50 institutions would participate, apart from the key partners implementing the project;
- Component 3 targeted the individual coffee farmers and was budget-wise the most important part of the intervention;
- Component 4 included both river basin-level and farm-level activities;
- Component 5 comprised activities at the river basin-level and were supposed to inform decision makers at the institutional level; and
- Component 6 concerned Project Management and the cross-cutting issues of Good Governance, Risk Management, Gender and Social Responsibility.

The activities of Components 3 to 5 were implemented in 25 municipalities that are evenly distributed across the departments of Antioquia, Caldas, Cauca, Nariño, and Valle de Cauca.

A stakeholder and impact evaluation was conducted between 2014 and 2018, of which the final report was submitted in July 2019. One finding is that IWM was very effective in implementing the IWM

[1] FNC (2018). FDW 12CO02. Year 5 Report. Reporting period: July 1, 2013 to August, 31 2018. (Version 23 November 2018).
[2] See also http://manosalagua.com/en/about.

intervention. The interventions managed to reach even more beneficiaries than originally planned by securing additional funding sources along the way.

Econometric analysis shows that adoption of promoted equipment was higher in treatment river basins than in control basins. The same is particularly true for reforestation activities. More trees were planted in the treatment river basins than in the control areas.

Estimated effect sizes at farm level are generally very small, also for equipment adoption. Hardly any indicator shows increases of more than ten percentage points. This is partly explained by the fact that IWM implemented a broad range of activities and intervened at farms in very different areas (domestic water use, productive water use, water saving and water contamination, etc.).

In 2018, the evaluation team agreed with The Netherlands Ministry of Foreign Affairs to execute some additional research on the IWM project, to assess the post-completion sustainability of partner relationships and of results of the project after formal IWM project completion.

2. Methodology

The analysis in this report pays attention to the criteria of a developmental Public-Private Partnership (PPP) when it assesses the sustainability of the partnership established for the project.[3] The analysis of the sustainability of the result of the project uses RVO's FIETS criteria of sustainability – i.e. the criteria of financial, institutional, environmental, technical and social sustainability – and assesses to what extent the success factors for sustainability identified in the IWM Work Plan 2.3 on transfer and sustainability have played a role.[4] The work plan identified the following factors: sensitization and training; multidisciplinary professional and technical coaching; associativity/social capital; communication; and, articulation of stakeholders.

This report is based on project documentation – in particular the final report of the project submitted to RVO – and the results of 20 semi-structured follow-up interviews with various stakeholders in all the regions where the project took place and of a quick poll among the coffee growers committees of the five departments covered by the project that were conducted in July-August 2019. In addition, use is made of some information and findings included in the impact evaluation report of IWM of July 2019.

3. Sustainability of the partnership established for the project

The following six partners agreed to form a Public-Private Partnership (PPP) for the implementation of the IWM project:

- *Federación Nacional de Cafeteros de Colombia* (FNC), the National Federation of Colombian coffee growers;
- Nestlé S.A.;
- Nestlé Nespresso S.A. (henceforth referred to as Nespresso);
- The Ministry of Agriculture and Rural Development (MADR);
- Wageningen University & Research (WUR); and

[3] The Ministry of Foreign Affairs defines a developmental PPP as follows: "A form of cooperation between government and business (in many cases also involving NGOs, trade unions and/or knowledge institutions) in which they agree to work together to reach a common goal or carry out a specific task, jointly assuming the risks and responsibility and sharing their resources and competences" (see IOB 2013, p. 17).

[4] See annex to Year 1 Report.

- *Cenicafé*, the National Centre for Coffee Research in Colombia

FNC was the initiator of IWM Colombia and the lead partner of the PPP. In June 2014, five of the six PPP partners signed a Partnership Agreement in which they agreed to operate as partners in the implementation of the project. MADR was committed to be a partner of the PPP. However, by the end of Year 2, MADR had still not signed. The Ministry of Agriculture and Rural Development was replaced in 2016 by the *Agencia Presidencial de Cooperación* (APC) – the Colombian Presidential agency that coordinates the international cooperation with Colombia. At that moment, the PPP was consolidated from the point of view of membership.

Assessing the sustainability of the partnership that was established for the project Intelligent Water Management is difficult, as there was never a genuine developmental Public-Private Partnership, for lack of a real involvement of some partners from day one of the project, most notably the Colombian Ministry of Agriculture and Rural Development and later on the APC. The MADR hardly played its envisaged role in the project, while the Colombian government disbursed only a quarter of the committed financial resources (via APC). Some of the other partners were also not involved to the extent envisaged in a developmental PPP.

In this context, a representative of one of the partners expressed that "the only way to create a genuine partnership is that all the partners are really involved from day one of the project, because what happened in IWM is that on day one of the project the partners entered, but without any option to give their opinion on what had been planned." Hence, some of the partners felt frustrated, because they were in the partnership, but were not able to make choices. It has therefore been emphasised that "if you establish a partnership, it is important to see what the needs of each party are, how the objectives are met." Although there was a common goal, there were apparently different views on how this goal could be achieved.

A complaint about the governance of the project is that the rules of governance were not the same for everyone. The project was basically written when some of the founding partners joined the project and they could not bring into the project some of the things that they were interested in. Conditions for a potential replication of the project "would be a much stronger governance from the beginning, a much stronger shared governance amongst the partners … So, governance and clear rules and probably a better equilibrium on the parties."

Despite shortcomings, the partnership shared competences of the partners and resources provided to the project and therefore allowed for "something that is much bigger, much broader" than in the absence of such a partnership, also because the contribution from the Dutch Sustainable Water Fund was conditional on the formation of a partnership.[5] However, not all the partners (and funders) provided the committed resources. As mentioned above, the Colombian government did not provide all the financial resources that it had committed. However, it has been pointed out that it was not only the Colombian government that did not fully contribute the financial resources that it had committed. As explained by one of the interviewees, "neither the Dutch government, nor the Colombian government totally fulfilled the contribution of the resources. The Colombian government did not have sufficient resources. The Dutch government had them, but did not fully disburse them, because it did not understand the issue of the exchange rate." In addition, it has been explained that there was an issue regarding the valuation of the contributions in kind by one of the partners. This issue is potentially a hindrance for a continued partnership.

[5] See Final Evaluation Report of Intelligent Water Management Colombia.

In November 2018, the Dutch government signed a memorandum of understanding with the FNC to continue working on water issues. Most of the partners of the PPP that was set up for the IWM project are also involved in this Valuing Water Initiative of the Ministry of Foreign Affairs of the government of the Netherlands. So far this initiative has not generated any projects.

Replication in terms of a similar project with a (similar) PPP set-up is not likely. Currently "the partners are no longer so interested in investing in a similar project, but they are interested in continuing the actions. FNC maintains contact with Nestlé-Nespresso, because the FNC has other projects with them. With Wageningen, no joint actions have been developed since then."

4. Sustainability of the results of the project

In this section, the sustainability of the results of the project after formal IWM project completion are analysed, using RVO's criteria of financial, institutional, environmental, technical and social sustainability and taking into account the identified critical success factors for sustainability of the project.

Financial sustainability

The first type of sustainability, that in itself is also likely to affect other types of sustainability, is sustainability in terms of financial resources.

One interviewee representing the private partners in the project interpreted this as financial resources generated by the market, by saying that a condition for sustainability is "creating commercial value out of the project, which makes it really sustainable afterwards if we are doing good and making money. Then things become virtuous." An example of the creation of commercial value is Nespresso's Master Origin Colombia produced in Cauca and Nariño and processed in the community wet mills constructed by the GIA project.[6] This coffee receives a price premium in the market, which is used by Nespresso to invest in collective coffee processing.

But financial sustainability is not necessarily market-driven financial sustainability. It can be based on a business model, but it can also refer to financial resources generated nationally in a different way, for example by means of fees or taxation. This broader concept is used here.

A distinction is made in the assessment of financial sustainability between the sustainability of (realised) GIA actions/farm-level interventions and of the deployment of multidisciplinary teams.

GIA actions/farm-level interventions

The results of a quick poll conducted among the five departmental coffee growers committees indicate that some of the committees are only moderately optimistic as far as the conditions for generating national financial resources for allowing continuity of its actions are concerned (see Annex A). One committee is hardly or not implementing new projects with the GIA methodology, three do this to some extent, while the fifth committee reported that it does this a lot.

A representative of the departmental Committee of Coffee Growers in Antioquia explained that "the continuity that the Committee could give to the GIA actions would be a review with the extension service, but the development of sustainability actions requires new economic resources that are currently not available." The point was made that the extension service could reflect on how GIA's intervention logic could currently be replicated in the work or projects in which the extension service

[6] In total, 7 community wet mills were constructed (see also IWM Final Report, November 2018).

participates in the department of Antioquia. To the extent that available budgets allow for this, the department strives to apply a combination of technical accompaniment with social accompaniment in each project that is initiated, which is a legacy of GIA.

In comparison, in the Caldas Coffee Growers Committee has maintained as a kind of premise to insert the logic of GIA in the projects it implements. But it also recognises that GIA had substantial resources, which the regular interventions of the institution can hardly count on. Currently, a small follow-up project of GIA is being implemented in the municipality of Anserma (see Box 1). The methodology of GIA is to some extent being replicated, though the project appears to lack some of the key components of GIA that seem crucial for sustainability, such as the social extension worker and the sensitization campaign, and it appears that the project does not have full access to the learing material that was devlopend by the *Fundación Manuel Mejia* in the GIA project.

Furthermore, the operation of the above-mentioned community wet mills constructed in Cauca and Nariño also replicate elements of GIA and received a financial contribution from Nespresso.

Box 1: Project 'Todos al Agua'

A small follow-up project of GIA, called 'Todos al Agua', is being implemented in the municipality of Anserma in the department of Caldas. The GIA information was used to construct the logic of the project. It started in 2018 and has a three-year horizon. It is co-financed by RGC Americas, which buys coffee with a fair trade premium from producers and channels a percentage of the premium back to the producers. A three-year agreement concerning an investment of 400,000 USD was signed. The project is expected to fund itself with the sale of coffee.

The project intervenes in soil management, planting trees to protect the watershed, managing coffee-processing and domestic wastewater, and socialising with the local community. It will reforest 13 hectares, improve 1,080 agroforestry systems in coffee plantations, conduct 364 soil analyses with training and deliver coffee-processing equipment to save water (120 coffee-processing solutions). It will involve 350 female coffee growers and 242 coffee farms.

FNC was involved in the design of the project. The GIA methodology is being replicated in 'Todos al Agua', adapted to the context and available resources. The project in Anserma has a micro-basin approach and works closely with the community.

Solidaridad participates in the 'Todos al Agua' Project. It designed the initial workshops, takes care of methodological accompaniment, training of coffee producers and development of training tools. The departmental Coffee Growers Committee of Caldas is also a participant in the project. The FNC's *Fundación Manuel Mejía* was involved in the strategy workshop and co-financed the provision of sceptic tanks.

Due to budget constraints, the project is not able to assign its own team of extension workers as GIA did. It has a social person who is going to help in the implementation. The Caldas Committee is expected to provide an extension worker.

Source: Own elaboration based on interviews

In GIA, technical assistance for adopting clean and efficient technologies and practices was provided to over 3,500 coffee farmers.[7] The financial sustainability of farm-level interventions will depend on whether the coffee farmers can generate sufficient income for maintance and, where relevant, covering the financial investments that they made in the context of the GIA project. One issue that may threaten sustainability is Decree 50 of 2018, requiring a characterization of the soil of the farm,

[7] See IWM Final Report, November 2018.

which costs 12 million Colombian pesos (or approximately 3,200 Euro), amount that could be equivalent to the annual gross income of an average small coffee farm. In addition, Law 631 requires the producers to characterize their farm every year, implying an investment of 1 million Colombian annually. These regulations threaten the financial sustainability of the farm-level interventions of GIA. Apart from this, the sustainability of the project results is also threatened by the variability in the price of coffee and possible periods of low coffee prices in the future.

Availability of resources for involving multidisciplinary teams

A key feature of GIA was the involvement of multidisciplinary teams, which was considered an important condition for sustainability. Available resources allowed for the involvement of experts from different disciplines, i.e. social and forestry experts, next to agronomists. This had previously been impossible to achieve in the formulation of other projects. The scope for involvement of multidisciplinary teams in new priojects became more limited after the completion of the GIA project.

Currently, the possibility to incorporate multidisciplinary teams in projects depends exclusively on the availability of resources. In some projects, there are resources for involving experts from different disciplines. This is for example the case in the project of Nespresso for the operation of the seven community wet mills in Cauca and Nariño constructed by the GIA project. In comparison, as mentioned earlier, the project 'Todos al Agua' in Caldas was due to budget conditions not able to assign its own team of extension workers as GIA did, but the Caldas coffee growers' committee provided human resources.

Institutional sustainability

As discussed in Section 3, it is not likely that the six key or "PPP" partners will continue to form a kind of formal partnership. Nonetheless, some of them logically continue to work together, given the nature of their involvement in the Colombian coffee sector. This holds in particular for FNC, Cenicafé and Nespresso. These partners will furthermore collaborate with other institutions. One of the key features of GIA was the establishment of the Water & Coffee platform as a vehicle for involving other institutions in GIA activities and beyond. Articulation with actors through an attractive platform was considered another critical success factor for sustainability of the project. Other success factors are sensitisation and training, community involvement, communication and visibility, and the earlier-mentioned use of a multi-disciplinary team. The roles of the platform, working with communities and the incorporation of (mullti-disciplinary) GIA staff in departmental coffee growers' committees in creating institutional sustainability are discussed below.

Platform for involving other institutions

The IWM project had a strategy that connected many actors through the Water & Coffee platform. Within FNC, the theme of the platform is currently being applied in the area of Social Development, but this mechanism has not yet been transmitted to the entire institution.

One example of an FNC project which builds on the GIA experience in terms of using a platform to involve other institutions is the project that FNC now has with the Ministry of Commerce, to take a tourism business to nine associations of coffee growers in nine departments. The FNC is the key institution to enter the communities in the region. This project is taking advantage of GIA's experience in convening actors with knowledge in different areas and is applying the approach of agreements, which was a very efficient mechanism in GIA.

Another example is a project that is being carried out with the National Planning Department (NDP), for which Manos al Agua is taken as an example of management. The NDP project also allows for the establishment of relationships with many other institutional partners.

For the *Fundación Manuel Mejía* (FMM) – the training centre of FNC – the impact of the project on has been important, in that it improved both the interaction of the Foundation with other institutions (within and outside FNC) and the transmission of knowledge by FMM's staff. It taught the people of the Foundation to transmit knowledge in a simpler and more effective way and provided them the opportunity to use a more lucid approach to transmit knowledge. This continues to be put into practice in the design of materials for other projects.

The list of members of the Water & Coffee platform includes Regional Autonomous Corporations (i.e. regional environmental authorities) and various municipal governments, as well as the departmental coffee growers' committees. The GIA project has improved (somewhat) the committees's alliances with other organisations (see Annex A). For example, one of the interviewees in Antioquia emphasised that the GIA project helped change the relationship of the coffee sector with the Regional Autonomous Corporations Cornare and CorAntioquia and the municipalities. There is now room for the sector to be involved in discussions on policies of these institutions, while this was previously not the case. Also in other departments, the GIA project helped to strengthen the relationship between the regional environmental authorities and the coffee sector. It should be mentioned, however, that the departmental Committee of Coffee Growers of Valle del Cauca started already in 2010 to focus on a policy of sustainability with a micro-basin approach instead of the traditional work by districts, which was characteristic of the extension work of FNC. GIA enhanced the Committee's way of working, contributing its integral approach with joint actions – not isolated ones – in the formulation of projects based on cooperation agreements with local (*i.e.* departmental and municipal) governments.

Community involvement

One of the interviewed stakeholders mentioned that a condition for sustainability is "involving the communities and having a broader ownership of the project then the original participants and funders." This is in line with the IWM work plan 2.3 on transfer and sustainability that was included as an annex to the Year 1 Report, which mentioned that it is "advisable to consider the needs of the benefited communities and their active participation in the entire implementation process."

A similar observation has been made regarding the 'Todos al Agua' project that is currently being implemented in Caldas: "sustainability requires community empowerment". Investing in community empowerment can thus pay off. In the words of one of the interviewees: it "can become a business case around sustainability". GIA also invested in community empowerment through sensitisation and training and there are signs that benefited communities participated actively in the implementation of the project and are now more involved in issues regarding coffee and water.

Incorporation of GIA staff in departmental committees

The results of the poll indicate that the committees have to some exent incorporated (multi-disciplinary) GIA staff in their current teams (see Annex A). This is an important way to retain in these institutions the knowledge and experience gained in the implementation of the GIA project. It is important to link staff that worked in the GIA project to other committee activities.

In *Valle del Cauca*, eight out of ten people that were assigned to the GIA project (including three agronomists and the social extension worker) remain active in the departmental committee. For example, the GIA agronomist of the Departmental Committee of Valle de Cauca continues with the committee.

Two of the GIA agronomists in *Antioquia* are now working in other areas of the Departmental Committee of Coffee Growers of Antioquia, in areas of influence in one of the GIA project's micro-watersheds. For this reason, they remain in contact with the beneficiaries of the project. Another GIA extension worker also continues to work in the project's watershed.

In *Cauca*, seven of the ten persons that formed the GIA staff are currently extension workers. In *Nariño*, the extension workers that were involved in GIA continue to be assigned to projects that the departmental coffee growers' committee is implementing. This includes the social extension worker and the agronomist.

Finally, in *Caldas*, the majority of the the GIA extension workers are no longer present. However, the coffee growers' committee is involving two or three GIA staff members in the follow-up project of GIA that is being implemented in the municipality of Anserma.

The partial incorporation of former GIA staff can help to keep alive the lessons learnt from the project.

Environmental sustainability

The departmental coffee growers' committees consider that the GIA project created quite some conditions for improvement of the environment in the intervened micro-basins (see Annex A).

A condition for sustainability is creating some value. This can be environmental value, such as clean water and so on. The GIA project generated a culture of caring for the environment, which coffee farmers have adopted. New projects should continue to work on the collective awareness of protecting water and the natural environment in general.

Furthermore, the GIA project involved reforestation and generated infrastructure to protect the environment. Awareness raising and training realised in the targeted areas likely created favourable conditions for sustained reforestation activities and protection (and possible expansion) of infrastructure to protect the natural environment.

Nonetheless, as one interviewed persons remarked, "there is a need for contribution of the government to protection of the natural environment." This concerns contribution by the national government, especially if policy design is concerned. But contribution of the government can also take place at the sub-national level. In this context, it is interesting that the regional autonomous corporations and municipalities now have a closer relationship with the coffee sector. For instance, the Regional Autonomous Corporations and the municipalities in Antioquia saw for the first time a direct commitment of the coffee sector to the environmental issue. They always refer to the GIA project. A discussion process took place before the corporations set the goals of decontamination and the coffee sector was able to contribute to that discussion. The changed relationship is like to contribute to environmental sustainability of GIA actions.

Interesting changes in farm-level interventions that were promoted by the GIA project and which have a potential to increase environmental sustainability are the so-called green filters to treat waste water and a technological improvement in the modular systems for treatment of waste water (*Sistemas Modulares de Tratamiento de Agua*, or SMTAs), which favoured the acceptance of the SMTA technology by the GIA producers and at the same time implied improvements for the rest of coffee growers.

Figure 1: Indication of installing of an SMTA on a GIA coffee farm in Caldas

Finally, estimations included in the impact evaluation report show that a non-intended effect of IWM is an increase in the share of farms that participate in a sustainability initiative. This is also likely to have a positive contribution to sustainability of the GIA interventions.

Technical sustainability

Examples of technical improvements generated by IWM are the measurement of water quality, soil conservation and technical evaluation of zones to know whether it is feasible to plant certain types of trees. A lot of techniques have been learned in the context of IWM, which will likely continue to be deployed in the communities. The project left well-systematized the knowledge it built through publications.[8]

Farm-level interventions

The project helped to improve the adoption of practices by coffee farmers. The accompaniment provided by the IWM project guaranteed "adoption with conviction" on the part of the producers, because it made it easier to show the effects of the technology with the advice and follow-up by the technicians. It can be seen in the regions that the levels of adoption were high on the part of coffee growers. The initial intention of the project was to support 15% of the farms with interventions. In the end, 52% of the farms received support for some kind of intervention.[9] More than 1,000 interventions with septic systems were made in basic sanitation and solutions for coffee processing were provided to producers that would last 20 years without suffering deterioration. This is a condition for the sustainability of the effects, because they last over time and are within the norms of the government.

Figure 2: Water-saving coffee-processing equipment installed by GIA project

According to the results of the quick poll, all departmental coffee growers' committees continue to offer a lot of technical support to the beneficiaries of the GIA

[8] See https://www.cenicafe.org/es/index.php/nuestras_publicaciones/proyecto_gia_manos_al_agua. In addition, the GIA project created a virtual learning network (see also https://www.ceddet.org/termina-el-proyecto-manos-al-agua-y-el-soporte-de-su-red-de-aprendizaje-gestionada-por-fundacion-ceddet/).

[9] However, it has to be recognised that Nespresso had already done some initial work in some areas.

project after the project was completed. As explained in Annex A, the departmental coffee growers committees are of the opinion that coffee farmers generally maintained the farm-level GIA interventions in adequate conditions. It is likely that the fact that all committees continue to offer a lot of technical support to the beneficiaries of the GIA project is contributing to this.

For example, in Valle del Cauca, the interventions delivered by the project are followed up. Surveys are made of the state of the SMTAs and one can know if they are being maintained. However, monitoring is something that was already being done in the Committee prior to GIA. While the GIA interventions are generally well-maintained, the monitoring shows that currently some producers do not do the required maintenance.

The situation appears to be somewhat different in Antioquia. The specific GIA technologies are not monitored, because the extension service does not have the resources and time for such monitoring and the implementation of own resources does not allow it to use funds for specific monitoring. The committee uses other means to make a general follow-up, such as the minutes of visits of the extension service to the farms, the communications of the municipal committees of coffee growers, or the system of complaints and claims. It cannot guarantee continuity and that the community will continue to drive the project's actions by its own means. The impression is that while the community has not completely disengaged from the project, “there is a risk that the project will become a positive memory of the past”.

Box 2 presents some interview results regarding the technical sustainability of equipment provided by GIA and the sustainability of related training and other GIA support to coffee growers in Caldas.

Box 2: Producers' perceptions regarding GIA support'

The coffee producers in Caldas that were interviewed for this evaluation expressed that they were satisfied with their participation in the project. They considered that the training they received was useful to raise awareness about the rational use of water, as well as the proper management of the equipment (for processing of coffee and treatment of waste water) that was provided by the project.

They keep the received equipment in working order and in a good state of conservation. They have used it with good results in several harvests and affirm that the equipment is adequate for the production capacity of their farms. They consider that the project provided sufficient training to do the required maintenance, although they are not self-sufficient to make repairs. For required repairs, they expect to receive assistance from the Departmental Committee of Coffee Growers. An initiative is required to periodically monitor the proper operation of the supplied equipment and, where necessary, to make arrangements to repair equipment that is damaged or to correct inconveniences.

One of the producers said that thanks to the equipment he received, he was able to enter the Nespresso AAA programme, which in turn allowed him to improve family income.

Evidence was obtained of the importance of the reforestation component of the project to increase water availability. Some producers led or participated in joint work days to fence and protect water sources, in accompaniment of the GIA team. Thanks to these actions, they said, it has been possible to significantly improve the flow and availability of water in their neighbourhoods.

The producers recognise that the support of the GIA project was fundamental to achieve group actions in favour of the communities and for the neighbours to unite. However, they point out that group activities are unlikely to last without GIA accompaniment.

Source: Own elaboration based on interviews

Community wet mills (*microcentrales de beneficio*)

The seven community wet mills that were foreseen by the GIA project were constructed. They were installed in Cauca and Nariño. The plants have coffee-processing equipment that is designed to reduce the amount of water used in coffee processing. They also have waste-water treatment systems.

It took time to set the "seed of collective work" required by this type of project. Cauca and Nariño meet this condition, but there are many aspects that must continue to be strengthened, such as self-confidence and cohesion. The departmental coffee growers' committees and Nespresso are providing technical assistance for the operation of the community wet mills and the organisation/strengthening of associative groups. As a follow-up activity to GIA, Nespresso committed itself to accompany the communities in setting up the groups of producers responsible for the operation of the small collective coffee processing plants (see also below).

Social sustainability

The assesment of social sustainability will focus on two aspects: the role of the social component in projects and the potential role and current status of the community groups that were established or strengthened by the GIA project.

Role of the social component in projects

The initial sensitisation process of GIA was key for producers and families to connect with the practices that the project wanted to transmit. The project, and in particular the social extension workers, helped people understand why the practices are important and why it is important to implement them. The project worked with the family, not just the producer, and more work – training, etcetera – was done on the farm than in previous projects. In monitoring visits to the farms that had received training, the *Fundación Manuel Mejía* observed that the coffee farmers incorporate practices and habits promoted by the project.

In *Cauca*, for instance, the participation of the social extension worker in GIA was successful (though the social component's coverage in terms of producers in the microbasin was not complete). After the completion of GIA, the departmental committee of coffee growers in Cauca continued to involve a social extension worker, who provides assistance to the organisation of the work in the four community wet mills constructed by GIA. Likewise, different GIA extension workers (including the social extension worker) continue to be assigned to projects being developed by the departmental committee of coffee growers in *Nariño*. They continue to use the material that GIA developed and used for the trainings.

The stakeholders in the follow-up project regarding community wet mills are aware that the success of them in the future depends on continuing to work on social aspects, given that the technical conditions are covered. Nespresso established a project with the Federation for the seven micro plants to support the operation of the plants and the organisation of the buying, processing and selling of coffee. It hired social teams in both Cauca and Nariño to strengthen organised producers, to ensure that they operate around the community wet mills. In practical terms, this implies that the organisations internally reach agreements to buy and process the coffee through community work. This aspect, which is crucial for the sustainability of these interventions, is ongoing.

Similarly, the project in Anserma in the department of *Caldas* has a social person who is going to help in the implementation. The Caldas committee is expected to provide an extension worker.

After the completion of the GIA project, the aim of the departmental committee of coffee growers in *Valle del Cauca* was to strengthen the effect of the social component in the projects by incorporating this component into the new projects.

While these are examples of involvement of social extension workers in current projects, the results of the poll among departmental coffee growers committees show that the provision of social support by the committees is currently more limited than the provision of technical support (see Annex A). In GIA there was more budget, and hence more scope for involving social extension workers. The role of social extension workers in GIA not only enhanced the adoption of water-saving technical solutions for processing of coffee, better equipment for treatment of waste water and a change in practices and habits. It may also have contributed to the joint participation of men and women. However, in order to see profound changes in this respect, more time and more accompaniment would be needed. The sustainability of the effects of promotion of habits and practices may also require the development of actions on the part of FNC to continue the accompaniment of coffee producers (see also Box 2).

***Manos al Agua* groups**

The GIA project also foresaw the establishment or strengthening of community groups – later on called *Manos al Agua* groups. The formation/strengthening of the *Manos al Agua* groups at the level of the communities was also seen as a way to foster sustainability of the project. By June 2018, 29 *Manos al Agua* groups had been established and agreements of participation had been signed.[10]

A stakeholder interviewed in the impact evaluation phase expressed that "if *Manos al Agua* groups continue to exist, they can give continuity to the programme and the conservation of water." For the sustainability of the results, it is important that the community groups establish and strengthen relations with other institutions. Some *Manos al Agua* groups have a clear vision and know with whom they can relate themselves. Other groups are weaker.

The work done in partnership with other institutions and people in the micro-basins will favour the sustainability of the effects of the project. For example, the groups that were organised in various regions for decontamination and garbage collection are an element to give continuity to the actions on water care.

The question is to what extent the Manos al Agua groups continue to exist and play an active role in the communities. The poll results presented in Annex A show that the rate of survival of the Manos al Agua groups varies across the departments.

In *Cauca*, one Manos al Agua group widened its activities to a larger community and is implementing a project of protection of river basins and water sources. Three groups continue to strenghten themselves. A group that is active since 2013 continues with various activities, including activities related to one of the community wet mills constructed by GIA and supported by Nespresso and FNC.

The five Manos al Agua groups supported in *Nariño* continue as associative groups and are trying to include themselves in an FNC programme.

Like in Nariño, five Manos al Agua groups were strengthened in *Valle del Cauca*. They had between 15 and 25 people per group. Two of them, which were already in an advanced process before the project, remain with good results and management capacities. The other three do either no longer exist or are relatively weak to continue on their own.

[10] End-of-project presentation in The Hague on 7 June 2018. In some departments, more than one group was established.

Also in *Caldas*, some of the Manos al Agua groups have severely weakened. For example, the Manos al Agua group in the municipality of Salamina gained wide recognition in the project for the construction of a chapel using plastic waste material. This chapel-construction project was supported by the GIA project. It is a source of pride in the group, a symbol of their struggle and their ability to achieve collective action, and it has been visited by many national and inter national actors. Despite this broad recognition, the Manos al Agua group has not received any recognition or support that represents economic benefits or a change in their well-being. Currently, there is a weakness of the group in its management capacity and a low cohesion among its members. It seems that their capacities for self-management were severely weakened with the departure of their main leader and the group is at risk of disintegrating, due to lack of interest and lack of motivation of its members.

Figure 3: Chapel near Salamina constructed with used plastic bottles

5. Conclusions

The partnership established for the GIA project was not a genuine developmental PPP and did not continue to exist after the completion of the project in 2018, although some of the partners (logically) continue to work together in other initiatives in the Colombian coffee sector.

Some results of the project are sustainable. This hold in particular for most of the knowledge generated by the project and several practices that it promoted. Some institutional changes, such as collaboration via the Water & Coffee platform and deployment of multidisciplinary team, are lasting, at least for the moment. In terms of environmental sustainability, the project generated a lot of awareness of protecting water and the natural environment in general, though new projects should continue to work on this aspect and social accompaniment to the producers is needed. Technically, most of the interventions of the project appear to be lasting; farm-level interventions realised by the project are in general not expected to deteriorate within the next 10 to 20 years, but may require (minor) maintenance activities and monitoring. Continuation of technical follow-up seems feasible. The GIA project put a lot of emphasis on the social aspects – among others by involving social extension workers – and this approach is to some extent maintained in current projects and practice of the departmental coffee committees and partially incorporated in the FNC. Financial sustainability of the project results is more limited, which in itself may have repercussions for the other aspects of sustainability.

The important results achieved with the consolidation and formalisation of the Manos al Agua groups, which was one of the successful elements of the intervention, are currently uncertain, due to the difficulty that some of these groups face to continue without any type of support and social accompaniment. Some did not reach a sufficient level of associative maturity, to be able to manage themselves, which prevents them, for example, from creating scope for co-management with local governments.

The continuity of the type of integrated action that was possible with Intelligent Water Management will depend crucially on the availability of a budget of comparable magnitude that allows for the convergence of careful planning in the design with a focused social intervention in the medium term, a strong research component as technological support for the project, and a qualified human resource.

Annex: Quick poll among departmental coffee growers' committees

This appendix presents the results of a quick poll conducted among the five departmental coffee committees in which they were asked to score ten topics on a scale of 1 to 4. The results in Table 1 indicate that one committee is hardly or not implementing new projects with the GIA methodology, while the other four do this to (quite) some extent. The committees have incorporated some of the GIA staff in their current team. The GIA project has furthermore improved (somewhat) the committees's alliances with other organisations.

The committees are of the opinion that coffee farmers generally maintained the farm-level GIA interventions in adequate conditions. They furthermore consider that the GIA project created either some or many conditions for improvement of the environment in the intervened micro-basins. Some of the committees are less optimistic as far as the conditions for generating national financial resources for allowing continuity of actions are concerned.

All committees continue to offer a lot of technical support to the beneficiaries of the GIA project. The provision of social support is more limited.

The rate of survival of the Manos al Agua groups varies across the departments.

Table 1 To what extent … (Number of Coffee Growing Departmental Committees answering each question…)[a]

	1	2	3	4
1. …is the Committee implementing new projects with the GIA methodology?	1	0	3	1
2. ... has the GIA project staff been incorporated into the Committee's current team?	0	0	3	2
3. ... do you consider that the GIA project has improved the Committee's alliances with other organisations?	0	0	2	3
4. ... have coffee farmers maintained GIA interventions at farm level in adequate operating conditions?	0	0	2	3
5. ... do you consider that the *Manos al Agua* groups are capable of self-management?	0	2	2	1
6. ... have the *Manos al Agua* groups survived?	1	1	2	1
7. ... do you consider that the GIA project has created conditions to improve the environment in the intervened micro-watersheds?	0	0	1	4
8. ... is the Committee offering technical support to producers who participated in the GIA project?	0	0	0	5
9. ... is the Committee offering social support to producers who participated in the GIA project?	0	3	2	0
10. ... has the GIA project created conditions to generate national financial resources that allow for continuity of its actions?	0	1	2	2

Source: Own elaboration based on a quick poll.

[a] 1 is "Very little/nothing"; 2 "Little"; 3 "Some" or "Somewhat" and 4 is "A lot" or "A large extent"