Final Report

Technology, adaptation and mitigation: Greening the economy of urban agriculture at the Kanata Metropolitan Area, Bolivia

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List of acronyms

ANA:	Peruvian National Agency for Water
ASOCOLFLORES:	Colombian Association for Flower Producers
ASOFIN:	Association for Microfinance Institutions
CBO:	Community Based Organisation
CSO:	Civil Society Organisation
CIDRE:	Centre for Research and Regional Development
EDIM:	Development Strategy of Kanata Metropolitan Area
ESCI:	Emerging and Sustainable Cities Initiative
FEDEFLOR:	Provincial Flower growing Association
FEPC:	Cochabamba Federation of Enterprises
GHG:	Green House Gas
IADB:	Inter-American Development Bank
IDF:	Development Financial Institution
KMA:	Kanata Metropolitan Area
KW:	Kilo-watts
KW-H:	Kilo-watts per hour
LPPD:	Litres per Person per Day
PLAFLHOR:	Platform for Flower growing Research
MET:	Metropolitan
MFI:	Micro Finance Institution
NCF:	Nordic Climate Facility
NDF:	Nordic Development Fund
NEFCO:	Nordic Environmental Finance Corporation
NGO:	Non-Government Organisation
OO:	Overall Objective
ONU:	United Nations Organisation
OVI:	Objective Verifiable Indicator
P:	Purpose
PDES:	Social and Economic Development Plan
SDC:	Cochabamba Province Basin Service
SO:	Specific Objective
TBO:	Territorial Based Organisation (Neighbourhood Organisation)
UNFCCC:	United Nations Framework Convention on Climate Change
WP:	Working Pressure
WWTP:	Waste Water Treatment Plant

EXECUTIVE SUMMARY

This project was implemented in the Kanata Metropolitan area in Bolivia, hosting more than 1.5 million inhabitants. The objective was to contribute to the implementation of the Sustainable Cochabamba Action Plan, elaborated as part of the Emerging and Sustainable Cities Initiative (ESCI) to promote adaptation and mitigation at Kanata metropolitan area using a rights based and gender equality approach by:

- Introducing Nordic technologies in urban districts for water management, water recycling for irrigation and compost production.
- Improving urban agriculture productivity, business development and market expansion in a B2B (business to business) approach.
- Developing production protocols of climate resilient varieties of flowers and vegetables.
- Developing and offering with a 3R approach (Reducing, Reusing and Recycling) cost-effective microfinance products to economic circuits and actors involved in urban agriculture, contributing to reduced emissions of greenhouse gases (GHG).
- Strengthening urban planning networks with focus on adaptation and mitigation priorities.

Project interventions were aiming for rights based, women economic empowerment and win-to-win public-private partnerships through: (i) technology validation and transfer, (ii) capacity building; (iii) efficient utilization of organic residue; (iv) business plans development, (v) advocacy and policy development and (vi) public-private partnerships and financing.

The **overall objective** of the project was to support the implementation of the "Sustainable Cochabamba" Action Plan through local experiences for improving urban climate resilience, with a rights and gender based approach. The **specific objective** was to strengthen the capacities for adaptation and mitigation of climate change effects in the Kanata metropolitan area through increased leadership, innovation, investment and environmental prevention by women productive organisations, social organisations, universities, public and private entities and oriented towards water efficiency, urban agriculture, organic waste management and smarter environmental planning.

To measure the project's contribution to these objectives in the form of medium term and long-term impact**, four intermediate outcomes** were designed as **purposes** to assess the achievements in the intervention areas of water management, urban agriculture and organic waste management, business development, and resilient planning. These outcomes were monitored through **seven output indicators;** four of these related to development and three related to climate change adaptation and mitigation. At project closure, these indicators show that the intermediate outcomes were quite successfully achieved.

Due to the political and administrative context leading to lengthy processes for investment approvals, the expected medium-term impacts on climate change were not achieved at the scale expected. E.g. the meagre 93.42 tons of CO_2 emissions actually saved (or reduced) through project direct investments, compared to the 43,874 tons of CO_2 emissions targeted to be saved by 2018, as well as the 49,745 women expected to have improved their adaptation and mitigation practices for urban agriculture, which eventually turned out to be 20,196 women, although an additional 20,561 men also benefitted from the activities.

When assessing the contribution to long-term development impact, the most relevant is the rapid increase in investment allocations made in the Kanata Metropolitan Area's provincial budget that now exclusively benefits women; from 2.4% (in 2016) to 14.57% (2018). An example is "the Women City Center", which will be implemented as a strategic metropolitan project through a € 348,000 contract with the Inter-American Development Bank, and which will continue to attract more public funding in 2020-2025. This project will address the economic empowerment of women, the elimination of gender-based violence, and the need for improved health and legal services for women.

Achieved objectives, outputs and results as well as the climate and development benefits

The project achieved most of the expected intermediate outcomes and short-term outputs regarding the validation of technology and the improvement of local capacities for institutional adaptation to climate change. Women were successfully involved in collaborative circuits supporting urban agriculture,

especially in the flower growing sector leading to increased research, productivity and trade. Businesses developed for organic waste management were transformed into new models for green micro credit products, while the Trust Fund which was oriented towards more effective waste management and sanitation has embarked on an ambitious agenda to find out international investment partners in order to scale up climate and financial benefits for the Kanata Metropolitan Area. The Metropolitan platform is still in place and actively used as a multi-stakeholder forum to discuss and agree on strategic investments towards improved metropolitan resilience.

An important project contribution is the "Resilience agenda" for mainstreaming adaptation strategies to climate change at the Kanata Metropolitan Area, where policies regarding urban development and informal urban growth could see short and long-term benefits. A point of entry for this to also benefit an increasing number of urban inhabitants relies on the planning and design to build a proper urban environment (urban infrastructure, transportation, services, land use, and the management of other natural resources), as well as to upgrade the citizens' and local communities' capacities for climate change adaptation, while a new environmental strategy is being developed for the Metropolitan area.

Objectives and outcomes –
Indicator achievement on development and on climate change adaptation/mitigation

Objectives level - Medium term impact (effects)	**Intermediate outcomes (Purposes) – Development**	**Intermediate outcomes (Purposes) – Climate change adaptation/mitigation**
On Development: By 2018, 14.57 % of the metropolitan investment budget is targeted for improving competitiveness, formal employment and economic climate-related adaptation aimed at women.	Under purpose 1: By 2018, there was a 47% increase in coverage of urban water systems serving children from Itocta, Pucarita Chica and Monte Canto neighbourhood organisations due to the application of photovoltaic pressurization technology.	Under purpose 1: By 2018, 2 hectares were enabled for containment due to the application of hydro seeding technology in Tiquipaya and Quillacollo.
On Climate change: By 2018, 93.42 Tons of CO_2 emissions were saved due to direct application of Nordic technologies on water management and organic residues in Tiquipaya, Cercado and Vinto Municipalities.	Under purpose 2: By 2018, there was an average increase of 23% in women's income basically due to the commercialization of adapted varieties in local and national markets.	Under purpose 1: By 2018, 1,420 elementary school students in the Cercado South District and the Khora Tiquipaya basin have learned and are actively informing about dry toilet technology as an option for adapting to water scarcity.
On Climate change: By 2018, 20,196 beneficiary women in the Kanata Metropolitan area have improved their adaptation practices for urban agriculture through the application of Nordic technologies for water and organic waste management.	Under purpose 3: By 2018, € 622,316 was invested in public and private funding to support urban agriculture in the metropolitan area.	Under purpose 2: By 2018, an average of 0.34 kg/per/day/person, of organic residue were selected and processed for compost production.
	Under purpose 4: By 2018, "the Resilience Agenda", an initiative for common accountability, was jointly agreed on by a number of stakeholders as a support mechanism for the environmental orientation of the metropolitan investment plan.	

For further details on achievements of the objectives, outcomes and outputs see the matrix on page 8-11.

Key conclusions/lessons learned and possibilities for scaling up

Four key lessons learned from this project are; 1) the relevance of working with a multi-stakeholder planning platform towards resilience, 2) to properly implement communication strategies for outcome dissemination, 3) to promote women empowerment and climate change leadership and 4) to improve the monitoring and management of political risks during project implementation. When elaborated on the main lessons are that:

1) Other urban institutions (i.e. professional associations of engineers, architects and similars) and economic institutions (Chambers of Commerce, other business representative organisations) are also active in local urban areas and can play significant roles in developing and implementing strategies to reduce social, urban vulnerability and enhance adaptation to climate change. Expanding their participation in urban planning and in the design of adaptation options can strengthen social commitment to those strategies and complement local knowledge as well as to expand community involvement in short and long-term strategies. They can all become important actors in the social learning process of adaptation to climate change.

2) The project results were disseminated via two principal means: (i) Metropolitan Bulletins and (ii) a Web Site. Both means focused on reaching an adult audience and on a more limited term to reach also other expected beneficiaries within different age groups. To secure at least some continuance in the dissemination of the project's outcomes beyond the contract period, Diakonia will transfer project information and studies to the Ministry for Water and the Environment by uploading all of these to the Ministry's web library with the intention of widening the benefitting audience. When it comes to project impact on adaptation and mitigation, the project's communication strategies for dissemination were implemented a bit late, where the enormous geographic range encountered to coordinate these activities reduced the scope of reaching potential beneficiaries.

3) All metropolitan platform participants value the motivation and importance of continuing the work on promoting women leadership focusing on adaptation and mitigation, since women cultivate a permanent relationship and leading the search for water sources and access, as well as exercising a leading role in waste management and environmental conservation. Women contribute significantly to the spread of information and transfer of capacities, knowledge and application of environmental norms and laws addressing women empowerment from a rights and gender based approach.

4) The design of the project underestimated the time for discussion and approval of investments, both at local and provincial level; although many authorities showed a cooperative attitude towards Project activities and agreements. Municipal Government's internal procedures for the final allocation of resources went very slow. Therefore, project learned not only to better monitor but also to inform stakeholders and donors on the possible delays and the technical consequences, so that they may take such risks into realistic account when planning projects.

When it comes to possibilities for scaling up; in January 2019, the Cochabamba Secretary for Planning informed that the metropolitan Resilience agenda is considered part of the development of the "National Policy for Cities", designed by the Ministry for Public Works and the Ministry for the Environment. This Project has provided significant inputs to contribute to this policy among which could be mentioned: the metropolitan development strategy progress and focus report, and the evaluation of resilience indicators at Kanata Metropolitan Area according to the Sustainable Cities Initiative (ESCI).

There are still project documentation and studies that could contribute to future policy development. A possibility is to upload the project's documentation to the "web book" server of the Ministry of Environment, which is available without restrictions and is intended to continue providing inputs to the National Policy for Cities. This will help to inform and to communicate the positive outcomes of the project more widely; especially to the urban and metropolitan development specialists who will be involved in the future implementation and development of this policy. It is possible that the Ministry for Public Works could involve also UN habitat in the process of policy development since the intention of the national government is to make more visible the country's contribution to the SDG 2030 framework.

In coordination with the KMA technical team, Agua Sustentable and CIDRE will draft a new project design on climate change adaptation to continue a more research-oriented work with neighbourhood organisations and other economic productive organisations based on important learnings from the NCF5 Project. This can be used for outcome replication and scaling up. CIDRE is also undertaking its proposed agenda for partner matching and attracting new funding for the Trust Fund to finance additional mitigation investments.

1. ASSESSMENT OF THE IMPLEMENTATION OF THE PROJECT

1.1 Achievement of Outputs, Outcomes and Objectives

Planned Objectives	Indicator(s):	Achievement of the objective´s indicators:	Target achieved (yes/no):	Assessment of targets that have not been achieved:
Overall Objective: *to support the implementation of the "Sustainable Cochabamba" Action Plan through local experiences for improving urban climate resilience, with a rights and gender based approach*	**Climate Change**. OO-OVI1: By 2025, saved emissions of 2,500 Kilotons (Ktons) CO_2 in the metropolitan area due to improvements in local management systems for organic residues.	**Climate Change:** By 2025, 0.304 CO_2 Ktons will be saved in the metropolitan area due to project´s investments to better manage organic residues (bio digester). Additionally 588.18 CO_2 Kton will be saved in the metropolitan area due to improvements in local management systems for organic residue such as the industrial waste complex (268 Ktn) and project-supported initiatives like financing schemes (318.72 Ktn) and local compost production units (1.46 Ktn) initiated during project lifetime (indirect local investments).	**No**	The outcome up to the end of the project in 2018 should be seen as a contribution and step towards reaching the impact target in 2025. Lessons can be learned from problems encountered in engaging with formal and informal bureaucracy, which delayed the implementation of GHG mitigating investments. The project has encouraged four KMA Municipalities (Sacaba, Cercado, Quillacollo and Vinto) to improve or to start a local plant (production unit) for handling organic residues in an initial low scale; however, the four plants could be expected to grow in capacity over the next years; nevertheless, the data submitted on expected contribution has been calculated based on their current processing capacity.
	Development. OO-OVI2: By 2025, 10 % of the metropolitan investment budget is targeted for improving competitiveness, formal employment and economic climate-related adaptation for women.	**Development**. By 2018, 14.57 % of the metropolitan investment budget is targeted for improving competitiveness, formal employment and economic climate-related adaptation aimed at women.	Yes	Although the targeted impact level was achieved by the end of the Project, it is expected that the investments made up to the end of 2018 will require more public funding in the coming years in order to sustain the operation of those investments.
Specific Objective: to strengthen the capacities for adaptation and mitigation of climate change effects in the Kanata metropolitan area through leadership, innovation, investment and environmental prevention of women productive organisations, social organisations, universities, public and private entities oriented towards water efficiency, urban agriculture, organic waste management and smarter environmental planning.	**Climate Change**. SO-OVI1: By the year 2018, 49,745 women in the Kanata metropolitan area (14,600 in Tiquipaya; 20,569 in Quillacollo and 14,756 in Cochabamba) have improved their adaptation and mitigation practices for urban agriculture through the application of Nordic supported technologies for water management and organic residue.	**Climate Change**: By 2018, 20,196 beneficiary women from Cercado, Colcapirhua, Tiquipaya, Quillacollo, Vinto and Sipe Sipe Municipalities in the Kanata Metropolitan area have improved their adaptation practices for urban agriculture through the application of Nordic technologies for water and waste management (organic residues).	**No**	Due to the project's social dynamics and a high demand from many CBOs and TBOs to participate, and based on expected time, costs and geographic priorities, the initial scope of implementing in three municipalities was expanded to three additional ones, (Colcapirhua, Vinto and Sipe Sipe). The intention was to bridge the gap between the estimated and actual women beneficiaries in each municipality through communication activities such as printed material distribution and broadcasting of radio spots, which was based on the radio listening habits of the population and communicated by the TBOs in platform meetings (where the estimates predicted that local radio stations could reach a potential audience of >100,000 people/day). Unfortunately, due to late approval of the communication activities, the project could not assess the effects of change in the practices of women who had benefited from local investments driven by the Project.
	Climate Change. SO-OVI2: By the year 2018, 43,874 tons of CO_2 emissions will be saved due the application of Nordic technologies for water management, recycling and processing of organic residues in the Kanata metropolitan area.	**Climate Change**: By 2018, 93.42 ton of CO_2 emissions were saved due the direct application of Nordic technologies on water management (17.42 ton), recycling and processing of organic residues (76 ton). Additionally 56.93 ton of CO2 emissions were saved due to local investments implemented during project lifetime (indirect investments) for improving organic residue processing, funded with public resources (in Tiquipaya, Cercado and Vinto municipalities).	**No**	Although the expected savings in CO_2 emissions were not achieved, mainly due to bureaucratic processes and prolonged dialogues with the authorities for approvals, leading to delays of the investments. Still, a significant asset base has been achieved by the end of the Project which by 2025 will contribute with an additional 588,183 Tons of CO_2 emissions saved, mainly from improvements in waste management; through the investments made by the municipalities (1,463 tons), KMA (268,000 tons) and CIDRE (318,720 tons).

P1. *Women's productive, irrigation and neighbourhood organisations have been strengthened in their capacities in water management by applying Nordic technologies to achieve efficiency in water usage and to adapt to climate change.*	***Development.*** *P1-OVI1: By 2018, a 30% increase (from baseline) to cover urban water systems for three neighbourhood organisations placed in the highlands and hillsides in Cochabamba, due to the application of photovoltaic pressurization technologies.*	**Development**. By 2018, there was a 47% increase in coverage of urban water systems serving children from Itocta, Pucarita Chica and Monte Canto neighbourhood organisations due to the application of photovoltaic pressurization technology.	Yes	
	Climate Change. *P1-OVI2: By 2018, three hectares of highlands and hillsides were enabled for containment, predial arrangements and green areas, due to the application of hydro-seeding technology in Tiquipaya and Quillacollo.*	**Climate Change**. By 2018, 2 hectares were enabled for containment due to the application of hydro seeding technology in Tiquipaya and Quillacollo.	**No**	This far, 1.95 hectares were covered in Quillacollo Municipality; 1.12 in Tacata and 0.83 in Urkupiña districts in order to contain the Rocha Basin. For the Tiquipaya municipality 0.87 hectares were covered in the same name district. The three irrigation projects totalled 2.83 hectares; but unfortunately 0.83 hectares in Quillacollo were damaged in a local hailstorm in 2018. Climate related risks were monitored by project staff, but local materials used for this technology could not resist the intensity of the hailstorm.
	Climate Change. *P1-OVI3: By 2018, 1,200 elementary school students have learned and inform actively about using the dry toilet technology as an option for adapting to water scarcity in the metropolitan area.*	**Climate Change**. By 2018, 1,420 elementary school students (1,170 school students from Laura Vicuña, Eduardo Lopez and Hermano Pacifico Feletti schools in the Cercado South District and 250 additional students from Titiri, Laphia, Totora and Cruzani schools from the Khora Tiquipaya basin) have learned and actively inform on dry toilet technology as an option for adapting to water scarcity.	Yes	
Purpose 1. Output 1: 90 families directly involved in the implementation of photovoltaic pressurization technologies for recovering highlands	Achieved at Milestone 1	Photovoltaic pressurization technology for recovering highlands implemented at Pihusi Farming Community (TBO) supporting 174 families.	Yes	
Purpose 1. Output 2: 90 families directly involved in the implementation of photovoltaic pressurization technologies for increasing coverage of urban water systems	Implemented at Milestone 4	This output changed its scope. No family was involved in the implementation of the photovoltaic system installed at Laura Vicuña School, since there was some difficulty in coming to an agreement with them for a specific site to implement this photovoltaic technology. During the Project´s last milestone the proposed technology was set up to benefit students rather than families to increase water coverage (access and availability) for them.	**No**	1,600 students from 560 families benefited from the installation of a photovoltaic pressurization technology for increasing water coverage at their school.
Purpose 1. Output 3: 3 urban districts directly involved in validating the hydro-seeding technology	Achieved at Milestone 4	Hydro-seeding technology validated in the urban districts of Tacata, Urkupiña and Tiquipaya.	Yes	
Purpose 1. Output 4: 1 publication on dry toilet technology to be used for information/dissemination by grade level students.	Achieved at Milestone 4	A printed version of the Dry Toilet technology leaflet is available.	Yes	
P2. *Women's productive, irrigation and neighbourhood organisations have been*	***Development.*** *P2-OVI1: By 2018, a 20% relative increase in women's*	**Development**: By 2018, there was an average increase of 23% in the women's income	Yes	

strengthened in their capacities to grow adapted variations of flowers and vegetables, and lead in urban agricultural innovation for adaptation to climate change.	*income (from baseline situation and considering income generated only from floriculture), due to the commercialization of adapted varieties (more water efficient and with shorter production cycle) in local and national markets.* ***Climate Change**. P2-OVI2: By 2018, an average of 0.28 kilograms/person/day of organic residue (including pruning) are selected and processed for compost production in Tiquipaya, Quillacollo and Cochabamba.*	basically due to the commercialization of adapted varieties in local and national markets. **Climate Change**: By 2018, an average of 0.34 kg/per/day/ person of organic residue were selected and processed for compost production	 Yes	
Purpose 2. Output 1: 4 production protocols written by women organisations on production of varieties of flowers and vegetables which are adapted to climate change.	Achieved at Milestone 2	4 production protocols are part of the "Production Manual" printed version.	Yes	
Purpose 2. Output 2: 1 publication on urban agriculture with a gender and business to business (B2B) approach.	Achieved at Milestone 4	The "Women research agenda" and a flower growing commercial study documenting urban agriculture with a gender and business approaches was published.	Yes	
***P3**. Women's productive, irrigation organisations, universities and private entities are leaders in the development of "green business models" for innovations in microfinance, urban agriculture and waste management.*	***Development**. P3-OVI1: By 2018, € 600,000 has been mobilized in financial resources from public-private partnerships to support urban agriculture at the metropolitan area.*	**Development**: By 2018, € 622,316 was invested in public and private funding to support urban agriculture in the metropolitan area.	Yes	
Purpose 3. Output 1: 1 new microcredit product developed to finance the instalment of bio-digesters to support urban agriculture.	Achieved at Milestone 2	There is a printed version of an informative leaflet and a video on a microcredit to finance the instalment of bio digesters.	Yes	
Purpose 3. Output 2: 1 production protocol and 1 business model aimed at the production of compost and humus.	Achieved at Milestone 4	1 production protocol and 1 business model for the production of compost are presented in the printed report "Technic, Economic, Organisational and Environmental Evaluation and Systematisation of Tiquipaya's Compost Production Unit to be a Replicable Model for other Municipalities"	Yes	
Purpose 3. Output 3: 1 new microcredit product developed to finance the instalment of water treatment plants to improved access to water for irrigation.	Achieved at Milestone 3	Product Concept and Documents for operationalization, including a Funding Strategy, Legal and Financial aspects as well as a demand study on credit for WWTP and other waste management solutions were developed in the form of a Trust Fund.	Yes	
Purpose 3. Output 4: 1 publication on the application of 3R strategy in the metropolitan area and its link to business	Not achieved at Milestone 4	No publication was made	**No**	This output was programmed to inform on the implementation of a joint metropolitan strategy to address waste management considering the 3R approach that took the form of a project named "Industrial

development.				Complex for Waste Treatment" extensively discussed in the Metropolitan Council and Platform. Unfortunately, the decision on a complex location and the drafting of the agreement between Municipalities and the province government took over a year, delaying project implementation, systematization and publication of a printed report aimed to enhance climate change mitigation.
Purpose 3. Output 5: 2 business plans developed for the micro-credit products	Achieved at Milestone 4	2-business plans were developed for the micro-credit products.	Yes	1) Conclusive report on bio digester as credit product and BIOL market research; 2) Concept and operating analysis of the Trust Fund (legal, financial and demand study).
P4. *Women's productive, irrigation and neighbourhood organisations, universities and public and private entities have been strengthened in their capacities for networking, sustainable and participatory-smart planning, and have agreed on a joint agenda of responsibility to achieve climate resilience in the metropolitan area.*	***Development.*** *P4-OVI1: By 2018, one agenda of common responsibility jointly agreed by multi-stakeholders as a supporting mechanism for the environmental orientation of the metropolitan investment plan.*	**Development**: By 2018, one agenda for common accountability, named "Resilient Agenda" was jointly agreed by multi-stakeholders as a support mechanism for the environmental orientation of the metropolitan investment plan.	Yes	
Purpose 4. Output 1: 1 metropolitan platform installed as a scenario for smart planning with a gender approach	Achieved at Milestone 1	The Metropolitan platform was installed in 2016 as a planning scenario for leading and supporting resilience at KMA with the collaboration of KMA's technical team.	Yes	
Purpose 4. Output 2: 1 Baseline report drafted	Achieved at Milestone 1	1 Baseline report was drafted	Yes	
Purpose 4. Output 3: 2 local policies and/or incentive schemes to address climate resilience discuss and agree with private/public entities	Achieved at Milestone 3	2 local metropolitan policies on waste management and water management for addressing climate resilience were agreed with private/public entities.	Yes	
Purpose 4. Output 4: 1 published report on best practices for climate resilient cities in metropolitan areas.	Achieved at Milestone 4	There is a published report named "EDIM's situation and Contributions to the 1st Workshop"	Yes	
Purpose 4. Output 5: 1 External Evaluation	Achieved at Milestone 4	The "Evaluation for Indicators of the Sustainable Cochabamba Action Plan" was elaborated	Yes	

1.2 Deviations from planned Outputs and Activities

- **Specific Objective - Indicator 1**: By the year 2018, 49,745 women in the Kanata metropolitan area have improved their adaptation and mitigation practices for urban agriculture through the application of Nordic supported technologies for water management and organic residue.

Deviation: *By 2018, 20,196 beneficiary women from Cercado, Colcapirhua, Tiquipaya, Quillacollo, Vinto and Sipe Sipe Municipalities in the Kanata Metropolitan area have improved their adaptation practices for urban agriculture through the application of Nordic technologies for water and waste management (organic residue).*

During project implementation, the team had to constantly choose whether or not to include in the programme workshops and trainings also interested women groups from other municipalities, which were not considered in the project from the start but were participating very actively in the metropolitan platform. The project team chose not to lose women participation in the larger platform and thus expanded the geographic scope of events for reaching out to those other women groups. This implied a re-scheduling of trainings for women in the three initially planned municipalities, depleting women leader's possibilities for replicating the contents to more peers, as well as in knowledge sharing and communication activities regarding the new technologies to be used in water and organic waste management. Ultimately the geographic area covered by the Project turned out to be much larger than originally designed, which led to a reduction in beneficiary women but to a greater participation of groups of women and municipal representatives in some of the Project stages such as planning and international events which were organized by the Project and the Metropolitan Team.

- **Specific Objective - Indicator 2**: By the year 2018, 43,874 tons of CO_2 emissions will be saved due the application of Nordic technologies for water management, recycling and processing of organic residues in the Kanata metropolitan area.

Deviation: *By 2018, 93.42 ton of CO_2 emissions were saved due the direct application of Nordic technologies on water management (17.42 ton), recycling and processing of organic residues (76 ton). Additionally 56.93 ton of CO2 emissions were saved due to local investments implemented during project lifetime (indirect investments) for improving organic residue processing, funded with public resources (in Tiquipaya, Cercado and Vinto municipalities).*

Some of the main hurdles experienced when it came to mitigation impact were:

i. Delays in the implementation of technology due to lengthy processes for customs clearance of the imported equipment (coding, labelling and misinterpretation regarding technology use by the customs authorities) which was handled by the Project staff, although with some difficulty;

ii. Delays in metropolitan budget allocations, approvals and disbursements to address large waste management projects often followed from difficulties within the political context and/or with internal bureaucratic procedures in the KMA Council. These were risks which the Project had not properly included under its risk management strategies (although the willingness encountered from both local and provincial authorities to collaborate on the project should be duly noted);

iii. Administrative difficulties within the KMA municipal governments to allocate funds for minor investments in water management and waste management;

iv. The project's communication strategies for dissemination were implemented a bit late, where the enormous geographic range encountered to coordinate these activities reduced the scope of reaching potential beneficiaries.

In general, delays in getting the new technology operational and demonstrated, as well as very slow processes for local investment approvals for photovoltaic, water and organic waste treatment led to a shortfall between the expected project impact on GHG emissions and the actual outcomes. All of the agreements made with local authorities for waste management projects started more than a year later than initially planned. With a different planning scenario, the ambitious contribution of these mitigation investments would have been more realistic.

- **Purpose 1 – Indicator 2 on Climate change:** By 2018, three hectares of highland and hillsides were enabled to contain predial arrangements and green areas, due to the application of hydro-seeding technology in Tiquipaya and Quillacollo.

Deviation: *By 2018, two hectares were enabled for containment due to the application of hydro seeding technology in Tiquipaya and Quillacollo*.

In the first semester of 2018, the project team had been able to cover 2.83 river bank hectares on the Rocha and Tiquipaya Rivers with different vegetation layers applying the hydro-cannon (hydro seeding) technology, thus close to reaching the 3 hectares as planned. In coordination with the Secretary of Mother Earth and the Ministry of Environment, the team had planned to perform one more job for vegetation coverag to contend the Rocha River at the Quillacollo Municipality. Unfortunately, in April 2018 a hailstorm occurred which affected five out of seven municipalities in the metropolitan area and damaged at least 0.83 hectares that had been previously covered with vegetation on the Rocha River bank. Given the damage caused by the hailstorm in the nearby plantations of the River, the local Government of Cochabamba decided to allocate aid to the affected families, which made it impossible to continue with the final part of the hydro seeding activities.

Nevertheless, as part of the project agreement closed and based on the collaboration undertaken during project implementation, the Cochabamba Departmental Service of Basins (SDC) has promised to replace the vegetation coverage in 2019, once the state of emergency has been lifted in the area.

- **Purpose 1 - Output 2**: 90 families directly involved in the implementation of photovoltaic pressurization technologies for increasing coverage of urban water systems.

Revised output; *1,600 students from 560 families benefited from the installation of a photovoltaic pressurization technology for increasing water coverage at their school.*

During implementation, the scope for this output was changed after a dialogue with the NDF. The revised activity was implemented in the southern district of the Cercado municipality because of its low water coverage (where according to the latest census only 65.5% of families have daily access to water by alternative means). This district also lacks a water service network (only 7% of families living in this district have access to water through a network); hence, most families can consume a maximum of 33 litres per person and day (lppd) by purchasing water in cubic meters from water-trucks.

The project staff proposed the installation of a photovoltaic system as an alternative power source for a water distribution network to benefit at least 90 families (many neighbourhoods are still not connected to the power grid), taking water from a common well or water source managed by local organisations. In this way, the project team had dialogue with the representatives and assemblies of four TBOs (*1ero de Mayo, Nuevo Amanecer, Bolívar* and *1ero de Septiembre*), which were seen as potential beneficiaries. Dialogues were held in order to identify and agree on suitable places for installing this technology.

While the project were in dialogue with the first two TBOs (*1ero de Mayo* and *Nuevo Amanecer*), the national government built a water distribution system propelled by an electric engine. This investment of US$ 29,000 in each site took place through a program called “My Water”. In the case of *Bolivar* TBO, laboratory test certified some contaminant elements in nearby water sources, while for *1ero de Septiembre* there was no formally conclusive agreement made among neighbours, although there was a common consensus on the need for this service.

On October 2017, representatives of *1ero de Mayo* submitted a request to the project for installing this technology in the Laura Vicuña Elementary and High School, a large school where water provision had been identified as a major concern. The existing diesel propelled system was too expensive for the school to operate, where in some parts of the year, especially during spring the parents had to contribute additional funds for the school to be able to purchase water from water trucks for the school bathrooms. Approximately 560 families living in the *1ero de Mayo* neighbourhood have their children studying at the Laura Vicuña Elementary and High School.

As a response to this request, a photovoltaic water bumping system was installed as a two-part system in the site belonging to "Heart of Maria Congregation of Nun Services", a religious institution in charge of Laura Vicuña Elementary and High School (in morning and afternoon shifts) and the Maria Auxiliadora Orphanage located in the *1ero de Mayo* neighbourhood. With the support of the school authorities the Project staff held a meeting with the school's parental representatives to agree on the design of the system with a 600 KW per hour (KW-H) of power generated through a photovoltaic panel with a working pressure of 4200 WP to be installed in the school for water provision. For the orphanage a photovoltaic panel of 250 WP was installed for bumping water.

Today, this two-part system serves 1,600 students and has improved the service of 20 bathrooms (the first elementary School module), four showers (the first module of the elementary school) and ten bathrooms (the second module for high-school). When it comes to the orphanage, the system will enable the use of 16 bathrooms (three bathroom modules), 16 showers and 15 laundry stations.

- **Purpose 3 - Output 4**: One publication on the application of the 3R strategy in the metropolitan area and its link to business development.

Deviation: *Up to this date no publication has been produced.*

This output was programmed to inform on the implementation of a joint metropolitan strategy to address waste management based on the 3R approach (Reducing, reusing and recycling). This took the form of a project named "Industrial Complex for Waste Treatment" extensively discussed in the Metropolitan Council and its platform. Unfortunately, the final decision on a complex location and the drafting of the agreement between the municipalities and the provincial government took over a year, which delayed project implementation and the systematization and publication of a printed report aimed to enhance further efforts towards climate change mitigation.

At the beginning of the project and as a part of the coordination with the metropolitan platform, the technical team and the Metropolitan Council, there was a consensus to discuss the proposal to build an Industrial Metropolitan Complex of the organic residue collected. This theme was given priority as a regional strategy and as a mean to prompt the management of organic waste.

The agreement between the project team and the authorities of the Metropolitan Council, was that upon initiating the building of this important complex, both the project and the local University (San Simon University) would grant their support for the systematization of this initiative, highlighting the coordination and strategy of organic waste management agreed by all municipalities as well as the technology to be used in this complex.

Unfortunately, the political and bureaucratic dynamics of the municipalities of the area and in the Metropolitan council, took too long time to initiate this complex construction, which therefore at the time of closing the project had not yet been started. Nevertheless, through short news published in the Metropolitan newsletters; the project did document the advancement of negotiations for the implementation of this project; although a more ample document was not drafted which could have certified the joint willingness on a metropolitan level to collaborate in the management of organic waste.

1.3 Achievement of NCF indicators

NCF indicators	Results
1. Number of beneficiaries reached (women/men)	40,757 KMA inhabitants (20,196 women and 20,561 men) from Sacaba, Cercado, Colcapirhua, Quillacollo, Tiquipaya, Vinto and Sipe Sipe municipalities were reached by services and goods provided by the Project to improve their quality of life. This figure corresponds to women and men involved in various project activities (e.g. research, capacity building, platform dialogues, training, meetings and international events), and other neighboring families benefitting from services provided by the Project; such as waste collection and/or waste water treatment (see Annex 2 for

	detailed information).
2. Number of people with increased resilience to climate change (women/men)	6,341 inhabitants (3,101 women and 3,240 men) increased their resilience to climate change through their involvement in capacity building activities on environmental issues and climate change adaptation.
3. CO_2e emissions reductions (Current at project completion and expected during the lifetime of the project's mitigation investments)	At project completion, 93.42 Tons of CO_2 emissions had been reduced due to the use of the project's assets. A total of 538.04 Tons of CO_2 emissions is expected to be reduced during project's mitigation lifetime investment (the assets). By 2025, 588.18 Kilotons of CO_2 emissions will be saved in the metropolitan area due to improvements in local management systems for organic residues.
4. Number of green business concepts tested	One green business microfinance product was tested corresponding to a credit product to finance bio digester implementation.
5. Number of new decent jobs created (disaggregated by number of permanent and seasonal (women and men))	N/A
6. Number of people with improved livelihoods/income-generating possibilities (women/men)	A total of 446 people (336 women and 110 men) within 14 associations have improved their production methods for flower growing as a livelihood.
7. Number of multi-stakeholder partnerships created	One metropolitan platform installed for planning and dialogue for undertaking strategic programs and projects.
7. Amount of funds leveraged (actual project co-financing and possible secured future investments to scale up/replication)	€ 149,743 leveraged as co-funding during project implementation comprising of € 78,067 funded by Diakonia as the grantee and €71,676 through in kind contributions from the local partner. € 622,316 in development funds leveraged and allocated by the Tiquipaya (€ 113,863), Quillacollo (€ 57,143) and Vinto (€ 103,310) municipalities and also the KMA (€ 348,000) in projects to be executed until 2020 in the areas of water treatment, compost production and for improvements in gender related issues.

2. CLIMATE CHANGE ACHIEVEMENTS

Adaptation

- **Capacity building**. In total **1,420 students were reached** as follows: (1) ***1,170 elementary grade students*** from 4th to 6th grade in Laura Vicuña, Hermano Pacifico Feletti and Eduardo Lopez schools completed an environmental program focused on climate change adaptation. The program, named "*Water Guardians*" was based on 3 modules. (2) ***250 elementary students*** of 3rd to 5th grade from Titiri, Laphia, Totora and Cruzani elementary schools completed the first module on Water Management and Climate Change.
- **Urban agriculture**. (1) ***4 production protocols*** written by women organisations were published and distributed among FEDEFLOR members to disseminate findings on improved water efficiency use for cultivating lysianthus and carnations flower varieties by emulating water stress periods and encouraging early adaptation. (2) A financing instrument in the concept of a ***Trust Fund*** was designed to finance credit demand for building Waste Water Treatment Plants (WWTP), bio digesters and other technical solutions to improved access to water for irrigation and improved organic waste management. This financing instrument predicts to reach ***US$ 50 million*** from an initial US$ 10 million equity investment. (3) In total, **3,101 adult women** in the Kanata Metropolitan area **have improved their adaptation practices for urban agriculture** by participating in capacity building activities on environmental issues and climate change adaptation.
- **Resilient Planning**: (1) A ***multi-stakeholder platform*** which integrates CSOs, NGOs, companies, business representations and chambers, local and national authorities is in place and operational, discussing and agreeing on strategic projects to improve climate resilience at the Kanata Metropolitan Area. (2) This platform has produced a joint ***strategy and agenda towards climate resilience*** with 101 future actions to be undertaken. (3) A hydro-cannon technology was tested by the project staff

and the Cochabamba Province Basin Service (SDC) and validated as useful equipment for risk and basin management.

Mitigation

- By 2018, **93.42** ton of CO2 emissions were saved due the direct application of Nordic technologies on water management (17.42 ton), recycling and processing of organic residues (76 ton).
- By 2025, the Project's mitigation investments such as the photovoltaic systems and the bio digesters will contribute with a total of **538.04 Tons of** saved $\mathbf{CO_2}$ emissions.

3. DEVELOPMENT IMPACT AND CROSS-CUTTING ISSUES

Development Impact

1) By 2018, 14.57 % of the metropolitan investment budget is targeted for improving competitiveness, formal employment and economic climate-related adaptation aimed at women.
2) By 2018, a total budget of € 622,316 have been approved and allocated by Tiquipaya, Quillacollo and Vinto municipalities and also by the Kanata Metropolitan Area for projects to be implemented up to 2020, in the areas of water treatment (water for irrigation to support urban agriculture), compost production and women entrepreneurship in urban agriculture. These amounts correspond to the small-scale projects developed in dialogue with local authorities as part of the commitments during the metropolitan forums which were organised by the Project staff.
3) By 2018, the Metropolitan Platform composed of Civil Society Organisations (CSOs), companies and local authorities remain as the main forum for addressing environmental issues in a participant, democratic and joint manner. This platform has agreed to implement an agenda towards resilience supported by a development strategy and an investment plan.

Cross cutting issues

Promotion of human rights: One of the main environmental problems experienced in many cities of Cochabamba province is the lack of water and sewerage systems. Therefore the project focused on promoting improved management for metropolitan and strategic water sources such as the Rocha River, small water sources (local rivers) and the superficial or basin sources of water which are used for urban agriculture. In this regard, the advocacy actions and awareness-raising towards local authorities focused on the obligation to secure a fundamental human right such as the right to water (as established in the National Constitution).

Another strategic intervention was the adaptation to climate change through water management that involves all social structures and organisations (the use of water and the right to easement of water) through the observation of the most relevant social and cultural rights of the Territorial based organisations' (TBOs) rights to water. When dealing with the various stakeholders, the Project made a clear emphasis on environmental rights based on an environmental justice approach. These efforts have managed to build awareness and consciousness of the authorities (who are accountable) when approving water related investments, such as for the Waste Water Treatment Plants in Quillacollo municipality.

Gender equality: Gender mainstreaming was seen as the most important cross cutting issue of the Project by improving women's information and access to natural resources, technology, research agendas, capacity building, in order to create new income opportunities. However, this plan does not only favour women's presence, but most importantly the fact that women are well informed and have the right to make their own decisions regarding their socio-economic contribution to climate resilience. Some project indicators which display gender mainstreaming are:

1. A 23% increase in income from sales of adapted carnations to a larger market, mainly benefitting women.
2. Thanks to the boost of the Project and Province authorities to increase gender-sensitive budgeting on a regional scale, the Metropolitan Council approved a € 348,000 project named "the Women City

Centre". This project was planned by the KMA technical team, discussed in the metropolitan Platform and initially funded by IADB as a strategic metropolitan project with the aim to promote gender equality and social inclusion with the provision of services for legal and economic empowerment in one single place. This initial funding will allow the KMA to develop a large infrastructure providing services exclusively for women's economic empowerment. During 2020-2025, this initiative will continue to enhance public funding from the seven KMA municipalities in the economic and health sector programs since the project addresses gender-based violence, improved health and legal services for women and youth, as well as in promoting women entrepreneurship.

3. 23 women from flower growing associations and 12 women TBO representatives worked together with the National Women Leaders Group (http://www.lideresas.cambioclimaticoyagua.org.bo/), a national platform for women working on climate change adaptation and mitigation; sharing individual and common experience and challenges, as well as good practices and lessons learned.
4. Project activities and events with a variety of CSOs and private institutions (including Micro Finance Institutions) enabled many side collaborations with productive organisations led by women and private actors. Experiences in flower growing which were documented in the research journals helped CIDRE to adjust its credit product, which was initially oriented exclusively for the acquisition of flowers and planting these and not to support the whole production cycle of growing flowers.

Good governance: The project opened up a window of opportunity for the Province of Cochabamba to improve its administration and local governance. At the beginning, the Metropolitan set-up was not fully operational pursuant to national law. The design and implementation of the Project enabled coordination not only between the newly created Metropolitan Council and the KMA Technical Team, but also among KMA Municipalities (including Counsellors and technical teams in each municipality). These articulation and communication channels helped the project to coordinate large activities like the Resilient Cities Symposiums and Metropolitan Forums. As side benefits of improved governance, the Government of Cochabamba was able to introduce the Metropolitan Technical Team Code into its budget system for current and future allocation of resources aimed at implementing more strategic projects.

4. ASSESSMENT OF THE RESULT AND IMPACT OF THE PROJECT

4.1 Relevance

The Bolivian State is currently in the process of implementing a better planning approach and addressing two current issues prioritized by citizens and the public opinion: (i) Sustainable Metropolises and (ii) Climate Change Adaptation. In 2018, in order to address these issues, the Ministry for Water and Environment, the Ministry for Public Works and the Ministry for Development Planning concluded an agreement with UN Habitat to receive further advice in regards to Sustainable Development Goal no 11 of Sustainable Cities and Communities.

One of the main suggestions from UN Habitat was to capitalise on the progress made at the Kanata Metropolitan Area and its joint planning approach towards resilience. This shows that the NCF5 project was timely and properly implemented with the participation of local and national authorities, and also a forerunner by establishing an agenda for climate change adaptation and mitigation based on a metropolitan perspective for resilience and sustainability.

The "Resilience agenda" includes issues such as waste water and waste management which are also discussed in the metropolitan areas of La Paz and Santa Cruz. When these three metropolitan areas evaluated their respective progress on climate change adaptation and other metropolitan issues, they used the Project's publication on EDIM (Metropolitan Development Strategy, acronym in Spanish). They found several similarities on climate change topics being addressed in all three metropolitan areas which dealt with future challenges in resilience: e.g. waste management, urban mobility, water management, citizen's capacity for adaptation and in mitigation of Green House Gases (GHG). All guides and strategies are included in the Project's documentation and studies which are available to the public upon demand.

4.2 Effectiveness

On technology implementation

Regarding the purpose to introduce new technology within the Kanata Metropolitan Area and in Cochabamba, which aimed at technology transfer, risk management and climate change adaptation, mainly in relation to water sources and neighborhood organisations this was addressed with the hydro cannon. Here the Project has not only made this new technology available to the local authorities but also trained them, ensuring proper acknowledgement of its operation and management along with the responsibility being delegated to the Provincial Basin Service (SDC).

This technology was first introduced for the sowing of vegetable layers which could be of great assistance to farmers, especially to control landslides in the higher and more humid areas during the rainy season. However during project implementation, through research and investigations in the use of national products to replace imported ones, such as the case of the sawdust layer and natural seed species, the team realized that the hydro cannon could be far more useful and practical. One innovative example is to establish a new river bed and to improve the containment of rising waters during the rainy season which the SDC plans to execute in 2019 through the use of hydro cannons.

In the case of the photovoltaic panels, regardless of the delay to install the panels as well as the delay in their implementation, the Project found clear evidence that solar based systems represent a relevant amount of savings compared to the use of diesel propelled pumping systems, where this is an affordable alternative solution for the provision of water to those sites that fall off the power grid or are geographically further away from the grid, also within metropolitan areas.

On adaptation capacities

On a local level (in neighborhood organisations and school authorities), the Project managed to conduct and disseminate the contents of the training programs, raising awareness and improving the capacity for local climate change adaptation. Having introduced the dry bathroom technology as part of the environmental program in relation to water scarcity, from which the elementary school students in Cochabamba highly benefitted; shows that the knowledge acquired by children and their families could be strengthened, showing them a way to more practical and low-cost alternatives to support communities in climate change adaptation.

In the case of the economic productive organisations, the adaptation was focused mainly on a more efficient use of water in the flower growing sector. Another achievement of the Project was to show women who produce flowers a new method to reduce water consumption within the entire production cycle, as well as the possibility to replicate this method also in other associations. This idea could be more closely studied by families in the sector, so that they may invest in water irrigation systems that the Project has shown to be efficient when it comes to water management.

On the mitigation ambition

The project proved to be effective by addressing in each municipality of the metropolitan area the dire need to reduce GHG emissions produced from two main sources: the concentration and the wrongful disposition of organic and non-organic waste.

Nevertheless, the initially proposed investment levels were neither timely addressed by local authorities nor by the the Provincial Government in order to comply with the project's targeted benchmarks for GHG reduction. The project staff has assessed that this was not merely due to the local authorities' lack of willingness to invest, but to the lengthy political and bureaucratic processes needed in order to allocate resources for these investments in their budgets, where the project team from their side could not speed up these processes on the local or provincial level.

The construction of treatment plants for residual waters and the municipalities' improvement of their compost production units were undertaken almost 18 months after the agreements had been signed, which took place at the first metropolitan forum for the management of residues in 2016. Furthermore, the level

of initial investments were much lower than expected, therefore the contribution of these investments in terms of the reduction of hazardous emissions of greenhouse gases was much lower than planned.

On the promotion of urban agriculture

The subproject on urban agriculture was one of the most relevant for local stakeholders and beneficiaries as well as the most visible to those involved, e.g. the Secretary of Madre Tierra (Mother Earth). Under this sub-project, all of the expected results were achieved and publicly acknowledged by FEDEFLOR (the provincial federation of flower growers).

Although the flower growing sector mostly engages women, the main aggregated value of this sub-project was to incite these women into a reflective process, including decision making, and research related to flower growing, which at the start of the project many of them had not previously heard of. This very relevant information and capacity building for women did not only strengthen their leadership within this activity, but also stimulated their involvement in other neighborhood and municipal activities.

Through its interventions the Project has also managed to reposition and value the capacity of farmers in order to try out and find local solutions, by using local materials and mitigating problems such as plague infections on plants. This also made it possible to manage some unity and conviviality of the floriculture associations and their departmental federation (FEDEFLOR) which has allowed for a revival of this activity within the metropolitan area.

4.3 Efficiency

Financial performance shows a **92%** use of the total project budget executed during a 33-month period (including the project extension). The first and forth milestones were the most resource consuming ones with 39 % and 20% respectively of the project budget, which was related to more active field work in order to initiate and implement new water technologies together with the provincial institutions (SDC and the Secretary of Mother Earth).

The processes needed for testing, understanding and researching the use of local materials to enable the correct application of new technologies', especially the hydro-cannon, were unfortunately underestimated both in time and cost, as well as regarding processes needed for importing and customs clearance. These were the main reasons behind the increased resource allocation needed for these budget items in the second version of the budget. Nevertheless, in the end the extra resources and time allocated paid off because the initial intended use of this technology was for improved risk management. Only later was the technology extended and tested for other innovative usages in basin management. Future costs for locally provided technology will be bearable for provincial institutions (the estimate is 13-17% in savings by acquiring local vs imported materials for the hydro-cannon).

When looking at the originally contracted implementation period of 27 months, the budget execution reached 73%, mainly in training and capacity building through urban agricultural events, research expenses framed in the Trichoderma research agenda (a local mushroom used as plague controller) and planning events with local authorities. The funds used under the first two milestones of the project and the positive results achieved enabled two later Trichoderma reproduction orders (June and November 2018), which were paid directly to the university laboratory by participant farmer associations, and which were used for two seeding campaigns. This shows the validity of subsidizing initial reproduction of this particular mushroom which proved to be an effective natural plague controller.

With regards to the major budget headings, these are some cost categories listed from minor to major: Other Costs (84%); Local Office Costs (97%); Equipment and Supplies (95%) and Human Resources (109%). The last two were the main operational costs categories which were reflected in the need for implementation of technology, training, and other stakeholder related activities which were important to achieve outputs and results. All technology related costs (equipment, spare parts and implementation) were executed up to 96%, including the possibility to perform technology transfers to public entities such as the SDC and the Departmental Government of Cochabamba. It is also important to mention that our

joint work together with local authorities contributed to save costs due to the free use of public spaces for project activities such as venues for meetings and capacity building.

Regarding urban agriculture and waste management which involved the participation of social organisation and productive organisations all programmed studies were achieved, and where possibilities for replication lies not only in the future regular meetings of FEDEFLOR, but also in the other associations' internal capacities, the creation of events and diffusion of printed materials such as the research agendas and protocols in support of women producers.

In order to evaluate the efficiency of the Project in relation to profits made from the assigned resources to each project theme, the Project team analyzed the Social Profit over social Investment ratio, which comprises of:

Return on investment = Approved investments during project – NDF investment / NDF investment

Where:

- Approved investments during project = Investments formally approved (registered in the municipal/province budget) by local or provincial authorities as a result of the Project's agreed agenda and/or commitments.
- NDF investment = the Project's final budget execution for a specific project theme corresponding to NDF resources (without including human resources, office and indirect costs).

With the following list of approved investment projects:

Project Theme	Approved investments (€)	Composition	NDF budget investment (€)*	Return on Investment
Water Management	111,553	54,410 in Tiquipaya for protecting water sources at project sites. 57,143 in Quillacollo for building Waste Water Treatment plants at project sites.	100,347.54 Corresponding to expenses on water technologies, printed materials and capacity building events.	11.67%
Urban agriculture and Waste Management	162, 763	59,453 in Tiquipaya for a waste selection truck. 103,310 in Vinto for closing the old landfill and building a compost production unit.	104,448.89 Correspond to expenses on assets to collect waste, the implementation of a bio digester, research, publications, meeting forums and international events.	55.83%

- Data are based on the finally executed funds

4.4 Impact

During evaluation meetings held with the KMA Technical Team, the Secretary of Planning and the Secretary of Mother Earth the following impacts received most acknowledgements and appreciation:

1. Waste Management: The dialogue with KMA was successful and all municipalities improved, changed or updated their local waste management introducing realistic possibilities to treat organic waste and produce materials locally to support urban agriculture. This was an effective approach to provide a pilot and model example (along with a printed study) to all municipalities based on Tiquipaya's compost production unit, which went from a processing capacity of 2 Tons per day to a current capacity of 8 Tons per day of organic waste. Impressed by this example, other municipalities in the KMA increased their public funding with a total of € 162,763 for similar initiatives in three projects for the Tiquipaya and Vinto Municipalities to improve their local sites for waste management.

The Project organised a series of related events; joint discussions and workshops with local authorities including important policy discussions and commitments made by the authorities on how to improve

waste management. This cleared and provided for a structured path to address jointly this environmental challenge. This also led to the Provincial authorities developing a larger metropolitan project named "the Industrial waste complex", with an approved public investment of US$ 47 million from the Ministry for Environment to be implemented up to 2021.

2. GHG emissions: Another significant result for the Metropolitan area was the impulse given by the project to strengthen the institutional culture for monitoring reductions in GHG emission, via large-scale projects as well as through smaller projects. For the large-scale projects, the consensus among the provincial authorities was that the Secretary of Mother Earth should be accountable to monitor and update these indicators, whereas for the small-scale projects the Metropolitan Technical Team could monitor these by using the parametric tool based on economic activities, developed by the Project. With these two monitoring work streams, the Cochabamba Departmental Government will be in a better position to contribute to the coming 3rd and 4th National Communication to the United Nations Framework Convention on Climate Change (UNFCCC).

3. Flower growing: the improvement for the flower growing associations was significantly noticed by local authorities in five of the seven municipalities of KMA. The direct involvement of 336 women from 14 associations in research and knowledge activities regarding the use of Trichoderma and bio fertilizers was particularly appreciated by FEDEFLOR. Through project support and other incentives, six associations are now exploring a broader business platform in Santa Cruz. If this succeeds and translates into more business opportunities for the productive organisations at KMA, a strong demand would be expected also from other productive organisations for more support and orientation on urban agricultural improvement.

4. Women leadership on climate change issues: Diakonia and Agua Sustentable have received previous funding from NDF under NCF1 for the possibility to form a group of women leaders addressing climate change adaptation. At the end of that project two modules had been developed on effective methods to train women on climate change issues. Diakonia and Agua Sustentable have continued developing this initial outline and have been able to replicate and to scale up from two to four modules. This has been led by women leaders who were making some adjustments to these outlines for them to be suitable also in an urban context.

4.5 Sustainability

Technical Sustainability

- Agua Sustentable will continue the institutional work on Climate Change at the KMA in coordination with the Provincial authorities. This opens up for the possibility to use all locally produced materials for trainings and capacity building also with other local organisations and with new local authorities. With great satisfaction the alliance with the Province Basin Service (SDC) will enable the use of the hydro-seeding cannon in already planned trainings, mainly for basin management and recovery; this time focusing on strategic water sources for the entire Kanata Metropolitan Area and not only for the main basins like the Rocha River.
- As a result of the international collaborations within the KMA Project, the technical team now collaborates with a large network of specialist from Mexico, Perú, Chile and Colombia, all working on relevant environmental issues in urban areas. Some local governments, like Cercado, have ongoing technical collaboration with the KMA Project and have already invited some of their specialists for future engagements.

Financial sustainability

- Through Agua Sustentable, Diakonia will continue funding women leaders and women groups working on adaptation and mitigation options as a project follow up in 2019. This will constitute a base to attract other donors' interests based on a mainstreamed approach of gender equality and women economic empowerment in resilient cities. Diakonia will follow closely the development of the Women City Centre metropolitan project since this will help to target other development areas connected to Diakonia's ongoing country program and the prioritised thematic intervention areas of human rights and the elimination of gender-based violence.

- There are on-going local investments (€ 103,310) in Tiquipaya and Vinto Municipalities, and specifically in Vinto which strives to improve its organic waste management and closing up its current landfill. The Vinto, Tiquipaya and Sacaba Municipalities will continue to produce local compost throughout 2019. This is also a sign of political and technical willingness to fulfil previous commitments aimed at improving local resilience.

Environmental Sustainability

- An immediate and urgent task for Diakonia is to coordinate with the Secretary of Mother Earth, and all involved entities in direct coordination with the Ministry for the Environment, in order to find the best means to include and articulate the KMA contributions in the GHG national reporting mechanism to the United Nations Framework Convention on Climate Change (UNFCCC).
- Since the joint Strategy and Agenda for resilience contains 101 actions to be implemented until 2025, Diakonia and Agua Sustentable will continue to inform NDF/NCF during the period up to December 2020 on the relevant improvements on air quality, urban mobility and waste management, which are the topics to be considered as main priorities for the coming years.

5. POTENTIAL TO SCALE UP AND FOLLOW-UP INVESTMENTS

Policy to scale up

In January 2019, the Cochabamba Secretary for Planning, informed that the metropolitan resilience agenda is considered part of the development of the "National Policy for Cities", designed by the Ministry for Public Works and the Ministry for the Environment. This Project has provided significant inputs to contribute to this policy among which could be mentioned: the metropolitan development strategy progress and focus report, and the evaluation of resilience indicators at Kanata Metropolitan Area according to the Sustainable Cities Initiative (ESCI).

According to this provincial authority, there are still a lot of the project's documentation and studies that could contribute to the future implementation and policy development. It is quite possible that the Ministry for Public Works could involve also UN habitat in the process of policy development since the intention of the national government is to make the country's contribution to the Sustainable Development Goals framework more visible.

After the visit of the NCF project officer to the Ministry for the Environment in October 2018, a possibility arose that the project's studies will be uploaded to the web server of this Ministry, into a space named "web books" which is available without restrictions and is intended to continue to provide inputs to the National Policy for Cities. This will help to inform and to communicate the positive outcomes of the project more widely; especially to the urban and metropolitan development specialists who will be involved in the future implementation of this policy.

New Project design for outcome replication and scaling up

In coordination with the KMA technical team, Agua Sustentable and CIDRE will draft a new project design on climate change adaptation to continue a more research-oriented work with neighbourhood organisations and other productive associations based on important learnings from the NCF5 Project.

Follow-up on investment

CIDRE is also undertaking its proposed agenda for partner matching and new funding possibilities for the Trust Fund. Based on this agenda there is an interest to approach SwedFund in coordination with the Embassy of Sweden, and also NEFCO via NDF's project staff, as potential future investment partners. This will be reported on to NDF (though outside of the agreement period).

Project staff will also continue to monitor the following approved and scheduled investments at the Kanata Metropolitan Area, as well as their contribution to the reduction of greenhouse gas (GHG) emissions:

Investment	Theme Area	Amount approved	Period to be undertaken	Expected GHG reduction (CO_2 Tons) until 2025
Sustainable Sanitation Trust Fund (CIDRE) placed at Cercado but targeted to benefit KMA	Water and waste management	US$ 10 million	2019 - 2023	318,720
Metropolitan Industrial Waste Complex placed at Quillacollo municipality but targeted to benefit KMA	Waste management	US$ 47 million	2019 - 2021	268,000
Metropolitan electric train, which will transit from Sipe Sipe to the Sacaba municipality.	Urban mobility and energy	US$ 447 million	2018 - 2020	1'020,000
Total		**US$ 504 million**		**1'606,720**

N.B. the investment decision on the Metropolitan electric train is outside of the direct contribution of the project.

6. UNEXPECTED OUTCOMES

The progress on organic waste treatment in the Sacaba Municipality turned out to be extremely positive during the project period. Discussions at the KMA Council and active participation in project events like the Metropolitan Forum for Waste Management, the Resilient Cities Symposium and Fair, as well as during program visits to Tiquipaya, evidenced a strong political will from the authorities not only to catch up with the largest cities in terms of waste treatment investments, but also to surpass them.

Currently, at the Lava Lava District, the municipality counts on a compost production unit which copies the Tiquipaya method with an installed capacity of 40 Tons/day. It started operations by processing 6 Tons/day and has in its first try-outs reached 15 Tons/day. For 2019, this municipality face the challenge to internally design and redesign the waste collecting routes and routines in order to cover most of the urban population (which in the last 5 years has grown by 4% annually) as well as most of the rural population (with an annual growth rate of 2%).

7. LESSONS LEARNED

On the relevance of a multi-stakeholder planning platform towards resilience

NGOs, CSOs, CBOs and Economic Productive Organisations are important urban institutions and change agents in low and middle-income countries. These organisations often supplement the limitations of local governments in the supply of urban services and play a key role in the design and implementation of bottom-up development projects. They can also be important actors in reducing social vulnerability and building adaptive responses to climate variability and climate change.

Other urban institutions (i.e. professional associations of engineers, architects, etc.) and economic institutions (Chambers of Commerce and other business representative organisations) are also active in local urban areas and can play an important role in developing and implementing strategies to reduce social and urban vulnerability and enhance adaptation to climate change. Expanding their participation in urban planning and in the design of adaptive options can strengthen social commitment to those strategies and complement local knowledge as well as to expand community involvement in short and long term strategies. They can all become important actors in the social learning process of adaptation to climate change and climate change mitigation.

On the importance of properly implemented communication strategies for outcome dissemination

The project results were disseminated via two principal means: 1) Metropolitan Bulletins and 2) a Web Site. In the first case, three bulletins were published in order to inform the public and the press on the progress of the project as well as about the agreements being signed and executed for strategic projects in the metropolitan area. In regards to second, the web site http://cambioclimaticoyagua.org.bo/kanata/

remains active with information on the Resilient Cities Symposium which may be downloaded from here. Both means were focused on reaching an adult audience and on a more limited term to reach also other expected beneficiaries within different age groups.

To secure at least some continuity in the dissemination of the project's outcomes beyond the contract period, Diakonia will transfer project information and studies to the Ministry for Water and the Environment by uploading all of these to the Ministry's web library with the intention of widening the benefitting audience. When it comes to project impact on adaptation and mitigation, the project's communication strategies for dissemination were implemented a bit late, where the enormous geographic range encountered to coordinate these activities reduced the scope of reaching potential beneficiaries.

On promoting women empowerment and climate change leadership

All metropolitan platform participants value the motivation and importance of continuing the work on promoting women leadership focusing on climate change adaptation and mitigation, since women cultivate a permanent relationship with each other, leading the search for water sources and access, as well as their roles in waste management and environmental conservation. Women contribute significantly to the spread of information and transfer of capacities, knowledge and application of norms and laws addressing women empowerment from rights-based and gender justice approaches, as well as their role in strengthening their own organisations for advocacy and for watching over national and local authorities regarding their climate related responsibilities and commitments.

On improving the monitoring and management of political risk during project implementation

Unfortunately, the initial design of the project underestimated the time needed for political discussions and budgetary approvals of necessary investments both at local and province level; although some authorities showed a very cooperative attitude towards the Project's activities and agreed to allocate budgets for current and future investments. Most of the Municipal Governments' internal procedures for allocating and approving budget for strategic projects went very slow, which subsequently hindered reaching the initial ambitions of the project when it came to the expected impact on mitigation. Therefore, it is relevant for future projects, not only to better monitor but also inform donors on the possible delays and the technical consequences, so that they may take into realistic account also such risks in the same way as they do with the climate related risks.

8. FINANCIAL SUMMARY

Table 1. Project financing per partner

	Financing, €					
Expenditures, €	**NCF**	**Diakonia**	**Agua Sustentable**	**CIDRE**	**Revenues from the project**	**Total**
Diakonia	132,376	13,299	0	0	0	145,675
Agua Sustentable	260,929	64,768	71,676	0	0	397,373
CIDRE	52,431	0	0	0	0	52,431
Total	**445,736**	**78,067**	**71,676**	**0**	**0**	**595,479**

9. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The project achieved the expected outcomes regarding technology validation and transfers, and the improvement of local capacities for institutional adaptation to climate change. Women were successfully integrated into collaborative circuits supporting urban agriculture, especially in the flower growing sector leading to increased research, productivity and trade. Business developments based on waste management was translated into the development of new green credit products, while the Trust Fund oriented to waste management and sanitation now has an ambitious agenda to find international investment partners in order to scale up climate and financial benefits for the metropolitan area. The Metropolitan Platform is still in place as a multi-stakeholder forum to discuss and agree on strategic investments towards future improved resilience.

Unfortunately, expected project impacts on mitigation were not achieved on time. Nevertheless, the committed resilience agenda for investments among national, provincial and local governments constitutes a solid base to reach the objectives in the Kanata Metropolitan Area by 2025, since it has continuously been an integrated part of the Sustainable Cochabamba Action Plan.

An important project contribution is the "Resilience agenda" for mainstreaming adaptation strategies to climate change at the Kanata Metropolitan Area, where policies regarding urban development and informal urban growth could see short and long-term benefits. A point of entry for this to also benefit an increasing number of urban inhabitants relies on the planning and design to build a proper urban environment (urban infrastructure, transportation, services, land use, and the management of other natural resources), as well as to upgrade the citizens' and local communities' capacities for climate change adaptation, while a new environmental strategy is being developed for the Metropolitan area.

If we look upon future forecasted worst case climate scenarios, related to a rise in temperature and reduction in precipitation in the order of 5- 7%, based on the historic precipitation level submitted within the Action Plan, the Project helped to contribute to a progressive adaptation in the design to build such an environment and this is precisely where the "Resilience agenda" drafted within the project could be used as a guiding instrument for this process. To adjust current planning practices (building codes, infrastructure standards, land use, land regulations, etc.) along with the regulatory and financial framework of formal urban growth are also important steps in order to move in this direction.

Information on future scenarios with climate extremes and alternatives to progressively adapt to these are also useful planning tools to reduce urban and social vulnerability and to promote adaptation to climate change. Access to scientific information is often difficult for local urban planners and other relevant stakeholders. Building collaboration with local, national, and regional universities can help bridge the gap between science, policy and practice. It can help to incorporate the global and regional dimensions of climate variability and climate change adaptation in informal urban growth.

Recommendations

The Project team recommends:

- To continue to monitor the results of the Project for a subsequent 48 month-period, even if it lies outside of the agreement with the donor. This is based on the important advancements made, especially those related to the construction and institutionalization achieved in metropolitan areas, which now face an articulate and inclusive stage (mainly with civil society organisations) based on an agenda to contribute to resilience and in the near future to create national policies using the insights of the Project for guidance. It is important that Agua Sustentable continue the work thus far achieved within the area and that Diakonia can grant some financial support to make it possible to improve the conditions for sustainability of the project results to be replicated in other parts of the country.
- To continue to monitor the mitigation benchmarks that were included in the Project and its gradual or accrued change within the next coming months in coordination with the Secretary of Mother Earth on local and sub- national levels and with the Ministry for the Environment at the national level. This implies taking into account the expected reduction of greenhouse gases (GHG) when the Project would be closed, plus its articulation with the 3rd and 4th National Inventory Communication of GHG that has to be drafted by Bolivia as a country to UNFCCC.
- To inform the donor (NDF) on the achievements of CIDRE´s strategy to search for new partners or investors to be able to operate the Trust Fund, in a way that this product may be consolidated within a major project or investment agreement as a successful financial tool.
- To prepare for the closure of the Project and drafting a learning report, which may help not only Diakonia but also Agua Sustentable to review and revise PME procedures in relation to other climate change projects, risk monitoring and to collect individual testimonies from women beneficiaries to be used as long-term indicators of change taking place as result of project implementation.

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Annex 1 Project Completion Fact Sheet

Project Name:	**Technology, adaptation and mitigation: Greening the economy of urban agriculture at Kanata Metropolitan Area**		
Country/ Region:	Bolivia Latin-America	**Financing:**	
		EUR	**%**
Nordic Partner:	Diakonia	78,067	13.11
Local Partner:	Agua Sustentable	71,676	12.04
Other Partner:	CIDRE	0	0.00
	NCF grant disbursed	445,736	74.85
	Total	595,479	**100.00**
Classification:	Mitigation/ adaptation/ **combination**		
Project cycle:	Contracted: 27 months (from April 1st, 2016 to June 30th, 2018) Extended: 33 months (from April 1st, 2016 to December 31st, 2018) Original Closing Date: September 30, 2018 Actual Closing Date: March 30, 2019		
Project description:	The objective of this project was to contribute to the implementation of the Sustainable Cochabamba Action Plan, elaborated as part of the Emerging and Sustainable Cities Initiative (ESCI) to promote adaptation and mitigation at Kanata metropolitan area using a rights based and gender equality approach by: • Introducing Nordic technologies in urban districts for water management, water recycling for irrigation and compost production. • Improving urban agriculture productivity, business development and market expansion in a B2B (business to business) approach. • Developing production protocols of climate resilient varieties of flowers and vegetables. • Developing and offering with a 3R approach (Reducing, Reusing and Recycling) cost-effective microfinance products to economic circuits and actors involved in urban agriculture, contributing to reduced emissions of greenhouse gases (GHG). • Strengthening urban planning networks with focus on adaptation and mitigation priorities. Project components were aiming for rights based, women economic empowerment and win-to-win public-private partnerships through: (i) technology validation and transfer, (ii) capacity building; (iii) efficient utilization of organic residue; (iv) business plans development, (v) advocacy and policy development and (vi) public-private partnerships and financing. It is expected that the overall project as well as each of the identified components will pass necessary justification tests for economic standard.		
Key results:	**NCF indicators**	**Results**	
	1. Number of beneficiaries reached (women/men)	40,757 KMA inhabitants (20,196 women and 20,561 men) from Sacaba, Cercado, Colcapirhua, Quillacollo, Tiquipaya, Vinto and Sipe Sipe municipalities were reached by services and goods provided by the Project to improve their quality of life. This figure corresponds to women and men involved in various project activities (e.g. research, capacity building, platform dialogues, training, meetings and international events), and other neighboring families benefitting from services provided by the Project; such as waste collection and/or waste water treatment (see Annex 2 for detailed information).	
	2. Number of people with increased resilience to climate change (women/men)	6,341 inhabitants (3,101 women and 3,240 men) increased their resilience to climate change through their involvement in capacity building activities on environmental issues and climate change adaptation.	

	3. CO_2 emissions reductions (actual at project completion and expected during the lifetime of the project's mitigation investments)	At project completion; 93.42 Tons of CO_2 emissions had been reduced due to the use of the project's assets. A total of 538.04 Tons of reduction in CO_2 emissions is expected during the lifetime of the project's mitigation investment (assets). By year 2025, 588.18 Kilotons of CO_2 emissions will be saved in the metropolitan area due to improvements in local management systems for organic residue such as the industrial waste complex (268 Ktn), financing schemes for waste management (318.7 Ktn), bio digesters (1.072 Ktn) and local compost production units (0,398 Ktn).	
	4. Number of green business concepts tested	One green business microfinance product was tested corresponding to a credit product to finance bio digester implementation.	
	5. Number of new decent jobs created (disaggregated by number of permanent (women/men) and seasonal (women and men))	N/A	
	6. Number of people with improved livelihoods/income-generating possibilities (women/men)	A total of 446 people (336 women and 110 men) within 14 associations have improved their production methods for flower growing as a livelihood.	
	7. Number of multi-stakeholder partnerships developed	One metropolitan platform installed for planning and dialogue for undertaking strategic programs and projects.	
	8. Amount of funds leveraged (actual project co-financing and secured future investments for scaling-up/replication)	€ 149,743 leveraged as co-funding during project implementation comprising of € 78,067 funded by Diakonia as the grantee and €71,676 through in kind contributions from the local partner. € 622,316 in development funds leveraged and allocated by the Tiquipaya (€ 113,863), Quillacollo (€ 57,143) and Vinto (€ 103,310) municipalities and also the KMA (€ 348,000) in projects to be executed until 2020 in the areas of water treatment, compost production and for improvements in gender related issues.	
Project performance:	**Main Expected Outputs**	**Achieved**	**End-of-project status**
	One metropolitan platform installed as a forum for smart planning with a gender approach	100% achieved	The KMA platform remains in place and local authorities have taken responsibility for calling regular meetings.
	Four production protocols written by women organisations on production of varieties of flowers and vegetables which are adapted to climate change	100% achieved	A publication named "Manual de Producción" (Production Manual in Spanish) was published for distribution among the FEDEFLOR affiliates.
	One production protocol and one business piloted for the production of compost and humus	100% achieved	A publication named "Tiquipaya Compost Production Unit Evaluation and Systematisation for becoming a replicable Model for other Municipalities" was published for distribution among the seven Municipalities at the KMA.
	One new microcredit product developed to finance the instalment of bio digester to support urban agriculture.	100 % achieved	This product is now part of CIDRE's micro-credit product portfolio and at project closure US$ 70,000 were allocated in credits to producers.
Final beneficiaries:	40,757 KMA inhabitants (20,196 women and 20,561 men) from Sacaba, Cercado, Colcapirhua, Quillacollo, Tiquipaya, Vinto and Sipe Sipe municipalities were reached by services and goods provided by the Project to improve their quality of life.		
Climate change impacts:	**Capacity building**. 1) ***1,170 elementary grade students*** from the 4th to 6th grade in Laura Vicuña, Hermano Pacifico Feletti and Eduardo Lopez schools completed an environmental program focused on climate change adaptation named "*Water Guardians*" composed out 3 modules; and ***250 elementary students*** of the 3rd to 5th grade from Titiri, Laphia, Totora and Cruzani elementary schools completed the first module on Water Management and Climate Change.		

	Urban agriculture. 1) ***4 production protocols*** written by women organisations were published and distributed among FEDEFLOR members to disseminate findings on improved water efficiency use for cultivating lysianthus and carnations flower varieties by emulating water stress periods and encouraging early adaptation. 2) A financing instrument in the concept of a ***Trust Fund*** was designed to finance credit demand for building Waste Water Treatment Plants (WWTP), bio digesters and other technical solutions to improved access to water for irrigation and improved organic waste management. This financing instrument predicts to reach ***US$ 50 million*** from an initial US$ 10 million equity investment. 3) ***3,101 adult women in the Kanata Metropolitan*** area have improved their adaptation practices for urban agriculture by *participating in capacity building activities on environmental issues and climate change adaptation.* A ***multi-stakeholder platform*** which integrates CSOs, NGOs, companies, business representations and chambers, local and national authorities, is in place and operational, discussing and agreeing on strategic projects to improve climate resilience at the Kanata Metropolitan Area. 2) This platform has produced a joint ***strategy and agenda towards climate resilience*** with 101 future actions to be undertaken. 3) A hydro-cannon technology was tested and validated by the project staff and the Cochabamba Province Basin Service (SDC) as useful equipment for risk and basin management.
Development impacts:	• By 2018, 14.57 % of the metropolitan investment budget is targeted for improving competitiveness, formal employment and economic climate-related adaptation aimed at women. • By 2018, a total budget of € 622,316 have been approved and allocated by Tiquipaya, Quillacollo and Vinto municipalities and also by the Kanata Metropolitan Area for projects to be implemented up to 2020, in the areas of water treatment (water for irrigation to support urban agriculture), compost production and women entrepreneurship in urban agriculture. These amounts correspond to the small-scale projects developed in dialogue with local authorities as part of the commitments during the metropolitan fora which were organised by the Project staff. • By 2018, the Metropolitan Platform composed of Civil Society Organisations (CSOs), companies and local authorities remain as the main forum for addressing environmental issues in a participant, democratic and joint manner. This platform has agreed to implement an agenda towards resilience supported by a development strategy and an investment plan.
Innovation, technology and learning:	• The hydro seeding cannon (hydro cannon) was validated by the SDC technical team and the project staff as relevant equipment for risk management, basin management and basin recovery. Its functionality was also tested by using local seeds, materials and inputs in order to improve local ownership and facilitating operation and maintenance once the project is closed. • Through a research agenda, there was the possibility to learn on the use of Trichoderma, which is a local mushroom used as plague controller, specifically for controlling Fusarium damaging flower growing at the KMA. • Through an interexchange of learnings coordinated by FEDEFLOR (Bolivia) and ASOCOLFLORES (Colombia), representatives from six flower grower associations learnt about flower packaging and bouquet elaboration. This new knowledge was later tested as a new business concept and tried out in a commercial study for taking local production to one of the largest markets in the country. • A tariff scheme was proposed by the project to seven municipalities for improving organic waste management, where this new tariff scheme can contribute to eliminate or at least decrease public subsidies for treating organic waste.
Partnership:	Project was able to work in partnership with private sector actor, institutions and representations such as the IBL company for testing the hydro-seeding cannon, the Federation of Enterprises and Chamber of Commerce for addressing waste management as a local public policy and with MFIs institutions for building microcredits products.
Sustainability and replication:	***Technical Sustainability*** • Agua Sustentable will continue its institutional work on Climate Change at KMA, which opens the possibility of using all produced material regarding trainings and capacity building for even more local organisations. With great enjoyment the alliance with Province Basin Service (SDC) will enable the use of the hydro-seeding cannon for already planned services, mainly for basin management and recovery, this time focused on strategic water sources for the KMA and not only to some main basins like the one for Rocha River. • The KMA technical team has enlarged its specialist network with professionals from Mexico, Peru, Chile and Colombia working on relevant environmental issues in

	urban areas. Some local governments in the KMA, like Cercado, have already invited some of them for future engagements in technical collaboration with KMA. ***Financial sustainability*** • Through Agua Sustentable, Diakonia will continue funding women leaders and women groups working on adaptation and mitigation options as a project follow up in 2019. This will constitute a base to increase other donors' interests based on a mainstreaming of gender equality and women economic empowerment in resilient cities. Diakonia will also very closely oversee the development of the Women City Centre metropolitan project since this will help to target other development areas connected to Diakonia's ongoing country program and the prioritised thematic intervention areas of human rights and the elimination of gender-based violence. • There are on-going local investments (€ 103,310) in Tiquipaya and Vinto Municipalities, and specifically in Vinto which strives to improve its organic waste management and closing up its current landfill. The Vinto, Tiquipaya and Sacaba Municipalities will continue to produce local compost throughout 2019. This is also a sign of political and technical willingness to fulfil previous commitments aimed at improving local resilience. ***Environmental Sustainability*** • An immediate and urgent task for Diakonia is to coordinate with the Secretary of Mother Earth, and all involved entities in direct coordination with Cynthia Vargas in the Ministry for the Environment, in order to find the best means to include and articulate the KMA contributions in the GHG national reporting mechanism to the United Nations Framework Convention on Climate Change (UNFCCC). • Since the joint Strategy and Agenda for resilience contains 101 actions to be implemented until 2025, Diakonia and Agua Sustentable will continue to inform NDF/NCF during the following 24-month period up to 2020 on the relevant improvements on air quality, urban mobility and waste management, which are the topics to be considered as main priorities for the coming years.
Lessons learned:	**On the relevance of a multi-stakeholder planning platform towards resilience** NGOs, CSOs, CBOs and Economic Productive Organisations are important urban institutions in low and middle-income countries. These organisations often supplement the limitations of local governments in the supply of urban services and play a key role in the design and implementation of bottom-up development projects. They can also be important actors in reducing social vulnerability and building adaptive responses to climate variability and climate change. Other urban institutions (i.e. professional associations of engineers, architects, etc.) and economic institutions (Chambers of Commerce and other business representative organisations) are also active in local urban areas and can play an important role in developing and implementing strategies to reduce social and urban vulnerability and enhance adaptation to climate change. Expanding their participation in urban planning and in the design of adaptive options can strengthen social commitment to those strategies and complement local knowledge as well as to expand community involvement in short and long term strategies. They can all become important actors in the social learning process of adaptation to climate change and climate change mitigation. **On the importance of properly implemented communication strategies for outcome dissemination** The project results were disseminated via two principal means: 1) Metropolitan Bulletins and 2) a Web Site. In the case of the first, three bulletins were printed in order to inform public opinion and the press on the progress of the project as well as about the agreements being signed and executed regarding strategic projects for the metropolitan area. In regards of the second one, the web site http://cambioclimaticoyagua.org.bo/kanata/ remains active with information on the Resilient Cities Symposium which may be downloaded from here. Both means were focused on reaching adults and on a more limited term to reach also other expected beneficiaries within different age groups. To secure at least some continuance in the dissemination of the project's outcomes beyond the contract period, Diakonia will transfer project information and studies to the Ministry for Water and the Environment by uploading all of these to the Ministry's web library with the intention of widening the benefitting audience. **On promoting women empowerment and climate change leadership**

	All metropolitan platform participant value the motivation and importance of continue the work on promoting women leadership focused on adaptation and mitigation, since they cultivate a permanent relationship and lead the search for water sources and access, as well as their roles in waste management and environmental conservation. Women contribute significantly to the spread of information and transfer of capacities, knowledge and application of norms and laws addressing women empowerment from rights-based and gender justice approaches, as well as their role in strengthening their own organisations for advocacy and for watching over authorities regarding their climate related responsibilities and commitments. **On improving the monitoring and management of political risks during project implementation** Unfortunately, the initial design of the project underestimated the time needed for the discussions and approval of necessary investments both at local and province level; although some authorities showed a very cooperative attitude towards the Project's activities and agreed to allocate budgets for current and future investments. Most of the Municipal Governments' internal procedures for allocating and approving budget for strategic projects went very slow, which subsequently hindered reaching the initial ambitions of the project when it came to the expected impact indicators on mitigation. Therefore, it is relevant for future projects, not only to better monitor but also inform donors on the possible delays and the technical consequences, so that they may take into realistic account also such risks in the same way as they do with the climate related risks.