



Final Report

Building Resilience and Climate Adaptive Planning in Urban Centers of Nepal

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Abbreviations

CCA	Climate change adaptation
DRR	Disaster risk reduction
DCCI	District Chamber of Commerce and Industries
FNCCI	Federation of Nepalese Chambers of Commerce and Industries
MAP	Municipal Adaptation Plan
NAP	National Adaptation Plan
NCF	Nordic Climate Facility of the Nordic Development Fund
NDF	Nordic Development Fund
NSMC	Nepalgunj Sub-Metropolitan City

1. EXECUTIVE SUMMARY

"Building Resilience and Climate Adaptive Planning in Urban Centers of Nepal" is an initiative which was designed to support urban centers to develop and implement urban resilience and climate-adaptive planning in Nepalgunj Sub-Metropolitan City (NMC) of Banke district in Province 5 and Birendranagar Municipality of Surkhet district in province 6. The overall objective has been to make "local government agencies in the urban centers, in collaboration with the private sectors and communities, especially from the most vulnerable sectors, develop and implement adaptation plans to make cities more resilient to climate extremes and disasters".

There are four major outputs of the project: a) Municipalities in the vulnerable urban centers adopt climate adaptation and resilience as an integral part of their annual and periodic development plans and are better able to predict and to respond to floods and other climate extremes and disasters; b) Private sector actors develop adaptation-friendly policies, practices and business plans and invest on actions identified by the municipalities in their annual and periodic plans; c) Vulnerable urban dwellers, especially women from poor and marginalized background are equipped with information, resources, and appropriate technology to respond to and recover from climate extremes and disasters; d) Knowledge and evidences related to building community resilience to climate extremes and disasters in an urban context is generated, documented and disseminated for effective learning and influence.

During 33 months of project implementation, Municipal Adaptation Plans (MAP) were formulated and endorsed by Birendranagar Municipality and Nepalgunj Sub-Metropolitan City (NMC), based on the basis of a detailed vulnerability assessment conducted in the first year of the project. The municipalities have mainstreamed the adaptation plan into their annual development plans. In comparison to the fiscal year 2016-17, the allocated budget has significantly increased both in Birendranagar Municipality and in NMC for the fiscal year 2018-19.

The project has established and promoted a total of 24 innovative green businesses and has collected innovative ideas for new eco-friendly business or green initiatives. The project has reached 6030 direct beneficiaries: 5550 people (2867 women, 2683 men)¹ participated in capacity building and awareness raising events as well as training workshops which provided them with valuable knowledge on disaster risk reduction and climate change adaptation; and 480 people (366 women, 114 men) benefitted from the support for the businesses which has provided them with new job and income opportunities. In addition, the project has reached approximately 1862 indirect beneficiaries (estimated 911 female and 951 male) which are the family members of those receiving the business support and which therefore have improved lives through increased family income.

During the implementation of project activities, a number of partnerships have been developed, ranging from municipal governments, District Chamber of Commerce and Industries, Ministry of Forest and Environment, Ministry of Federal Affairs and Local Development, District Red Cross Society, Council for Technical Education and Vocational

¹ This is the sum of all participants in capacity building and awareness raising events as well as training workshops.

Training, Bheri Technology School, Department of Hydrology and Meteorology and local media.

The project has also contributed to climate change mitigation. In total, around 20,000 trees and tree seedlings have been planted in the two municipalities. An analysis of the CO₂ emission reductions has estimated that these trees will help to absorb roughly 3600 tonnes of CO₂ from the atmosphere over the next 20 years until the trees are mature (ca. 180 t CO₂/year).

The project has demonstrated that it is vital to support poor, marginalized and vulnerable communities by involving them in economic resilience activities. When focusing these activities on environmentally friendly and climate adaptive businesses, both livelihood enhancement and environmental protection can be achieved. The green businesses established and promoted by the project can easily be scaled up because they rely on the grass-root level and require only little investment. However, market situation, limited availability of initial investment funds and insufficient administrative support from local governments could form potential barriers for up-scaling in other municipalities.

The endorsed Municipal Adaptation Plans are the first adaptation plans developed on municipality level in Nepal, therefore setting an example for other urban centres. The success of making the topics climate change and disaster risk reduction an integral part of municipal planning by developing adaption plans suggests to replicate this practice in other cities vulnerable to climate change and climate-induced disasters.

2. ASSESSMENT OF IMPLEMENTATION OF THE PROJECT

2.1 Achievement of Outputs and Objectives

Planned Objectives and Outputs	Indicator(s):	Achievement of the objectives and outputs:
Overall Objective Urban centers of Nepal become people-centered and resilient to climate extremes and disasters.	The government of Nepal will develop urban DRR strategy to make cities resilient to the impacts of climate extremes and disasters.	ACHIEVED Model Resilient Strategy for Local Communities (2018) prepared and endorsed by the Ministry of Federal Affairs and General Administration in support from project partners; Disaster Risk and Management Act (2017); Incorporation of local adaptation issues in the National Adaptation Plan (NAP) formulation Process; Municipal Adaptation Plan of Nepalgunj Sub-Metropolitan City and Birendranagar Municipality.
	Public and private investors are provided an enabling policy environment to invest on actions that build resilient cities.	ACHIEVED Birendranagar Municipality has provisioned 50% grant for commercial agriculture applicable to agriculture cooperatives, groups, farms as well as for farmers for nurseries, tunnel farms, purchase of seeds, training on fodder preparation, improved mushroom farming, fisheries etc;

		<p>Birendranagar Municipality has formulated a Public Private Partnership Policy;</p> <p>Provision of a Public-Private Partnership for waste management of NSMC;</p> <p>Provision of small grants and administrative support for starting up green businesses/self-entrepreneurship in NSMC and Birendranagar Municipality.</p>
<p>Purpose</p> <p>Local government agencies in the urban centers in collaboration with the private sector and communities, especially from the most vulnerable sectors develop and implement adaptation plans to make cities more resilient to climate extremes and disasters.</p>	<p>10% increase in the investment of private sector for innovative programmes</p>	<p>PARTLY ACHIEVED</p> <p>This indicator has not been measured, but below are examples listed that indicate the investment of the private sector has increased:</p> <ol style="list-style-type: none"> 1. Investment by the FNCCI² into environment-friendly businesses; 2. Increased investment of the established business groups into expanding the business, for example in case of Maharjan Nursery (who is now importing plants from India) and Panchseel Hastakala (who engaged additional people after increased investment); 3. The Ujayaalo Women Empowerment Center has received additional external funding of (400 000 NPR) from the Prime Minister Agriculture Promotion Fund to expand their business; 4. The Hariyo Hira Women Agriculture Group in Birendranagar Municipality received the Women Entrepreneurs' grant of 600 000 NPR through the project. The cooperative members co-financed 500 000 NPR and constructed 5. Plastic tunnels for organic vegetables, thus, increasing their investment by more than 10% for innovative and green businesses for the production of healthy products.
	<p>60% (7063) of direct beneficiaries demonstrate increased adaptive capacity</p>	<p>ALMOST ACHIEVED</p> <p>A total of 6030 direct beneficiaries (85% of the target amount) were engaged with the project in various forms for example by being active in the established green businesses, being part of a women group in one of the established Women Empowerment Centers or by participating in capacity building events and learning forums, which informed about climate change and adaptation possibilities. In addition, the project also reached 1862 indirect beneficiaries.</p>
	<p>60% (141,251) of total population of target project areas are less affected by flooding</p>	<p>NOT ACHIEVED YET</p> <p>The Municipal Adaptation Plan has suggested allocating 760 000 000 NPR (ca. 6 080 000 EUR) in Nepalgunj and 610 000 000 NPR (ca. 4 880 000 EUR) in Birendranagar (for five years). The implementation of the Municipal Adaptation Plan may increase communities' resilience to flooding in flood-prone areas. It is estimated that the adaptation plan activities can have an impact on approximately 138 735 people who would be less affected by flooding then.</p>
<p>Output 1 (Results)</p> <p>Municipalities in the vulnerable urban centres adopt climate adaptation and resilience as an integral part of their annual and periodic development plans and are better able</p>	<p>CCA and DRR mainstreamed in at least 80% of development plans of target districts and municipalities.</p>	<p>ACHIEVED</p> <p>The Municipal Adaptation Plan (MAP) has been formulated and mainstreamed in both municipalities. The MAP is part of the municipal development planning. The plan suggests possible adaptation measures addressing issues like landslides, flood inundation, fire, waste management, drinking water quality, environmental pollution, drought, epidemics etc. Now these topics are well covered in the yearly municipal plan with an adequate budget. Besides, both municipal authorities have formally committed to mainstream the MAP by prioritizing the activities under CCA and DRR.</p>

² The Federation of Nepalese Chambers of Commerce and Industry (FNCCI) is the nationally and internationally recognized umbrella organization of business in Nepal. Organized as a representative body of business organizations in the country, it represents the interests of the private sector and is involved in promotion of socio-economic development of Nepal through private sector led economic growth.

to predict and more prepared to respond to floods and other climate extremes and disasters.		
	20 % increase in project districts and municipalities' budgets for CCA and DRR activities.	ACHIEVED Budgets allocated for CCA and DRR activities have increased six-fold from 950 000 NPR (2016-17) to 6 000 000 NPR (2018-19) in Birendranagar and doubled from 7 820 000 NPR (2016-17) to 14 625 000 (2018-19) NPR in Nepalgunj.
	40 % of target local government officials are better equipped with climate adaptive skills and knowledge	ACHIEVED The project has enhanced the capacity of 111 municipal staff including ward secretaries, Mayors, Deputy Mayors, and senior level staff of 2 municipalities in climate adaptive skills and knowledge. This has been confirmed by the Endline Survey in which Key Informant Interviews (KII) were conducted with a sample of 14 government staff persons of which 100% responded that they feel better equipped with climate adaptive skills and knowledge.
Output 2 Private sector actors develop adaptation-friendly policy, practice and business plans and invests on actions identified by the municipalities in their annual and periodic plans.	2 climate adaptive technologies from Nordic countries adopted	PARTLY ACHIEVED The Bhairam Community Forest User Group is producing and selling tree seedlings in a nursery in order to create more green spaces, following the example of the green cities like Helsinki and Stockholm. Local and Nordic IT knowledge were used to create a web-platform for product marketing of the established green businesses. A GIS platform developed by the Nordic partner Arbonaut, presents the project outcomes in a map viewer which can support climate-adaptive planning in the municipalities. In addition, Information system technology of the Nordic partner was applied to analyse flood risk in both municipalities. The results have been also integrated in the Municipal Adaptation Plan.
	5 private sector actors incorporating climate adaptive practices into their business plans.	ACHIEVED 1. Hariyo Hira Women Agriculture Group in Birendranagar constructed plastic tunnels and diversified vegetable products; 2. Bhairam Community Forest User Group in Birendranagar expanded their herb production; 3. Krishi Mahila Sahakari Samstha Alanagar Group in Nepalgunj are growing off-farming seasonal vegetables; 4. Maharjan Nursery in Nepalgunj is expanding the business of producing and selling seedlings/plants; 5. Panchasheel Handicraft Center is producing different types of Tharu handicraft like dustbin, hotcase, dalia , mauni, pen stand etc. by using local resources such dry grass, hey etc; 6. Green City Sanitation Service Nepal in Birendragar started producing organic manure.
	At least 10 private sector actors supporting actions promoting women entrepreneurships	ACHIEVED 1. Panchasheel Handicraft Center (NSMC); 2. Women Skill Development Center (NSMC); 3. Marjan Nursery (NSMC); 4. Ujayaalo Women Empowerment Center (NSMC);

evidences related to building community resilience to climate extremes and disasters in urban context generated, documented and disseminated for effective learning and influencing.	programme/ visit between the project municipalities and Nordic cities	An exchange visit was made on 3-8 September 2017 to Nordic countries (Finland, Sweden and Denmark) during which five delegates from Nepal including the Mayor of Nepalgunj Sub-Metropolitan City, the Senior Administrative Officer of Birendranagar Municipality, the Under Secretary of the Ministry of Federal Affairs and Local Development and project coordinators from Oxfam and Clean Energy Nepal participated.
	5 briefing papers and policy briefs used as tool for influencing national policies and programmes.	ACHIEVED 1. Municipal level climate adaptive policy; 2. Community awareness policy; 3. Promoting Environment Friendly Business Solutions; 4. Urban Greenery: An adaptive Approach; 5. Instrumental Value of Municipal Adaptation Plan in Guiding Climate Resilience in Nepali Cities.
	5 multi-stakeholder dialogues organised to disseminate project learning and best practices.	ACHIEVED 1. Sharing Workshop at NSMC (21 February 2019); 2. Sharing Workshop at Birendranagar Municipality (22 February 2019); 3. Mainstreaming Adaptation Plan for both municipalities, Bardiya (2&3 November 2018); 4. A public forum on climate adaptive business solutions and practices, Nepaljung (28 August 2018); 5. Municipal Solid Waste Management Workshop, Birendranagar (23 September 2018); 6. Regional Consultation on Nepal's NAP formulation Process (July 18, 2017); 7. Sharing overall project result in both project municipalities (22 Feb. in NSMC and 23 Feb. in Birendranagar).

2.2 Deviations from the planned Outputs and Activities

The project duration was initially planned for the period from June 2016 to November 2018. Since some of the grants that the project provided to businesses were only released during milestone 8, some businesses started their production only by the end of 2018. To allow monitoring and documentation of the success of these recently started businesses, the project was extended for a period of three months until 28 February 2019, while keeping the limits of the initially planned budget.

Further deviations from the original plan concern the number of private businesses that the project had planned to support with seed grants. Out of the 26 budgeted grants two remained unused or had to be returned. Five grants of 5,400 EUR each were planned to be awarded to women entrepreneurs promoting climate-friendly businesses. Four businesses were selected for this grant but the fifth planned grant had to be cancelled since another suitable climate-friendly business led by women could not be found. Out of those four selected businesses, three are performing well. The fourth business however (paper bag

production by Ekta Women Empowerment Centre in cooperation with Tarang Paper Products Private Limited in Nepalgunj), was not able to start production by February 2019 due to delivery delays of required machinery. Therefore, the grant agreement had to be cancelled and the released fund was paid back to the project. Nonetheless, Tarang Paper Products Ltd. is committed to continue the cooperation with the women group once the ordered machine has been delivered. The Green City Nepal in Birendranagar had been selected as one of the supported activities under the Retrofitting Grant. The business plans to turn organic waste into manure. The business owner could not bring the manure producing machine as planned within the project period, thus the project supported the business at the preparatory stage such as constructing boundary wall, purchasing drums, weighing scale etc. As the appropriate machine for manure production could not arrive on time, the project only supported this business partially.

2.3 Achievement of NCF indicators

NCF indicators	Results
1. Number of beneficiaries reached (women/men)	6030 direct beneficiaries (3233 women, 2797 men), approx. 1862 indirect beneficiaries (estimated 911 female, 952 male)
2. Number of people with increased resilience to climate change (women/men)	5550 (2867 women, 2683 men)
3. CO₂e emissions reductions (actual at project completion and expected during the lifetime of the project's mitigation investments)	Following activities have contributed to emission reductions: - Tree planting in Birendranagar (green belt) and Nepalgunj (roadside planting) - Production of tree seedlings in different nurseries supported through project grants In total, almost 20,000 trees/tree seedlings have been produced/planted, which will result in emission reductions of roughly 3600 tonnes of CO ₂ over the next 20 years until these trees are mature (ca. 180 t CO ₂ /year) under the assumption of 60% seedling survival rate.
4. Number of green business concepts tested	The project has tested 24 green business concepts. As a result of the success of these businesses and the awareness-raising campaign by the project, future initiatives have been started outside of the project. For instance, Badhi Community has started cloth bag production and a plywood factory upgraded to ISO standard.
5. Number of new decent jobs created (disaggregated by number of permanent (women/men) and seasonal (women and men))	Permanent jobs have been created for 13 people (4 women, 9 men) and seasonal jobs for 25 women (mushroom farming)
6. Number of people with improved livelihoods/income-generating possibilities (women/men)	480 people have increased income (366 women, 114 men)
7. Number of multi-stakeholder partnerships developed	7 partnerships have been established: Arbonaut – Oxfam Nepal Oxfam Nepal – Clean Energy Nepal

	Oxfam Nepal – Environment Development Society Oxfam Nepal – Bheri Environmental Excellence Group Nepalgunj SMC – Chamber of Commerce and 11 businesses Birendranagar Municipality- Chamber of Commerce and 13 businesses Bheri Technical School
8. Amount of funds leveraged (actual project co-financing and possible secured future investments for scaling-up/replication)	149 558 EUR co-financing by the project partners. The municipal Adaptation Plan has suggested allocating 76,00,00,000 NPR in Nepalgunj and 61,00,00,000 NPR in Birendranagar (for five years).

3. CLIMATE CHANGE

During the first phase of the project, a detailed assessment of the vulnerability to climate change was conducted for all 39 wards of both municipalities, and a document was prepared summarizing all findings. This document provided the basis for formulating the Municipal Adaptation Plan (MAP) and selecting vulnerable communities for engagement in income-generating climate-adaptive activities supported by the project.

The assessment was designed and conducted following the guidelines of the Vulnerability and Risk Assessment (VRA) framework set out in Nepal's National Adaptation Plan (NAP). Nepal's NAP formulation process is based on the Fifth Assessment Report (<https://ar5-syr.ipcc.ch/>) of the Intergovernmental Panel on Climate Change (IPCC). The IPCC framework assumes that the risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the exposure and vulnerability of human and natural systems. The vulnerability analysis has incorporated the seasonal calendar, crop calendar and historic trends of temperature, precipitation and weather extremes in the study. As a part of the analysis, the flood risk at more than 60 river locations was modelled using Geo-Information System technology by integrating satellite imagery, digital elevation data, and field-measurement of river channel profiles in combination with historic measurement data of extreme precipitation events during the past thirty years.

According to vulnerability report, both municipalities were found to be less vulnerable than quoted in the National Adaptation Program of Action (NAPA), however, some wards were found highly vulnerable in comparison to other wards. The seasonal calendar and crop calendar showed that, the regular rainfall pattern, duration of monsoon and winter days are changing compared to the last 30 years. The main results of the vulnerability risk assessment have been visualized in maps and are shared in an interactive map viewer at <https://proms.arbonaut.com/proms/nepal.jsp>

These findings clearly indicate a change in the climatic pattern and underline the possibility of unwanted climate induced disasters. The Municipal Adaptation Plan (MAP) was formulated for both municipalities based on the results of the vulnerability and risk assessment. Both MAPs have been endorsed by the local governments and were mainstreamed in their annual municipal plan. As a direct result, the budgets allocated for disaster risk reduction and climate change adaptation have increased in both municipalities. Apart from this, the project has

supported 24 climate-friendly green businesses, promoting organic farming of vegetables, fruits, spices and mushrooms, organic manure productions, nurseries (trees, flowers and medicinal herbs), plastic recycling (production of tiles from plastic waste) as well as production of handicrafts, traditional cloths, pottery, souvenirs, bags made from cloth or paper, and leaf plates and bowls. By providing alternatives to plastic products (e.g. paper/cloth bags, leaf dishes), some of these businesses support the environmental sustainability plans of the municipality to restrict the use of plastic. Additional innovative business ideas to promote climate-adaptive practices have been gathered from the public through crowd-sourcing by means of an online questionnaire. The collected information has been shared with local stakeholders and the district partners to be taken up in the future.

Throughout the project period, knowledge on climate change was imparted to a large number of project stakeholders and project beneficiaries (5550 people) through awareness raising, capacity building and joint implementation of project activities with different vulnerable target groups. Furthermore, the project has contributed to climate change mitigation by planting 290 trees to promote greenery in urban areas. Also the tree nursery of the Bhairam Community Forest User Group contributed to carbon sequestration. In total, almost 20,000 trees/tree seedlings have been produced/planted, which will result in emission reductions of roughly 3600 tonnes of CO₂ over the next 20 years until these trees are mature (ca. 180 t CO₂/year).

4. DEVELOPMENT IMPACTS AND CROSS-CUTTING ISSUES

The project was able to institutionalize the topic of climate change in the local government's plans and budgets through the formulation of two Municipal Adaptation Plans for NSMC and Birendranagar Municipality, respectively. Before project implementation, issues related to disaster risk reduction (DRR) and climate change adaptation (CCA) were not prioritized. With the support of the project, relevant capacities for DRR and CC have been created for municipal staff and are part of annual development plans now. Especially women, various ethnic groups and marginalized communities have been engaged in the process of the vulnerability and risk assessment and the development of the municipal adaptation plans. In this way the project has demonstrated an example of participatory policy/plan formulation.

The project also had a development impact on these vulnerable local groups by engaging and supporting them in climate-friendly businesses, thereby enhancing their livelihoods while at the same time reducing negative impacts on environment. The project has successfully promoted a total of 24 innovative green businesses, in which women make up 78% of the involved/employed people. In addition, the project was successful in ensuring the involvement of private sector entities like FNCCI for the promotion of green businesses. Time and again, the senior management of FNCCI have committed to the formulation of policies which will give space for green entrepreneurs and environmentfriendly businesses. The FNCCI was engaged in the selection process of the supported private businesses in both municipalities and promoted them by organizing various programs (e.g. invitation of the business representatives to FNCCI members and board meeting, provision a space free of cost in different exhibitions). Besides, FNCCI has promoted paper and clothes bag to reduce the use of plastic as well as organized an awareness program on sustainable business approaches.

The project has created a long-term impact on gender equality and social inclusion of marginalised groups. The women engaged in the promoted businesses are now able to contribute with additional income to daily living expenses and cost of childrens' education. These women have also gained respect and support from male family members which is relatively unusual in the patriarchal Nepalese society prevalent in the project areas. Running their own business has helped them to establish an identity and provides them with a larger economic resilience toward the impacts of climate change and climate-induced disaster. The project has also developed a product-marketing website which promotes the businesses and the products they offer, therefore fostering the impact and economic sustainability.

At project start, six Women Empowerment Centers (WEC) have been formed, three in each project municipality. Each group consists of 25-30 members. The project provided these women with relevant information, resources and appropriate technology to respond to and recover from climate extremes and disasters. Through the WECs, the project has created a platform for women which privileges them to collectively build capital, develop leadership and expand their social networks. A remarkable example are some women members from Muslim communities which are traditionally very reluctant to reveal their identity and name. In the course of the project however, they elaborated their business and started introducing themselves openly. Another example is the women group of the Ujayaalo Women Empowerment Center in NSMC. This group started a mushroom farming business to increase their economic resilience with the support from the project under the project specific resilience challenge fund.

Furthermore, the project has made an effort to maintain indigenous practices that are vanishing due to modernization. An example is the business Panchasheel Handicraft Center, which is run by a group of women from the Tharu community. These women are producing different types of Tharu handicrafts like dustbins, hotcases, baskets, pen stands etc. by using local natural materials such as dry grass, hay etc. These products are popular within Nepal and abroad. Through the project support, these deprived and poor women without any educational background have built up a well-working business and have expanded the variety of products to generate more income. The proprietor of this business has developed leadership skills and provides training in the traditional art of Tharu handicrafts in collaboration with the office of District Small Cottage Industries. A similar example is provided by the business of hand-made pottery making in Nepalgunj and the traditional weaving of Dhaka clothes in Birendranagar which both support indigenous people to preserve and expand their traditional skills.

The project has also engaged people with disabilities in business activities in Birendranagar. The Nawabihani Apanga Group, which has six disabled members, was supported by Resilience Challenge Fund of the project to produce single-use leaf bowls and plates from natural sal leaves. This activity allowed the group to increase their income and to build up self-esteem and self sustenance.

5. ASSESSMENT OF THE RESULTS AND IMPACTS OF THE PROJECT

5.1 Relevance

The project is considered very relevant in the Nepalese context, since the country is ranked as the world's 4th, 11th and 30th vulnerable country in terms of climate change-related hazards, earthquakes, and floods, respectively (Ministry of Home Affairs, 2017). According to the National Adaptation Program of Action, the project sites are considered strongly affected by climate-induced disasters like drought, inundation, floods, and landslides. Besides the significant impact of climate change, disaster risk has further intensified due to unplanned and uncertain growth in urban areas, rapid rural-urban migration and political and administrative transitions. The country's transition into federal structure has changed the entire governance system of the municipal governments and increased decision-making power. This transition took place at the start of this project and the local government had to still define their new responsibilities with respect to DRR and CCA. These circumstances were of advantage for this project, since the results of the conducted vulnerability risk assessment for the different municipalities wards were thus highly relevant for the municipal stakeholders and could be directly integrated in the development plans of the municipalities. The formulated Municipal Adaptation Plan has been endorsed and enables the project municipalities to move forward as per their mandates provided by the Disaster Risk and Management Act (2017). These two municipalities' name will always be remembered as pioneers in terms of formulation of MAP. Furthermore, the project also helped to leverage increased municipal budget for adaptation activities: Compared to the period 2016-2017, the municipal budgets allocated for CCA and DRR activities during 2018-2019 have increased by 5 050 000 NPR (ca. 40 400 EUR) in Birendranagar and by 6 805 000 NPR (ca. 54 440 EUR) in Nepalgunj.

In the context of Nepal as one of the least developed countries in the world, the project's achievements of enhancing the livelihood of poor, vulnerable and marginalized communities by engaging them in climate-friendly businesses is considered highly relevant as well. This activity has not only increased the income and economic resilience of these beneficiaries, but also helped to build up their self-esteem, established leadership, improved climate-adaptive capacities of these communities, social capital of the business groups and contributed to overcoming gender inequality and social exclusion. In this way, the project has contributed to the achievement of Sustainable Development Goals and implementing Government of Nepal's 14th plan.

5.2 Effectiveness

The project has successfully implemented most of the planned activities and has met the project objectives to a large degree (compare section 2.1). Some deviations (see section 2.2) from the original project plan have prevented the project from achieving all the planned results that have impeded us from achieving one hundred percent of the project results. For example, not all the budgeted grants to support women groups in business activities could be paid since not enough women entrepreneurs could be found. One other business support grants had to be cancelled due to delivery problems of required machinery. However, the project has successfully completed all other business activities contributing to poverty reduction and climate-change adaptation..

With the endorsement of the Municipal Adaptation Plan by the local governments, the project has fully achieved the objective of integrating climate-adaptive planning into the annual development plans of both municipalities, along with an increased municipal budget provision for DDR and CCA issues.

By promoting a total of 24 green businesses, the project has fully achieved the objective of incorporating climate-adaptive practices into the private sector and engaging women into entrepreneurship. Furthermore, in line with the project objectives, the project has improved the local capacities for responding to and recovering from climate extremes by promoting the climate-resilient and innovative businesses. The project-external private investment helped to expand the promoted innovative businesses, which has been one of the planned project outcomes.

Furthermore, with the project-specific grant support of private businesses and the connected agreements which were made with the two municipalities, the project contributed to improved public-private partnerships. Additional grant support for farming activities by Birendranagar municipality and financial and administrative support for start-ups of green businesses in both municipalities are also signs of more enabling policy environment for investment into climate-resilient activities. According to the final project evaluation survey, 6030 people have directly benefitted from the project by being equipped with knowledge and new skills to adapt to climate extremes. This corresponds to 85% of the targeted amount of direct project beneficiaries. In addition, 1862 people have indirectly benefitted from increased family income.

The engagement of the FNCCI in the selection process of the supported private businesses and in their promotion (e.g. by offering free space in exhibitions) has effectively helped the project activities.

Though climate change mitigation has not been a major objective in this adaptation project, activities such as tree planting and tree sapling production in different nurseries have contributed/will contribute to CO₂ emission reductions.

The objective of knowledge exchange and dissemination has been achieved by organizing an exchange visit of local representatives to three Nordic countries, by sharing five briefing papers and organizing five multi-stakeholder dialogue sessions to disseminate project results and best practices.

The major factors contributing to the achievement of the objectives was the continuous work in the field by all four local partners, who have been throughout the project in close contact with the different stakeholders, various target groups (beneficiaries), representatives of industries and the general public. Another major factor was the openness of the municipal government towards the recommendations on DRR and CCA by the project. The administrative change in Nepal towards a new federal structure has contributed to this, since the project provided information exactly in the time of need.

5.3 Efficiency

The overall efficiency of the project can be considered good with respect to time frame, investment cost and achieved outputs. For instance, with the seed amount of only 700 EUR per business, green businesses are now generating additional income and improving the

livelihood of vulnerable people out of which most of them are women. Also the project investment cost for the vulnerability risk assessment and formulating the Municipal Adaptation Plan is very reasonable when considering the large impact the endorsement of the adaptation plan along with the provision of municipal budgets for DRR and CCA activities will have during the coming years at local and possibly international level. Even though both municipalities are vulnerable to climate change, DRR and CCA were not prioritized by the local government prior to the project intervention.

An efficient project implementation has been ensured by partnering with district-based Non-Governmental Organizations namely Bheri Environmental Excellence (BEE) Group in Nepalgunj and the Environmental Development Society (EDS) in Surkhet. These organizations, which are based in the project areas, have been responsible for implementing project activities on a day-to-day basis which, minimized traveling and field cost of the consortium team (Arbonaut, Oxfam and CEN) to the field.

5.4 Impact

The project has created significant positive impacts by supporting a total of 480 people from poor and vulnerable communities in establishing and expanding climate-friendly and green businesses. This has improved their livelihood and at the same time has also improved the lives of their family members (2342 additional people). The engagement in project activities and learning from the projects have helped them to increase their self-esteem, social capital, and leadership capacity which was clearly evident in several monitoring visits. One of the members from the Panchasheel Handicraft business group told to the project team "I am getting more help from my husband and in-laws". Similarly, another young lady from the same group said, "I use my earnings to support my studies". Thus, the project support has provided a multitude of impacts which varies from case to case.

At project begin, the project helped in setting up six Women Empowerment Center (WEC), three in each municipality, which consist of a total of 161 women members. Each WEC has about 25-30 members and has developed into a platform for women to work collectively in a group, learn from each other and build networks and social capital. The project provided each group with financial support ranging from 300-400 EUR to start up, improve or expand livelihood activities such as mushroom farming, paper bag productions, agriculture etc and also increased their knowledge and skills through capacity building packages on climate change, disaster risk reduction, leadership etc. Therefore the project not only provided the funding and technical support to the selected business groups, the project team also repeatedly boosted their energy and motivated them to continue and expand their work. As a result, one of the WEC "Ujjalo Women Empowerment Center" received additional funding support from the "Prime Minister Agriculture Modernisation Project" which is worth of 400 000 NPR for the expansion of their mushroom business, which was piloted with support from the project.

The project also had a significant impact on people's awareness of climate change and adaptation measures. The project engaged a total of 5550 beneficiaries in different trainings, focused group discussions, workshops and awareness-raising programs related to climate change, disaster risk reduction, solid waste management and green businesses. The evaluation survey in the end of the project showed that 100% of the sampled respondents were able to define climate change and climate-induced disasters, and approximately 86% of the respondents were able to give the examples of various adaptation practices within their

household and community such as plantation, increasing practices of organic farming, and reducing the usage of plastic bags. Moreover, using a crowd-sourcing approach, the project has collected further innovative ideas from the public for environment-friendly and climate-adaptive businesses. These ideas have been shared with the local stakeholders.

The project conducted pioneering work by formulating the Municipal Adaptation Plans (MAP) based on the results of the vulnerability risk assessment. This effort has also resulted in organizational benefits by strengthening the expertise and knowledge of the project consortium members and district partners. The MAPs were endorsed by municipalities and mainstreamed in their development plans. The project supported the prioritization of DRR and CCA related activities in both municipalities which are reflected in an increment in their annual budgets as described in section 5.1.

The project has collected a database for CCA and DRR related experts, which helps to institutionalize the scattered skills people in the market. Furthermore, the project has created a product-marketing web portal (www.ecobusinessnepal.com) to promote the supported businesses and their products. This online portal also has the main project reports and a map viewer presenting various project results in map form as well as the locations of the promoted businesses.

The gathered knowledge and practical experiences related to climate change adaptation, promotion of climate-friendly businesses and building-up economic resilience in the milieu of climate-vulnerable cities has fostered the expertise and professional networks of the project partners.

5.5 Sustainability

The project has been implemented through collaboration with the local government in both municipalities. Both municipal offices have endorsed the Municipal Adaptation Plans and have already mainstreamed their activities in the annual development plans. Municipalities have prioritized environment protection, climate change adaptation and disaster risk reduction which is visible from the increasing trend of the annual budget in DRR and CCA related activities. This shows the commitment of the municipalities towards the project activities and the priority shift in municipal planning.

The sustainability of the supported businesses has been ensured by the responsables of the businesses. This was confirmed during the evaluation survey at project end when 100% of the respondents expressed their satisfaction with their business, also in the long-term. Regarding the business ownership, 86% of the respondents confidently said that they will continue to lead their businesses as owners, while 7% would prefer handing the business over to the community and another 7% would like their business to be owned by the government.

The project support has also leveraged additional grants for some of the business like Ujyaalo Women Empowerment Centre, who received further 400 000 NPR of government support to continue and expand their business. As the market for Panchaseel handicraft is growing up, they have increased their manpower and are looking forward to having a formal contract with dealers in Kathmandu and Pokhara. Recently, the Panchasheel group was honoured by the Women Entrepreneurs Association as one of the best women entrepreneurs in Banke district (<https://radiohatemalo.com.np/2019/03/23/8532/>). For the vegetable farming business they can take the benefits of agriculture related schemes recently

announced by the government of Nepal. On the other hand, for those businesses who were already initiated before the project interventions, project support has helped them to expand, to integrate green concepts, and expand their exposure and marketing linkages. These businesses also have long term plans to continue and expand their business. Moreover, both municipal governments have also committed to monitoring and following up the businesses after the completion of the project. The project's capacity building activities on business literacy and marketing linkages have also helped the business groups to further develop their leadership skills in running their businesses. The crowd-sourced innovative business ideas based on green and climate-adaptive practices have been shared with the municipalities and form the basis for establishing of further businesses, following the example of the businesses developed during the project.

As the project has promoted only climate-friendly and green initiatives, it has not created any negative impacts on the environment. The project also supported the planting of 90 and 537 tree seedlings as green belts and along roadsides in NSMC and Birendranagar Municipality, respectively, during June and July 2018. Furthermore, the project supported three tree nurseries: 1) Maharjan Nursery in Nepalgunj, 2) Nursery established by the Bhairam Community Forest User Group in Birendranagar and 3) Kalika Namuna Krishe Samuha in Birendranagar. The Maharjan Nursery produced a total of 5950 seedlings, Bhairam CFUG produced a total of 13200 seedlings, and Kalika Samuha produced a total of 150 seedlings after receiving support from the project. All seedlings were produced during 2018. When considering all planted trees and nurseries together, a total of almost 20,000 trees/tree seedlings have been produced or will be planted, which will result in emission reductions of roughly 3600 tonnes of CO₂ over the next 20 years until these trees are mature (ca. 180 t CO₂/year). This figure is based on a 60% survival rate for the planted trees and seedlings, assuming that all produced seedlings will be planted. The full list of tree species used for planting and seedlings production is available from Annex 6. The cities have signed a memorandum of understanding to ensure the protection of the planted trees. For example, in case of 40 trees planted along the roadside in Nepalgunj, the NCMC and the nearby campus will be responsible for the sustainability of the planted trees.

The product-marketing web portal developed by the project contributes to the sustainability of the supported businesses. It allows the business groups to advertise their products, prices and contact details online. The portal also informs about the main project results and provides links for downloading project reports. The maintenance of the web portal will be under the responsibility of CEN and Arbonaut in cooperation with a local IT company during the first year after project end. Afterwards it will be transferred to the municipalities.

During the execution of this project, the project has identified the detail capacity need and vulnerability index of the working municipalities. The collected information and climate related data will be useful in the future. Since the project has supported the establishment of public information centres in both municipalities, all the collected information related to DRR and CCA will be shared to the public through the information centre. Anyone who wants to have information about DRR and CC will have access to the collected database and web-portal through the information centre. Since, establishment of an information centre is guided by the Local Government Operation Act 2074 B.S., the project municipalities will run, maintain and update the established information centre in the future.

6. POTENTIAL FOR SCALING UP AND FOLLOW-UP INVESTMENTS

The government of Nepal is addressing adaptation activities at national and local levels. Ministry of Forest and Environment is updating the National Climate Change Policy, the National Framework of Local Adaptation Plan, and the Ministry of Federal Affairs and General Administration has drafted a Local Disaster and Climate Resilience Planning Guideline, which is under approval process. Besides, the Ministry of Home Affairs formulated a Disaster Risk Reduction and Management Act that is under implementation. All these initiatives are focused solely on disaster risk reduction, local level adaptation, and resilience-building processes. Thus, the MAP formulated for the two project municipalities are an additional step which reflects all these plans and policies in a single document, and contribute one step forward to respond to the needs of vulnerable urban dwellers. Since the MAP is a living document, it can be revised and updated in line with changing context and policy revisions. The MAP formulation process based on participatory approach as done in this project has shown successful since it is accepted by the public as well as government. It therefore forms a viable example that can be replicated not only in the context of Nepal but can also be taken to municipalities in other countries where the risk of climate change and disaster is prevalent.

Similarly, the support of 24 innovative climate-friendly businesses can be replicated with relatively low investment cost also in the national context as well as in municipalities in other countries. The replication requires eco-friendly policies in local bodies. For instance, the waste management practice of producing manure from organic waste and the collection and recycling of plastic waste can be replicated at different scales. The developed web-portal for marketing the business products could be expanded to other municipalities. The conducted crowd-sourcing of innovative business ideas can be applied in other communities to identify local business potentials and concepts.

The compiled knowledge package consisting of capacity building and awareness programs can be reused in other Nepalese municipalities where there is little knowledge on climate change and disaster risk reduction. From the coordination perspective, the project has been successful in showcasing the model of collaboration between municipal government, chamber of commerce (private sector) and business groups (target communities). This model can be replicated to increase economic resilience and reduce poverty by promoting climate-adaptive and green businesses.

In an additional parallel effort, as part of a Master thesis in cooperation with the University of Eastern Finland, the flood risk along West Rapti river in Banke district was studied using Geo-Information System (GIS) methods and flood modelling tools. This study has not been covered by the project budget but is considered relevant because it addresses climate change impacts in the vicinity of Nepalgunj Sub-Metropolitan City, thus extending the scope of the project. The thesis work has been finalized and the document will be available in spring 2019 and will be shared with the relevant stakeholders in NSMC.

Last but not least, this project has increased and strengthened the capacity and expertise of all the project partners, especially those at local level, for promoting and advancing climate change adaptation measures. These capacities will be essential when implementing and supporting upcoming climate change projects in Nepal.

7. LESSONS LEARNED

- In order to address climate change in all its complexity, engagement of local governments, private sector actors, civil societies, and local communities is important;
- The engagement at local level, especially of the private sector, as well as community participation are essential to ensure the sustainability of project activities after the funding from the project stops;
- Capacity enhancement, awareness raising, and hands-on training under the engagement of municipal government and stakeholders are necessary to increase their understanding and commitment to take the recommendations of the project forward;
- Poor, marginalized and vulnerable communities greatly benefit from being engaging in economic resilience activities, focusing on clean, green and climate adaptive businesses, thus achieving both livelihood enhancement as well as in environment protection. The motivation and willingness for collaboration has been high among these communities.;
- In order to overcome gender inequality and social exclusion, economic empowerment and livelihood enhancement play a crucial part;
- Women's networking and collective empowerment help to increase social capital and women's self-esteem as has been the case in the established Women's Empowerment Center;
- People are very open to increase their knowledge on climate change and to address its impacts, but they require technical assistance in achieving that;
- Climate Change Adaptation (CCA) can be incorporated at different levels ranging from household to community development process and from local to national development agenda. This can further reduce their climatic vulnerability, but regular knowledge documentation and dissemination is a prerequisite for this process;
- Developing a Municipal Adaptation Plan has shown to be a good way of integrating CCA and DRR activities into the municipal planning and to leverage increased budgets for these topics;
- Close collaboration with committed local partners in the project district is crucial for the success and sustainability of the implemented activities.

Regarding the implementation schedule, it is recommended that the identification of beneficiaries and the release of project grants is realized already in the very early stage of project implementation based on a clear, transparent, non-bureaucratic selection process. This will ensure that the results of the financial support can be sufficiently monitored during project lifetime. This increases the chance that the businesses continue sustainably also after project end. The identification and support to businesses should therefore be planned for the early phase of the project.

Furthermore, when planning and designing the project, it should be ensured that the formulated indicators are attributable to the project and do not depend to a large degree on

external factors. For example, the indicator 10% increase in the investment of private sector for innovative programmes' was not possible to properly measure at project end.

Dissemination of project results

The project results have been disseminated to local stakeholders and the general public. At the end of the project, all achievements have been shared during a workshop in NSMC and Birendranagar Municipality on 22 & 23 February 2019, respectively. All the local stakeholders including Mayor, Deputy Mayor, Ward Chairs, FNCCI members, business groups, and local project partners joined the workshop.

Apart from the final workshop, regular sharing activities were conducted in both municipalities during project implementation. Some of the business case studies, for instance, Ujjawalo Women Empowerment Center's mushroom farming, Panchasheel's handicraft business and Maharjan's nursery were presented in NDF's newsletters. Similarly, all project partners have actively shared the project's activities through their websites and Facebook pages. Local newspapers also became instrumental in capturing the major events and by publishing them in the local press. A comprehensive project documentary was prepared and broadcasted through television that covers 43 districts in the region. Five policy briefs have been compiled to share recommendations on following topics: Urban greenery, Environment-friendly business, Community awareness, Climate adaptation, and Municipal Adaptation Plan.

Furthermore, the supported businesses are presented on the product-marketing website developed by this project <http://www.ecobusinessnepal.com/>. The website also shares results of the vulnerability risk assessment in a map viewer and provides the possibility to view and download the main project reports and the policy briefs. Information about the project results is also shared by the municipal Information Centres. Similarly, all project partners are committed to disseminating project results even outside of the project's scope.

8. FINANCIAL SUMMARY

Table 1. Project financing per partner

	Financing, EUR						
Expenditures, EUR	NCF	Grantee	Oxfam	CEN	BEE/EDS	Revenues from the project	Total
Grantee	175 218	57 799					233 022
Oxfam	51 862		74 245				126 107
CEN	72 766			16 780			89 546
BEE	72 295						72 295
EDS	77 509				737		78 246
Total	449 659	57 796	74 245	16 780	0	0	599 217

9. CONCLUSIONS AND RECOMMENDATIONS

The project has successfully accomplished most of the planned activities. Very positive feedback on the achieved results was received from the local governments, project stakeholders and project beneficiaries. This was also reflected during the results sharing workshop and reported in local newspapers (e.g. <http://bulbulekhabar.com/2019/02/21453>, <https://www.radiosadvab.com/news/359>).

In summary, the immediate outcomes of this project in the two municipalities comprise the provision of increased municipal budgets for climate change adaptation, environmental management and disaster risk reduction, the mainstreaming of the developed MAP into the municipal development planning, the establishment of 24 successfully running climate-friendly businesses and their promotion through the developed product-marketing web portal (<http://www.ecobusinessnepal.com/>), the enhanced level of knowledge and awareness of climate change and adaptation issues among stakeholders and the general public, and the established partnerships between the public and the private sector.

The project has brought significant positive changes to the livelihood of vulnerable groups, especially for the women of the business groups supported by the project. This was reflected in the motivation and commitment of the beneficiaries towards the project activities and was also noticable during the final monitoring visit from the encouraging feedback by the business groups who are committed to maintain and expand their production also after project ending.

Annex 1
Project completion fact sheet

Project Name:			
Country/ Region:	Nepal /South Asia	Financing:	
		EUR	%
Nordic Partner:	Arbonaut	57 799	9.6
Local Partner:	Oxfam & Clean Energy Nepal	91 025	15.2
Other Partner:	EDS/BEE	737	0.1
	NCF grant disbursed	449 651	75.0
	Total	599 211	
Classification:	Mitigation/ adaptation / combination		
Project cycle:	Contracted: 1 June 2016 Original Closing Date: 30 November 2018 Actual Closing Date: 28 February 2019		
Project description:	"Building Resilience and Climate Adaptive Planning in Urban Centers of Nepal" is an initiative which is designed to support urban centers to develop and implement urban resilience and climate adaptive planning in Nepalgunj Sub-Metropolitan City (NSMC) and Birendranagar Municipality of the Mid-Western Development Region of Nepal. The overall project objective is to make local government agencies in the urban centers, in collaboration with the private sectors and communities especially from the most vulnerable sectors, develop and implement adaptation plans to make cities more resilient to climate extremes and disasters. The purpose is that "local government agencies in the urban centres, in collaboration with the private sectors and communities especially from the most vulnerable sectors, develop and implement adaptation plans to make cities more resilient to climate extremes and disasters".		
Key results:	NCF indicators	Results	
	1. Number of beneficiaries reached (women/men)	6030 direct beneficiaries (3233 women, 2797 men); approx. 1862 indirect beneficiaries (=family members, ca. 911 female, 952 male).	
	2. Number of people with increased resilience to climate change (women/men)	5550 (women 2867, men 2683).	
	3. CO ₂ e emissions reductions (actual at project completion and expected during the lifetime of the project's mitigation investments)	Approximately, 3600 tonnes of CO ₂ over the next 20 years until the planted seedlings are mature (ca. 180 t CO ₂ /year).	
	4. Number of green business concepts tested	24	
	5. Number of new decent jobs created (disaggregated by number of permanent (women/men) and seasonal (women and men))	Permanent jobs for 13 people (women 4; men 9); seasonal jobs for 25 women.	
	6. Number of people with improved livelihoods/income-generating possibilities (women/men)	480 (366 women, 114 men).	
	7. Number of multi-stakeholder partnerships developed	7	
	8. Amount of funds leveraged (actual project co-financing and secured future investments for scaling-up/replication)	149 558 EUR co-financing by the project partners. City of Birendranagar has allocated 8,500,000 NPR and Nepalgunj 14,625,000 NPR to finance yearly DRR/CCA activities (Municipal Adaptation Plan).	
Project performance:	Main Expected Outputs	Achieved	End-of-project status
	Vulnerable urban centres adopt climate adaptation and resilience	Achieved	1. CCA and DRR mainstreamed in the annual development plans of 2 municipalities; 2. Budgets allocated for CCA and DRR activities have increased from 950 000 NPR (2016-17) to 6 000 000 NPR (2018-19) in Birendranagar and from 7 820

			000 NPR (2016-17) to 14 625 000 (2018-19) NPR in Nepalgunj; 3. 111 municipal staff concerned with DRR-CCA activities are better equipped with climate adaptive skills and knowledge.
	Private Sector organizations develop adaptation friendly policies, practice and business plans	Partly achieved	1. One climate-adaptive technology from Nordic countries adopted (greening cities through seedling production); 2. Five private sector actors incorporated climate adaptive practices into their business plans; 3. Ten private sector actors are promoting women entrepreneurship; 4. Nordic information system technology applied to analyse the flood risk in the municipalities and to develop a GIS platform for disseminating project outcomes.
	Vulnerable urban dwellers are equipped with information, resources, and appropriate technology to respond to and recover from climate extremes and disasters	Achieved	1. 24 climate-resilient and innovative business enterprises set up/ retrofitted; 2. 6030 direct project beneficiaries are provided with resource and/or knowledge to minimise exposure and vulnerability and adapt to climate extremes and disaster; 3. Out of these beneficiaries, 3200 people were engaged in conducting the capacity needs and vulnerability assessment and formulating the MAP.
	Knowledge Documentation and Dissemination	Achieved	1. A city to city exchange programme between the project municipalities and Nordic cities was held; 2. Five briefing papers prepared; 3. Seven multi-stakeholder dialogues organised to disseminate project learning and best practices; 4. Web platform to market the supported businesses and to share the main project results incl. a map viewer http://www.ecobusinessnepal.com/ .
Final beneficiaries:	<i>Direct Beneficiaries: 6030 (women 3233, men 2797)</i>		
Climate change impacts:	<ul style="list-style-type: none"> Formulation of municipal adaptation plans, which are the first of their kind at municipal level in Nepal, and mainstreaming them in 2 working municipalities; In total, almost 20,000 trees/tree seedlings have been/will be planted, which will result in emission reductions of roughly 3600 tonnes of CO₂ over the next 20 years until these trees are mature (ca. 180 t CO₂/year), under the assumption of a seedling survival rate of 60%; Compared to the period 2016-2017, the municipal budgets allocated for climate change adaptation and disaster risk reduction during 2018-2019 have increased by 5.050.000 NPR in Birendranagar (six-fold) and by 6.805.000 NPR in Nepalgunj (doubled). 		
Development impacts:	<ul style="list-style-type: none"> Promoted 24 climate-friendly businesses; Created income generating opportunities for 480 direct beneficiaries out of which 76% are women, therefore improving the livelihood of 480 families (2343 people); Promoted leaf plates and bowls production business which engages people with disabilities. 		
Innovation, technology and learning:	<ul style="list-style-type: none"> Promoted 24 climate-friendly businesses like production of organic manure, climate adaptive agriculture, cloth and paper bags production, plastic waste recycling, manufacturing of traditional climate-friendly craft clothing and pottery, plant seedlings nurseries etc; 		

	<ul style="list-style-type: none"> Local and Nordic IT knowledge were used to create a web-platform for product marketing of the established green businesses; GIS platform developed by Nordic partner Arbonaut presents the project outcomes in a map viewer which can support climate-adaptive planning in the municipalities. Geo-Information system technology of the Nordic partner was also applied to analyse flood risk in the municipalities.
Partnership:	<ul style="list-style-type: none"> Partnership with district based NGOs, BEE Group and EDS to implement project activities; Partnership with Nepalgunj Sub-Metropolitan City and Birendranagar Municipality for local government's ownership and project implementation; Partnership with chamber of commerce in both municipalities to promote private business; Partnership with 24 business group to promote innovative green businesses; Partnership with the Council for Technical Education and Vocational Training (CTEVT) and Bheri Technical School (BTS) for technical support in skill development; Support from Ministry of Forest and Environment in MAP formulation process; Local media to disseminate the outcome of project activities.
Sustainability and replicability:	<ul style="list-style-type: none"> The project has been implemented by collaborating with the local government in both municipalities. The municipal office has endorsed Municipal Adaptation Plans and has already mainstreamed its activities in their annual development plans; Municipalities have prioritized environment protection, climate change and disaster risk reduction which is visible from the increasing trend of the annual budget in climate change and disaster risk reduction; The sustainability of the supported 24 business has been ensured by the business groups. This has been evidenced by the end line survey in which 86% of the respondents confidently said that they will continue leading their business, while the remaining 14% are interested to hand it over to the community or municipality. A product-marketing web portal (www.ecobusinessnepal.com) has been created to promote the supported businesses and their products also in the future; Both municipal governments have also committed to monitoring and following up the businesses after the completion of the project. The project's capacity building activities on business literacy and marketing linkages have also helped business groups to further develop their leadership in businesses; The project has supported the establishment of public information centres in both municipalities which will share the knowledge on DRR and CCA and the compiled datasheet of relevant skilled labour in that field. The centres will also maintain the product-marketing web-portal in the future; As the project has promoted only climate-friendly and green initiatives, it has not created any negative impacts on the environment. The project also supported planting of 40 and 250 saplings in NSMC and Birendranagar Municipality respectively on World Environment Day. In total, almost 20,000 trees/tree seedlings have been planted, which will result in emission reductions of roughly 3600 tonnes of CO₂ over the next 20 years until these trees are mature (ca. 180 t CO₂/year); Development of municipal adaptation plans based on participatory approach can be replicated in areas having high climate and disaster risk; The concept of creating climate-friendly private businesses to improve livelihood of families and support eco-friendly policies can be replicated and scaled up with relatively low investment cost; Project has increased and strengthened capacity and expertise of all the project partners, especially those at local level, for promoting and advancing climate change adaptation measures. These capacities will be essential when implementing and supporting upcoming climate change projects in Nepal.
Lessons learned:	<ul style="list-style-type: none"> In order to address climate change in all its complexity, engagement of local governments, private sector actors, civil societies, and local communities is important; The engagement at local level, especially of the private sector, as well as community participation are essential to ensure the sustainability of project activities after the funding from the project stops; Capacity enhancement, awareness raising, and hands-on training under the engagement of municipal government and stakeholders are necessary to increase their understanding and commitment to take the recommendations of the project forward; Poor, marginalized and vulnerable communities greatly benefit from being engaging in economic resilience activities, focusing on clean, green and climate adaptive businesses, thus achieving both

	<p>livelihood enhancement as well as in environment protection. The motivation and willingness for collaboration has been high among these communities;</p> <ul style="list-style-type: none"> • In order to overcome gender inequality and social exclusion, economic empowerment and livelihood enhancement play a crucial part; • Women's networking and collective empowerment help to increase social capital and women's self-esteem as has been the case in the established Women's Empowerment Center; • People are very open to increase their knowledge on climate change and to address its impacts, but they require technical assistance in achieving that; • Climate Change Adaptation (CCA) can be incorporated at different levels ranging from household to community development process and from local to national development agenda. This can further reduce their climatic vulnerability, but regular knowledge documentation and dissemination is a prerequisite for this process; • Developing a Municipal Adaptation Plan has shown to be a good way of integrating CCA and DRR activities into the municipal planning and to leverage increased budgets for these topics; • Close collaboration with committed local partners in the project district is crucial for the success and sustainability of the implemented activities; • Regarding the implementation schedule, it is recommended that the identification of beneficiaries and the release of project grants is realized already in the very early stage of project implementation based on a clear, transparent, non-bureaucratic selection process. This will ensure that the results of the financial support can be sufficiently monitored during project lifetime; • Project indicators should be formulated so that they are attributable to the project and do not depend to a large degree on external factors.
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Annex 2 Logical Framework Matrix

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification (MOVs)	External Factors (Assumptions)
Overall Objective Urban centers of Nepal become people-centered and resilient to climate extremes and disasters.	The government of Nepal will develop urban DRR strategy to make cities resilient to impacts of climate extremes and disasters. Public and private investors are provided an enabling policy environment to invest on actions that build resilient cities.	Policy documents Annual municipal and district council budget and reports	There will be no massive reorganisation of current line ministries responsible for driving climate change and DRR in Nepal in the first 12 months of implementation.
Purpose Local government agencies in the urban centers in collaboration with the private sectors and communities especially from the most vulnerable sector actors develop and implement adaptation plans to make cities more resilient to climate extremes and disasters.	10% increase in the investment of private sector for innovative programmes 60% (7063) of direct beneficiaries demonstrate increased adaptive capacity 60% (141,251) of total population of target project areas are less affected by flooding	District and municipal authorities annual plans and reports FNCCI publications Survey results Disaster monitoring reports	There will be no massive rotation of government local authorities in the target districts to other districts. Favourable environment prevails for private sectors to invest. No major disasters will affect a majority of the population.
Output 1 (Results) Municipalities in the vulnerable urban centres adopt climate adaptation and resilience as an integral part of their annual and periodic development plans and better able predict and prepared to respond to floods and other climate extremes and disasters.	CCA and DRR mainstreamed in at least 80% of development plans of target districts and municipalities. 20 % increase in project districts and municipalities' budgets for CCA and DRR activities. 40 % of target local government officials are better equipped with climate adaptive skills and knowledge	Development plans of project district and municipal authorities Training reports media coverage	There will be no massive rotation of government local authorities National government of Nepal will continue to provide the annual revenue allotment to the 2 districts covered by the project
Output 2- Private sector actors develop adaptation-friendly policies, practice and business plans and invests on actions identified by the municipalities in their annual and periodic plans.	2 climate adaptive technologies from Nordic countries adopted 5 private sector actors incorporating climate adaptive practices into their business plans. At least 10 private sectors supporting actions promoting women entrepreneurship	Progress reports & media coverage Business plans & project progress reports Event reports, progress reports & media coverage	Favourable policy environment prevails for private sector actors to invest.
Output 3- Vulnerable urban dwellers, especially women from poor and marginalized background are equipped with information, resources, and appropriate technology to respond to and recover from climate extremes and disasters.	20 climate resilience and innovative business enterprises set up/ retrofitted 60 % (7063) of target groups demonstrate skills and showcase knowledge to minimise exposure and vulnerability and adapt to climate extremes and disaster.	Business plans, Field monitoring reports and income statements of project beneficiaries (compared to baseline) Pre and post training evaluation reports	Women will be supported by their male counterparts to participate in business enterprises. No major disasters will affect a majority of the population.

Output 4- Knowledge and evidences related to building community resilience to climate extremes and disasters in an urban context generated, documented and disseminated for effective learning and influencing.	A city to city exchange programme/ visit between the project municipalities and Nordic cities 5 briefing papers and policy briefs used as tool for influencing national policies and programmes. 5 multi-stakeholder dialogues organised to disseminate project learning and best practices.	Memorandum of understanding Copies of briefing papers and policy briefs, Number of hits in websites	There will be no sudden change in consular relations between Nepal and Nordic countries Government of Nepal will remain open to suggestions from Civil Society on DRR and CCA matters
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Annex 3 Pictures

Attached separately

Annex 4 Other supplementary deliverables/documentation

Attached separately

Annex 5 Impact Story

Attached separately

Annex 6 List of tree species used for tree planting activities and nurseries

Attached separately

Annex 3 Pictures



Fig 1 : Project Inception Workshop, PC:CEN



Fig 2: Capacity Need Assessment training, PC:CEN



Fig 3: Modular training series presentation, PC:CEN



Fig 4: Conducting the detailed vulnerability assessment, PC: CEN



Fig5 : Presentation of Vulnerability data and projection, PC: CEN



Figure 6: Celebration of World Environment Day, PC BEE Group, PC :CEN



Fig 7: Participant of Art and drawing competition, PC: BEE Group



Figure 8: Handover the seedlings for plantation PC: EDS



Fig 9. While formation of Ward level disaster and climate resilience committee, PC: CEN



Fig 10. Partnership with CTEVT and small and cottage industry Board, PC: CEN



Fig 11. Climate change and environment friendly Interaction, PC:CEN



Fig 12 . Joint monitoring visit of NCF and project partners in Nepalgunj; PC: BEE Group



Fig 13. Orientation for enumerator for End-line survey, PC: Oxfam



Fig 14. Mainstreaming adaption plans in municipal development plan program, PC: CEN



Fig 15: Newspaper print about the challenges of municipality concluded by Need Assessment Survey.



Fig 16: Machine to convert plastics to tiles, PC: Oxfam



Fig 17: Pottery Making Business, PC: Oxfam



Fig 18: News print report concluded by BNNP adoption plan sharing program, PC: EDS



Figure 19: Donor Visit in NSMC ; PC :BEE Group

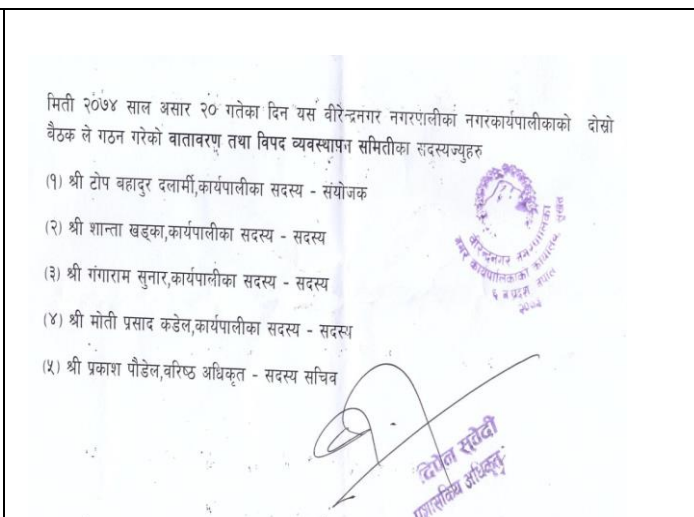


Figure 20 : Structure of municipal level disaster and climate change committees, PC :EDS



Fig 21. News print of Ward level disaster and climate resilience committee

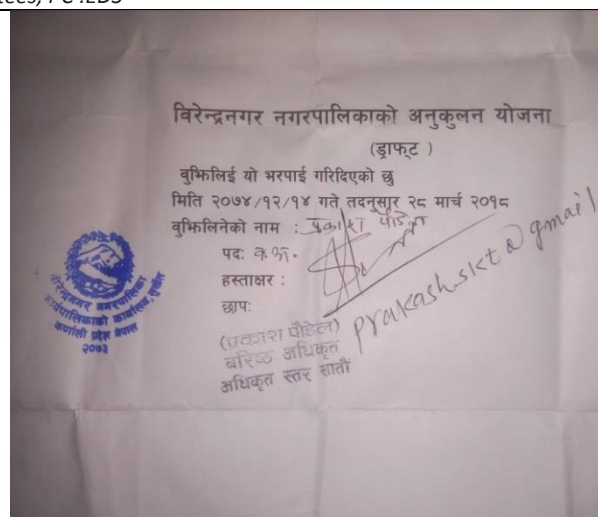


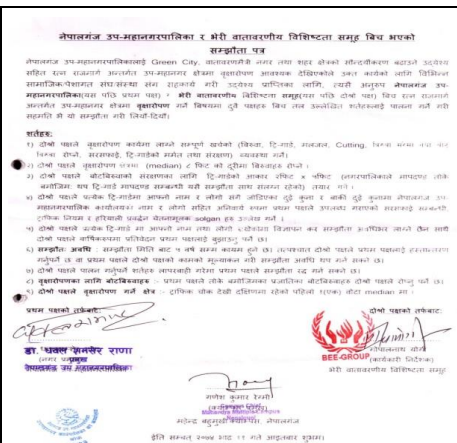
Figure 22. Acceptance and Acknowledgement of MAP from Birendranagar Municipality



Fig 23. Detail Vulnerability Survey (FGD) in Surkhet



Fig 24. Vulnerability Assessment sharing in Nepalgunj



Information on eco-businesses supported by the project

1) Company/Group Name:	Aalanagar Women Agriculture Cooperative Ltd.
Business:	Vegetable farming
Address:	Nepalgunj – 19, Banke
Contact person:	Dina Bhudha (chairperson of group)
Phone:	+977 9868112883
Website:	www.ecobusinessnepal.com
Amount supported:	90 000 NPR
Amount used for:	water pump, pipe, seeds and other equipment
Main products:	tomato, potato, bottle guard, radish, pumpkin, cauliflower, etc.

Business Description: The group was engaged in agriculture cooperatives where they used to deposit a certain amount of money on a monthly basis for saving purpose. They were lacking skills and technical knowledge to engage in activities enhancing their livelihood. Only few were engaged in agriculture by growing tomato, potato, bottle guard, radish, pumpkin, cauliflower and cabbage, but they were facing water scarcity problems. When the project supported the group to buy a water pump, the women were able to produce vegetables for commercial purpose. This support also opened an avenue for other women in the neighborhood to engage in the same activity. Additionally, the project provided trainings in organic farming, value chain and environmentally friendly techniques through different workshops, technical support and other capacity building activities. Lal Kumari, one of the female group members, says that *"before the project support, women were working in isolation, basically in household chores, but now the project has helped women to get connected. We share the same water pump, run savings and credit, share information and stories, and support each other. This has helped us to generate income, expand knowledge and networks and build the social capital and even help each other out"*. She adds: *"Income through this engagement has helped us to support our children to get better education"*. The women are receiving more support from their husbands and families in household chores, so that they can focus on agriculture. Through this initiation, they have already sold vegetables worth of 150 000 NPR.



2) Company/Group Name:	Bhajjupurwa Agriculture Group
Business:	Vegetable farming
Address:	Nepalgunj – 23, Banke
Contact person:	Abdul kudas shekh (chairperson of group)
Phone:	+977 9816595627
Website:	www.ecobusinessnepal.com
Amount supported:	90 000 NPR
Amount used for:	water pump, boring, caret, pipe, seeds and other equipment
Main products:	tomato, potato, radish, pumpkin, cauliflower, etc.

Business Description: The group is predominately surrounded by Muslim communities. Women of these communities are suppressed and deprived of education, employment opportunities and decision-making power. Among these, few were involved in livelihood enhancement activities through agriculture. But it was problematic due to lack of irrigation. Moreover, they were heavily using chemical fertilizers for the farming. When the project supported the group, they were able to purchase a water pump, increase the agricultural production for commercial purpose while avoiding the usage of chemical fertilizers. They have already sold vegetables worth of 170 000 NPR. One of the farmers says, *“we are able to generate income through commercial farming and contribute healthy and environment-friendly practices because of the generous support from the project”*.



3) Company/Group Name:	Everest Organic Agro Farm
Business:	Production of organic manure
Address:	Nepalgunj – 18, Banke
Contact person:	Bir Bahadur Hamal
Phone:	+977 9858068555
Email:	rabi.hamal@gmail.com
Website:	www.ecobusinessnepal.com
Amount supported:	75 000 NPR
Amount used for:	Manure production site
Main products:	Manure

Business Description: This farm produces vermi-compost from organic waste, which carries more beneficial nutrients than the chemical fertilizers that have been widely used in current agriculture productions in Nepal. The business was initiated by young and energetic entrepreneur Bahadur Hamal five years ago. Initially there was little chance for success. He used the waste of his own house and gradually increased the production of vermi-compost. As there was some demand from neighbors, he started selling the compost. Mr. Hamal claims that *“the project has not only helped to enhance my knowledge in climate-friendly business but has facilitated to expand my networks and increase publicity of the production. After this support, the demand of compost has increased which is eventually contributing to my income increase as well”*. With the increased sale of the product, Mr. Hamal was able to sell vermi-composting equivalent to 60 000 NPR so far.



4) Company/Group Name:	Fultekra Pottery Production Group
Business:	Production of pottery
Address:	Nepalgunj – 6, Banke
Contact person:	Fakire Kumhar (chairperson of group)
Phone:	+977 9819572480
Website:	www.ecobusinessnepal.com
Amount supported:	90 000 NPR
Amount used for:	Making chakra and purchasing raw materials
Main products:	Cup, glass, ghaito, pala, gamala, khutruke etc.

Business Description: This is a group of Kumhar people, a marginalized ethnic group, living in Ward no. 6 of Nepalgunj Sub-Metropolitan City. Because of their background, opportunities for changing their lives are very limited. Since generations their families are producing traditional handicraft items – an occupation which does not generate enough income. Most of the Kumhar families have no proper education and are afraid of people outside their own community. They trust their own community beliefs, values and norms and this occupation was not running very well. The project supported this group to manufacture different pottery items such as cups, glasses, gaito, pala, gamala, khutruke etc. The financial support expedited their production. In the early



stage of the business, the group was concerned about their production value since the produced goods are inexpensive. However, the business is progressing well, and the group is now able to produce more items and generate more income than in the past. In the same time, the clean production of clay pottery also supports the agenda of Nepalgunj Sub-Metropolitan City to reduce the use of plastics and promote environment-friendly materials. The group of manufacturers is proud to contribute to a greener and cleaner city.

5) Company/Group Name:	Maharjan Nursery
Business:	Production of seedling
Address:	Nepalgunj – 6, Banke
Contact person:	Renuka Maharjan
Phone:	+977 9848046119
Website:	www.ecobusinessnepal.com
Amount supported:	75 000 NPR
Amount used for:	Plant, Gamla and soil
Main products:	Plant seedlings

Business Description:

This is a family nursery that produces seedlings of some 160 species of flowers, ornamental plants and tree saplings. This business is a first of its kind in Nepalgunj and is proven as a credible green business, recognised by the municipality and the Nepal Chamber of Commerce and Industry. The nursery has gone from a little-known plant shop to an advanced cottage industry, not only supplying saplings across the region but also educating the urban community on plant types, gardening and roof-top farming. *"I knew nothing about business," Ms. Renuka confesses. She says,*



"without support from this project, it would have been almost impossible for me to educate my children and live our family life".

6) Company/Group Name: Mili Juli Women Cutting and Tailoring Group

Business:	Production of cloth bags
Address:	Nepalgunj – 6, Banke
Contact person:	Mina Khadka (chairperson of group)
Phone:	+977 9848022754
Website:	www.ecobusinessnepal.com
Amount supported:	90 000 NPR
Amount used for:	Sewing machine, cloth, furniture and other related materials
Main products:	Cloth bags

Business Description: The group was formed by gathering eight women from poor households of ward no. 18 of Nepalgunj Sub Metropolitan City. The formation of this group and their interest in income-generating activities unfolded the opportunity of starting a business. They began stitching cloth bags. During the process, they learned from each other and brought collective effort to provide an alternative to plastic bags. In the beginning of the business, this group of women were afraid and worried about creating market linkages of their products. Mina Khadka remembers *"it was very difficult to convince people to buy cloth bags when they are getting plastic bags for free along with their purchase"*. At this stage, this group is receiving orders for bags from different shopkeepers and the general public as well. The group members are very happy with their income, collective work and contribution towards making their city clean. This small support has built capacity of women and really transformed their lives.



7) Company/Group Name: Nepal waste Recyclers Pvt. Ltd.

Business: Recycling and upcycling

Address: Nepalgunj – 10, Banke

Contact person: Avadh Sharma

Phone: +977 9851004985

Email: avadhrajsharma@neaplwasterecyclers.org
simply.avadh@gmail.com

Website: www.nepalwasterecyclers.org, www.ecobusinessnepal.com

Amount supported: 330 000 NPR

Amount used for: machine

Main products: Tiles

Business Description:

This is a social enterprise set up with the motive of identifying innovative and sustainable solutions for recycling and upcycling of plastic wastes and all other type of wastes generated in Nepalgunj and surrounding areas. The business takes care of collecting, sorting, bailing and supplying PET (poly ethylene terephthalate) bottles to other value-adding recycling centers; they also collect and sort LDPE and HDPE plastics waste, identify solutions for their reuse and take care of all other recyclable dry waste. Avadh Sharma, the Business Head of the company, says *"We, together with other stakeholders are committed to solve the waste problems in the city. We have already created few jobs and will provide more opportunities, especially to youth, in the future as our business operationalizes."*



8) Company/Group Name: Panchasheel Handicraft Center

Business: Productions of Dhakiya and other home appliances

Address: Nepalgunj – 9, Banke

Contact person: Niru chaudhary (chairperson of group)

Phone: +977 9848178246

Email: panchashil.hastakala@gmail.com

Website: www.ecobusinessnepal.com

Amount supported: 675 000 NPR

Amount used for: Boiling container, LPG Gas and raw materials

Main products: Dustbin, hotcase, dalia , mauni, pen stand etc.

Business Description:

This is a women-led business empowering climate-vulnerable women through eco-entrepreneurship. The Nepalese name 'Panchasheel' literally translates to 'five qualities'. They produce dustbins, mattresses, laptop bags, tea trays, pen holders, and ornamental boxes from resilient plant species found along local river banks and wetlands, helping to minimise the usage of plastics.

The business began in the backroom of Niru Chaudhary's house. After receiving a grant from the project, the five women were able to ramp up their operation with the bulk purchase of raw materials and manufacturing utensils, including a stove. The ability to produce larger quantities expanded their margins, which culminated in a record profit margin at last year's Business Expo Fair. *"Without the support of the*



NCF grant we would never have imagined producing so much with such good returns", Chaudhary enthuses. "Now we have more to invest to grow even bigger". "We were five housewives, sceptical about ourselves, lacking identity and confined to the four walls of our house", Proprietor Niru Chaudhary recalls. Several hundreds have already received technical training from Panchasheel. The success of this business has raised the women's social status, bringing them new recognition within the business sector, and has helped to create a more inclusive community.

9) Company/Group Name:	Srijana Income Generation Agriculture Group
Business:	Vegetable farming
Address:	Nepalgunj – 21, Banke
Contact person:	Dal Bahadur Roka (chairperson of group)
Phone:	+977 9800542135
Website:	www.ecobusinessnepal.com
Amount supported:	90 000 NPR
Amount used for:	Water pump, pipe, seed and other equipment
Main products:	tomato, potato, radish, pumpkin, cauliflower, etc.

Business Description: This group is engaged in vegetable farming of different varieties like tomato, potato, bottle guard, radish, pumpkin, cauliflower, cabbage etc. Prior to this activity, the socio-economic conditions of these Dalit women were poor, they primarily spent their time for household work. Some started farming but had problems with water for irrigation. Besides they suffered from flood, inundation and extreme weather. The project provided training and better knowledge on organic farming, environment-friendly production and value chain, which has helped them to build-up capacity for improving their agriculture practices. The group president Dal Bahadur Rokay says, *“when we were facing various difficulties, the project supported us so that we were able to increase our production as well as enhance our livelihood.”* The group has already sold vegetables worth of 80 000 NPR and has converted their practice from chemical fertilizer-based production to organic farming.



10) Company/Group Name: Ujayaalo Women Empowerment Center

Business: Mushroom farming
Address: Nepalgunj – 2, Banke
Contact person: Bimala Gautam (chairperson of group)
Phone: +977 9848081408
Website: www.ecobusinessnepal.com
Amount supported: 127 775 NPR
Amount used for: production houses, seed, water pump and pipe
Main products: Mushrooms

Business Description: This is the group of 26 women who initiated mushroom farming through the established Women Empowerment Center (WEC). The WEC is a platform for women which privileges them to collectively build capital, develop leadership skills and expand their social networks. This business aims to enhance women’s resilience to climate change by introducing alternative business opportunities that generate income streams. *“Women who used to be busy with household chores withdrew from their traditional work and actively participated in group mushroom farming and succeeded in breaking the socio-cultural norms. This project has helped illiterate groups to learn about climate friendly business techniques and participate in income generating activities. We received seed money from the project to initiate the mushroom business which is going quite well considering the extreme temperatures of*



Nepalgunj”, says Bimala Gautam, chairperson of Ujjyalo Mahila Sasaktikaran Kendra Nepalgunj. The group recently received additional funding support from the “Prime Minister Agriculture Modernisation Project” which is worth of 400 000 NPR for the expansion of their business.

11) Company/Group Name: Women Skill Development Center

Business: Production of souvenirs
 Address: Nepalgunj – 2, Banke
 Contact person: Sumitra Chaudhary
 Phone: +977 9866069296
 Website: www.ecobusinessnepal.com
 Amount supported: 75 000 NPR
 Amount used for: Sewing machine, cloth, furniture and other related materials
 Main products: Cloth bags, cushions, stitched cloth bags

Business Description: This is a group of six women who recycle old clothes and produce cushions and dolls as souvenirs. They also create embroidery and stitch cloth bags. By recycling clothes and providing

alternatives to plastic bags, the group has been contributing to environment-friendly production in Nepalgunj. Sumitra Mukhiya was a deprived woman from an indigenous group who was neither able to pursue any education nor to have any job. Her family had difficulties to cover basic needs and having a small child she was not able to look for work. Thus, she took help



from a neighboring woman and learned tailoring from her. She gradually started to make clothes for her family and later produced dolls, cushions, bags and began selling in the local market. Lately she has expanded her networks and formed a group of six women to produce these items on a commercial basis. Through the project support they were able to increase the production and sell to other districts e.g. Surkhet, Dailekh, Butwal, Narayangath, Kailali, Kanchanpur and many other places. They are still unable to meet the demand and they have already earned approximately 200 000 NPR.

12) Company/Group Name: Bhairam Community Forest User Group

Business: Nursery for medicinal herbs
 Address: Birendranagar – 4, Surkhet
 Contact person: Amar Karki, Indra Kumari Chilesa
 Phone: +977 9868644145, 9848117560
 Website: www.ecobusinessnepal.com
 Amount supported: 75 000 NPR
 Amount used for: plastic tunnels, seeds and other related materials

Main products: Timur, Tejpatta, Kurilo

Business Description:

This group comprises 800 households. They had established a nursery to grow seedlings of Non-Timber Forest Products. However, with the existing nursery they were not able to focus on producing other valuable tree seedlings that have high demand in the market. With the support from the project they were able to establish a nursery of Timur, Tejpattan, Harro, Barro etc. The chairman of the group Amar Karki says, *"we are energized after the support from the project. We are able to produce more seedlings of diverse varieties that have a high demand in the local market. This has not only helped us to contribute to forest conservation but has generated income for the group members"*. The group has earned 200 000 NPR this year from selling seedlings.



13) Company/Group Name: Dholedhunga Duna Tapari Women Group

Business: Production of bowls and plates from leaves
Address: Birendranagar - 11, Surkhet
Contact person: Mina Acharya (Chairman), Krishna Chaudari
Phone: +977 9868927240, 9848075104
Website: www.ecobusinessnepal.com
Amount supported: 75 000 NPR
Amount used for: Machine
Main products: Plates and bowls from Sal leaves

Business Description: The Dholedhunga Duna Tapari Women Group comprises 40 female members primarily from Chaudhary ethnic groups. Most of them were used to work as maids in other people's houses, but they wanted to break this tradition. Thus, they approached the project with the plan of producing leaf bowls and plates from raw materials available in the nearby community forest. The project supported this group to buy a machine for manufacturing leaf bowls and plates. In order to run the business, a business operation committee was formed comprising 11 members out of which 7 members are from indigenous groups. Saradha Rana, one of the members of the group, says *"Approximately, 2000 items are produced each day by four women. They save 10 % of the joint income to their common fund and use it to pay rent and health security of the workers. These women are very happy to work collectively and contribute to this production of bowls and plates from Sal leaves, which is used as alternative to plastics"*.



14) Company/Group Name: Hariyo Hira Women Agriculture Group

Business: Organic vegetable farming
Address: Birendranagar - 12, Surkhet
Contact person: Ganesh Rokeya, Sabitra Buda
Phone: +977 9843713648, 9848097192
Website: www.ecobusinessnepal.com

Amount supported: 600 000 NPR
 Amount used for: plastic tunnel, literacy class, business plan, plant clinic, training
 Main products: Bottle guard, cucumber cauliflower, tomato, cabbage etc.

Business Description:

The farmers are engaged in vegetable production in a limited area of agro-land, since the increasing migration of people to the area and the rapid urbanization has resulted in the plotting of the fertile land into smaller parcels. This has caused problems for farming because availability of land for production of vegetables has decreased, and farmers are unable to meet the local market demand. For farmers, the investment costs are increasing compared to the achieved profit. Therefore, farmers were facing challenges in continuing their traditional farming and were looking for alternative livelihood options. The project supported them to establish green houses to produce organic vegetables. The members of the group received training on business literacy, plants treatment etc. The chairman of the group, Sabitra Budha, says *"Our livelihood has improved after getting support from the project". Proudly she adds: "We are also entrepreneurs now. I am able to send my sons and daughters to schools and colleges."*



15) Company/Group Name: Kalika Namuna Agriculture Group

Business: Timur production
 Address: Birendranagar - 16, Surkhet
 Contact person: Chitra Bahadur Basnet
 Phone: +977 9748035803
 Website: www.ecobusinessnepal.com
 Amount supported: 75 000 NPR
 Amount used for: Seedlings, instruments, pond
 Main products: Timur

Business Description:

Timur is a highly demanded medicinal plant in Nepal which is largely used in the treatment of fever, dyspepsia, carminative, stomachic and anthelmintic problems, as well as a disinfectant and for cleaning teeth. As the market price of timur is very high (1500 NPR/kg), farming is profitable. The farmers are planning to use an improved technology of solar dryers in the post-harvesting period. A rain water harvesting technology has been applied to store water for drought periods. Chitra Bahadur Basnet, one of the farmers, says *"We are able to expand our timur plantation and we are very happy with the*



project which enabled us to buy more seedlings, new instruments and to construct a rain water harvesting pond”.

16) Company/Group Name: Milan Chautari Agriculture Group

Business: Ginger production
Address: Birendranagar - 15, Surkhet
Contact person: Dhan Bahadur Thapa
Phone: +977 9748024695
Website: www.ecobusinessnepal.com
Amount supported: 75 000 NPR
Amount used for: Seeds and organic fertilizer
Main products: Ginger

Business Description:

Ginger is a cash crop with a short rotation period. The project supported this group to buy seeds and organic fertilizer. The group members are able to engage in professional ginger farming. Ginger is resistant to cold climate. Each family is able to earn up to 3500 NPR in one season. The chairman of the group, Dhan Bahadur Thapa, says, *“Our income has not only increased, we are also learning about climate change”*. He continues *“The project has encouraged us to change to climate-adaptive agricultural practices”*.



17) Company/Group Name: Nababihani Apanga Group

Business: Production of bowls and plates from Sal leaves
Address: Birendranagar - 2, Surkhet
Contact person: Jaya Bahadur BK (Chairman)
Phone: +977 9822411685
Website: www.ecobusinessnepal.com
Amount supported: 75 000 NPR
Amount used for: Repairing machine, furniture, electric wiring etc.
Main products: Bowls and plates from Sal leaves

Business Description: Nababihani Apanga Group is a group of disabled people. The project supported them with repairing the machine that was dysfunctional, constructing a shed for drying Sal leaves and renovating the house for producing bowls and plates from the dried leaves. They collectively produce 25,000 plates/bowls and earn 12,000 NPR per day. Parents of the people with disabilities are supporting them in the leave collection and transport while collecting firewood and fodder from the nearby forest for household purpose. The group have developed a good team spirit, recognizing and respecting each other's constraints and potentials. Thus, they divide the work based on their abilities, so that some are engaged in preparing the leaves, some are operating the machines and others are packaging the products. The Chairman of the group, Jaya Badhadur B.K, says *"The project support has helped us to increase income as well as self-esteem of the people with disabilities"*.



18) Company/Group Name:	Nikash Dhaka Micro Entrepreneurs' Group
Business:	Traditional hand-made Dhaka cloths
Address:	Birendranagar - 2, Surkhet
Contact person:	Sarmila Chaudari, Gita Chaudari
Phone:	+977 9848161019, 9864940256
Website:	www.ecobusinessnepal.com
Amount supported:	600 000 NPR
Amount used for:	machine, thread, business plan, literacy class, training
Main products:	Traditional hand-made Dhaka cloths (e.g. Khada, Sal, Pachaura)

Business Description: The group consists of indigenous women from the Tharu community who are engaged in weaving Dhaka clothes since six years. Dhaka clothes consist of unique pure cotton and are traditionally being used in Nepal for creating Kurta, Surwal, T-Shirts, purses, wallets, mufflers, waist coats, and laptop bag etc. It has high price in the local market. The group was making some profits, but the business has not succeeded in upscaling the production because it was based on manual work and took 3-4 days for producing one Dhaka cloth. They bought a semi-automatic machine after getting support from the project. Now they are able to produce 3-4 Dhaka cloth pieces in a day. Dhaka cloth is on high demand in the local market. The chairman of the group, Sharmila Chaudhari, says *"With the project support, the members of the group are going beyond their daily household chores. The group members and their families are very happy because we are able to earn some money from this business"*. She adds *"The project support has helped us to improve our livelihood and we are able to send our children to schools."* Each member manages to earn monthly 20 000 NPR with just four hours daily work. The group saves 100 NPR per month to their common account which is used to provide a loan to any group member in times of need with low interest rate.



19) Company/Group Name:	Pashupati Bag Industry
Business:	Paper bag production
Address:	Birendranagar - 6, Surkhet
Contact person:	Ganesh Pant
Phone:	+977 9858050525
Website:	www.ecobusinessnepal.com
Amount supported:	100 000 NPR
Amount used for:	punching machine
Main products:	Paper bags

Business Description: This business aims to contribute on environment sustainability by promoting environment-friendly paper bags. The project supported them by buying a punching machine. The machine usage has facilitated the workflow and increased the production. The business imports raw materials from India.



20) Company/Group Name:	Shree Ramrikada Agriculture Group
Business:	Lemon production
Address:	Birendranagar - 14, Surkhet
Contact person:	Agnidhar Chilesa
Phone:	+977 9804511197
Website:	www.ecobusinessnepal.com
Amount supported:	70 000 NPR
Amount used for:	seedlings, organic fertilizer etc.
Main products:	Lemon

Business Description: Due to increasing temperatures and expanded drought periods, farmers were interested in lemon plantation instead of other options to sustain their economic status. Because of the project support the farmers are able to manage lemon orchards with management practices like grafting, removing invasive species, applying water-efficient irrigation techniques, local pest management techniques, and extraction of neem leaves to treat the lemon plants. These practices will increase the production rate of lemon. The chairman of the group says, *"We are motivated to plant lemon seedlings because it is a drought-resistant species and it doesn't need very fertile land"*. He further adds *"Though*



we do not yet have productions as it needs at least three years to produce its fruits, we hope to have a good profit once the lemon plants have started to fruit.”

21) Company/Group Name: Shivashakti Bee Hive Agriculture Group

Business: Honey production
Address: Birendranagar - 11, Surkhet
Contact person: Chudamani Chapain
Phone: +977 9848048230
Website: www.ecobusinessnepal.com
Amount supported: 75 000 NPR
Amount used for: Machines and label stickers
Main products:

Business Description:

The project has supported this group to purchase a machine to facilitate the seal packaging of the honey products for sale on the market. Similarly, the received grant was used for acquiring necessary new technology for bee keeping and honey branding. In addition to honey production, the group now also provides trainings on bee keeping for others who wish to pursue this work. There are altogether 15 members in the Shivashakti Bee Keeping Group. They have also managed to save 100 NPR per month to a common fund from which they provide loans to group members with low interest rate and without collateral.



22) Company/Group Name: Sital Krishi & Pashupalan Group

Business: Organic vegetable farming
Address: Birendranagar - 14, Surkhet
Contact person: Prem Pd. Poudel, Yamlal Giri
Phone: +977 9748014972, 9858053070
Website: www.ecobusinessnepal.com
Amount supported: 75 000 NPR
Amount used for: Drum, seedlings, insect net

Main products:

Bitter guard, cucumber, cauliflower, tomato, cabbage etc.

Business Description:

The group has been engaged in tunnel farming for the past four years, experiencing problems of invasive species and insects. This has decreased the agricultural productivity. Moreover, the production cost has increased with the more intensive use of insecticides and erratic climatic change effects. The project support was used to invest in integrated pest management techniques such as use of neem leaves, titepati, cow urine and sisno. Also, the promotion of drip irrigation, maintenance of the irrigation system inside greenhouses, and river bed farming in flooded areas are some of the climate-adaptive activities that the group has undertaken to produce insect-/pest-free vegetables. The chairman of the group, Prem Prasad Poudel, says *"We used insecticides earlier, but after the support from the project we are able to produce organic vegetables"*. They have earned 200 000 - 300 000 NPR annually from selling vegetable products. Mr. Poudel continues: *"Vegetable farming has been the main basis for us to educate our children, to cover daily household expenses as well as to save some money"*.



23) Company/Group Name:

Usha Tailors and Training Center

Business:

Production of cloth bags

Address:

Birendranagar - 6, Surkhet

Contact person:

Kamala Nepali, Bhagawati Damai

Phone:

+977 9868224637, 9848138843

Website:

www.ecobusinessnepal.com

Amount supported:

75 000 NPR

Amount used for:

Sewing machine, cloths, etc.

Main products:

Cloth bags

Business Description:

This center was established by a couple of women to engage in cloth tailoring and to provide training. The group is producing cloth bags, hoping to reduce the use of plastic bags in the city. The business idea is highly aligned with Birendranagar municipality's campaign for a plastic free zone. The chairman of the center says: *"I am able to send my children to college with the income from the cloth bags sale. We are receiving orders for differently sized cloth bags and hope to involve more female members in this business"*.



24) Company/Group Name:	Green City Sanitation Service Nepal
Business:	Production of organic manure
Address:	Birendranagar - 6, Surkhet
Contact person:	Sasi KC
Phone:	+977 9851111449
Website:	www.ecobusinessnepal.com
Amount supported:	198 000 NPR
Amount used for:	Boundary wall, drums, weighing scale etc.
Main products:	Manure

Business Description:

This business collects, manages and recycles waste from Birendranagar municipality. Both the group and the municipality have agreed in a Memorandum of understanding to work together to convert trash into cash through resource recovery. The main business concept includes the establishment of a plant that composts organic waste and produces high quality agricultural manure to promote organic farming and soil nutrient enhancement in the city. The business further intends to extract biogas from a commercial biogas digester in the near future that will collect methane generated during waste composting in a controlled environment. This private sector has shown a great prospect for controlling the hazardous disposal of solid waste into the rivers or drainage system or the improper

burning of waste which is contributing to climate change. The chairman of the company, Sasi Kumar KC, says: *"If we are able to run this business sustainably, it can be a model for private sector engagement in the waste management sector while entire Nepal, especially Kathmandu city, is struggling with the waste management"*. He further adds: *"More jobs will eventually be created as the business takes its full shape."*



Situation before the project

The two Nepalese project municipalities Birendranagar (Surkhet district) and Nepalgunj Sub-Metropolitan City (Banke district) in Nepal are struggling with climate change impacts such as extended drought periods, increasingly irregular rainfall pattern, floods and landslides caused by extreme monsoon events. At the same time the municipalities are facing intensified pressure from unplanned urban growth and rapid rural-urban migration. This development has increased unemployment, poverty and economic vulnerability to the climate extremes.

Project results

The project has supported 24 innovative green businesses in two Nepalese municipalities by providing seed grants. The grants have helped to increase resilience to climate change especially among marginalized, vulnerable and poor groups of the society. The project has especially focused on engaging women into entrepreneurship. The supported businesses and their products, as well as the project results, are promoted at <http://www.ecobusinessnepal.com/>

People from different levels of society were also involved in the preparation of a Municipal Adaptation Plan (MAP), which is first of its kind in Nepal. The adaptation plan integrates the topics of climate change adaptation and disaster risk management into periodic municipal development planning with a significantly increased budget

Highlighted positive impacts

Enhancing womens' resilience to climate change through mushroom farming

A group of 26 women initiated mushroom farming through the Ujayaalo Women Empowerment Center (WEC) established by the project. The WEC is a platform for women that enables them to collectively build capital, develop leadership skills and expand their social networks. The group of women at Ujayaalo have embarked upon mushroom farming to generate income streams that support their families' livelihood and are now enjoying an income boost from this activity. As their business idea proved successful, they were rewarded with 400 000 NPR (ca. 3200 EUR) from the Prime Minister's Agriculture Modernization Project to continue and to expand their business.



Increased municipal budget for climate change adaptation

The project helped to leverage increased municipal budgets for adaptation activities. Both project municipalities have endorsed the adaptation plan prepared by the project and mainstreamed it into their annual development planning. Compared to the period 2016-2017, the funds allocated for climate change adaptation and disaster risk reduction activities during 2018-2019 have increased by 5 050 000 NPR (ca. 40 400 EUR) in Birendranagar and by 6 805 000 NPR (ca. 54 440 EUR) in Nepalgunj. This means that the new budgets are six-fold and two-fold than the previous budgets in the two municipalities, respectively.

Annex 6: List of tree species used in tree planting activities and nurseries

Business group or place	Activity	English or local name	Botanical name
Bhiram Community forest user Groups	Nursery for medicinal herbs	Cinnamon Hog plum Bel Fruit Prickly Ash Bamboo Cane	Cinnamomum tamala Choerospondias axillaris Aegle marmelos Zanthoxylum armatum Bambusa spp Calamus
Kalika Namuna Krishe Samuha	Timur production	Prickly Ash	Zanthoxylum armatum
Maharjan Nursery	Production of plants	China Palm Erkia Palm Pine Cape jasmine Silky oak Mango Litchi Lemon tree (Kagati) Pomegranate Guava Karbair plant Bottle brush Rakhi phul Aasare phule Rudrakshya Tejpatta Asoka Ardisia Pomelo Lemon tree (Amilo) Chadani Rubber fig Spruce Trumpetbush Kapur	Livistona chinensis Dypsis lutescens Pinus spp Gardenia jasminoides Gravellia robusta Magnefera indica Litchi chinensis Citrus limon Punica granatum Psidium guajava Nerium indicum Callistemon spp Passiflora spp Lagerstroemia indica Elaeocarpus spp Cinnamomum tamala Saraca asoca Ardisia elliptica Citrus maxima Citrus limon Tabernaemontana divaricata Ficus elastic Picea abies Tecoma spp Cinnamomum camphora
Nepalgunj green belt	Tree planting	Hybride swami Bottle palm	Ficus Hyophorbe lagenicaulis
Nepalgunj roadside	Tree planting	Ficus tree Karbair plant	Ficus benjamina L. Nerium indicum L.
Birendranagar green belt	Tree planting	Cinnamon	Cinnamomum tamala
Birendranagar Women Group (WEC)	Tree planting	Mango Bamboo Amrisoo (Tiger grass)	Mangifera indica Bambusa spp Thysanolaena maxima

		Mashala Kimmu Koirelo	Eucalyptus spp Morus spp Bauhinia purpurea
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