

# **Climate Change Local Adaptation Plan of Action (CC-LAPA)**

**Kristinachnechaur Village Development Committee  
(VDC), Nepal  
(2014-2019)**

Societal Transformation PL4-305  
Candidate Numbers: 213, 216, 304



## Slide 2: National context of Climate Change Adaptation/Mitigation

Nepal shares only 0.01 % of cumulative global CO<sub>2</sub> emission since 1750 until 2019 (Ritchie & Roser, 2020), but because of its geographical location, and weak socio-economic condition, it stands at number four (4) in Climate Change Vulnerability Index provided by maplecroft (maplecroft, 2011). Therefore, people are in need of strategic adaptation plans which could help them cope with the impacts of climate change and build resilience for future. Even though strategic adaptation plans are promptly needed for the vulnerable communities, the country has also committed to follow the path of net zero emission targeting 2030 in its Nationally Determined Contribution (NDC) (Government of Nepal, 2020). Therefore, Nepal should follow an integrated approach including both adaptation and mitigation strategies.

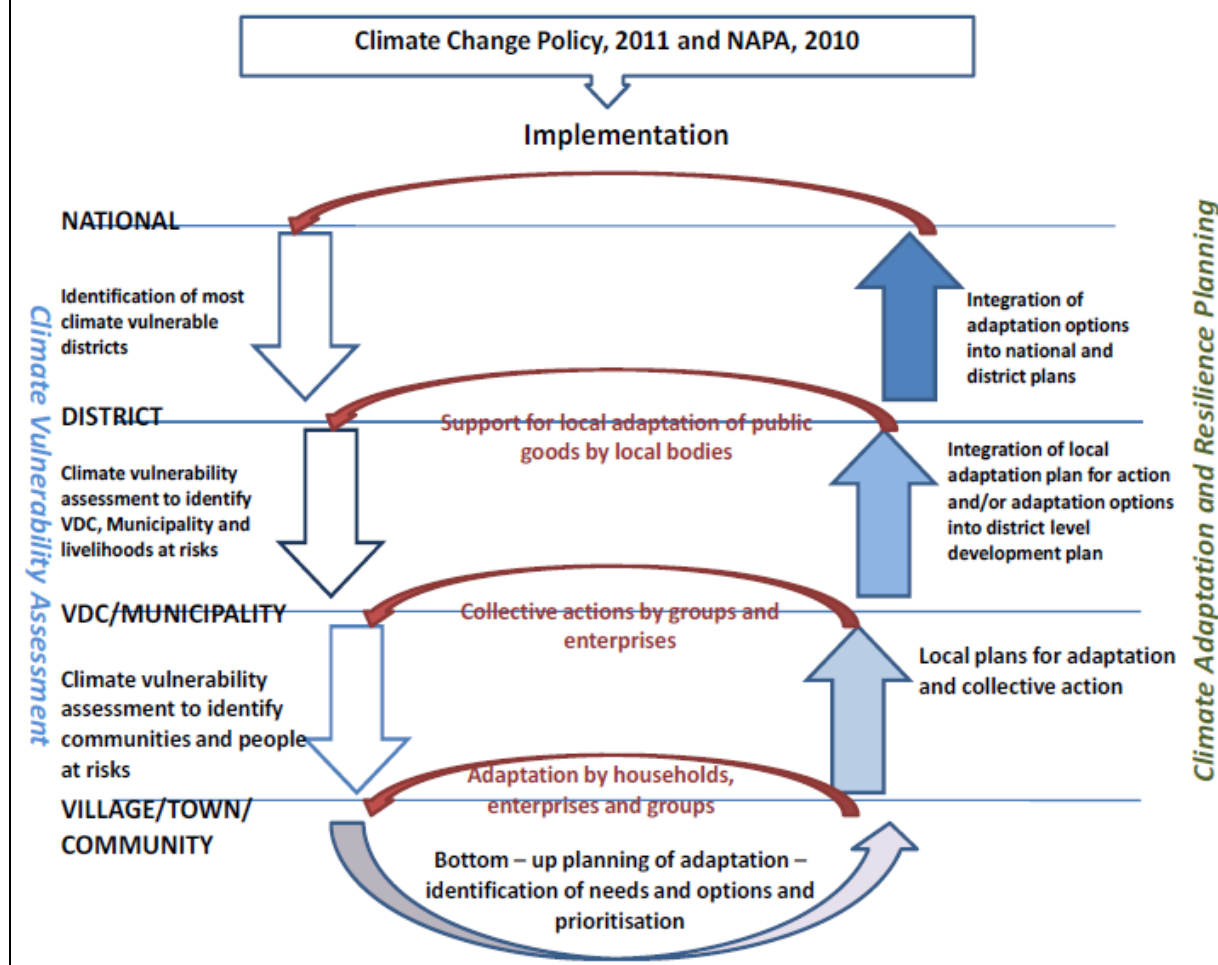
Sector-wise Greenhouse Gas Emission in Nepal		
1	Agriculture sector	50.1 %
2	Energy sector	29.6 %
3	Land-use change and forestry	14.8 %
4	Industrial processes	3.6 %
5	Waste sector	1.9 %
	Total	100 %

Source: (Climatelinks, 2019)

Since Nepal is an agricultural country, the emission from agricultural sector contributes more than half of the total emission followed by energy, land-use change and forestry. Perhaps, the country should focus on these sectors to make a big difference at least within its territory.

As the biggest carbon capture and storage source (CCS), the country has forest covering land area of 6.54 million ha which is 44.47 % of total land cover in Nepal (Ministry of Forests and Environment Nepal, 2019). Meanwhile, almost 80 % of the population live in rural areas (Statista, 2021) where they are directly dependent on forest for their livelihood. Therefore, there is high chance of deforestation and forest degradation, which ultimately means increase in emission of CO<sub>2</sub> and reduction in CCS.

# National Framework on Local Adaptation Plans for Action

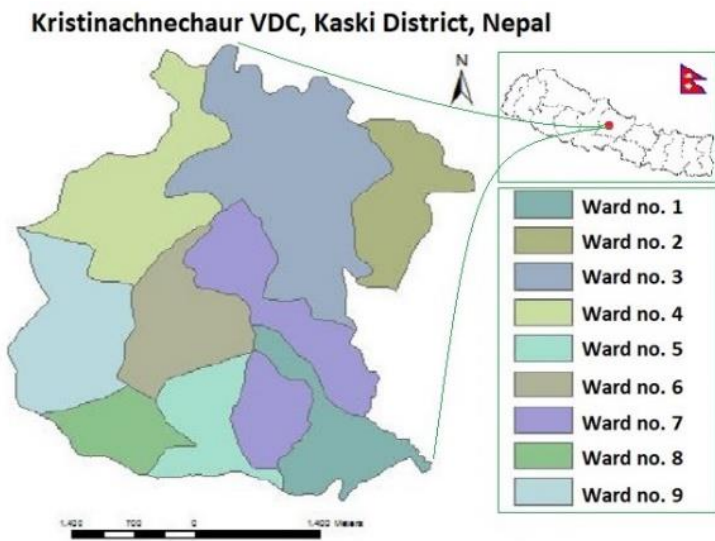


Source: (GoN, 2011)

## Slide 3: National Framework on Local Adaptation Plans for Action

In Nepal, the lowest government administrative body in rural areas is called Village Development Committee (VDC), which comprises of several small wards where all ward residents are affiliated with Community Forest Users Groups (CFUGs). There were altogether 3,157 VDCs in Nepal. After the endorsement of National Adaptation Program of Action (NAPA) in 2010, the process of Local Adaptation Plan of Action started in many VDCs of Nepal with the aim to disburse at least 80 % of available budget to local level for direct implementation of adaptation activities (Climatelinks, 2013). In line with that, the Climate Change Local Adaptation Plan of Action (CC-LAPA) prepared and implemented by Kristinachnechaur (in short “Kristi”) VDC of Kaski District in Nepal has been discussed in detail in this presentation. As compared to other VDCs in Kaski District, the Kristi VDC was one of the most vulnerable VDCs, so it was chosen for this presentation. In order to collect information about the status of the plan, Mr. Gyanendra Subedi, a Field Officer was interviewed through phone call.

## Introduction of the Project Area

Area	25.91 sq.km.	<p><b>Kristinachnechaur VDC, Kaski District, Nepal</b></p> 
Number of Wards	9	
Number of Community Forests	13	
Total Population	5063 (female – 1930, male - 2133)	
Literacy rate	72.1 %	
Total Households	1344	
Vulnerable Households	425	
Forest dependency	High	
Main sources of income	Agriculture, animal husbandry, forest products and foreign employment	
Major climate hazards	Landslides, soil erosion, flooding, forest fire, drying out of water sources, damage to agricultural land	
Livelihood potentiality	Highly potential area for vegetable farming and animal husbandry	

Source: (Kristinachnechaur VDC, 2014)

### Slide 4: Introduction of the Project Area

The meteorological data analyzed in the plan document clearly shows that the local temperature is increasing gradually at the rate of 0.04 °C per annum and the rainfall pattern is unpredictable causing major hazards like landslides, soil erosion, flooding, forest fire, drying out of water sources, and damage to agricultural lands. Meanwhile, the local population are mostly farmers and are heavily dependent on forest for their livelihood, so they have become more vulnerable because of negative impacts of climate change.

The preparation of plan was mainly initiated by the VDC but was supported by the “Hariyo Ban Project” (in English: “Green Forest Project”) implemented by CARE Nepal. In addition, the VDC ward committees, CFUGs, small farmers groups, youth and women’s groups and the local residence were actively participated in preparation, execution, monitoring and evaluation of the plan.

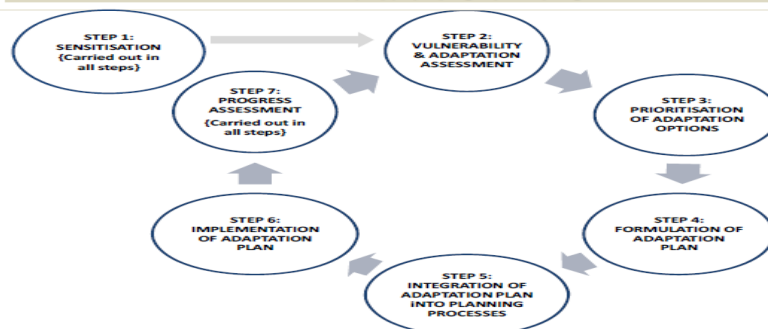
In Nepal, 70 % of energy requirement is fulfilled from forest biomass so if a plan aims to reduce emission, reduction in forest dependency and diverting to alternative green

sources is a must. As a commitment in NDC, the Government of Nepal has targeted to maintain at least 45 % of total land area as forest (Government of Nepal, 2020).

In line with that the plan is focused on preserving the forest area which covers more than 50% of total land within Kristi VDC, along with adaptation activities. Besides, the plan also focuses on reducing the fuel wood requirement to more than half through use of Improved Cooking Stoves (ICS) in each household. According to a study, the ICS is effective to reduce the indoor concentration of PM 2.5 and Co by 63.3 % and 60 % in a year which is equivalent to half the fuelwood requirement per year (Singh, Tuladhar, Bajracharya, & Pillarisetti, 2012).

## Extent of the Plan

### LAPA STEPS



#### LAPA Steps:

**Step 1:** Sensitization:

#### Objectives:

- Raise awareness of stakeholders at household, community, ward, and VDC level and strengthen the institution that will drive local adaptation planning

#### Tools used:

- Meetings and seminars, Visual aids, Climate Hazard Trend Analysis, Seasonal Calendars

**Step 2:** Vulnerability and Adaptation Assessment:

- Identify climate vulnerable communities and households
- Identify adaptation practices and actions
- Prioritizing the most urgent and cost-effective adaptation activities.

- Hazard mapping, vulnerability mapping, resource mapping, hazard, and impact risk analysis
- Vulnerability assessment and adaptive capacity assessment
- Multi-criteria ranking, Participatory cost-benefit analysis, Pair-wise ranking
- Service provider analysis, logical framework

**Step 3:** Prioritization of adaptation options:

**Step 4:** Formulation of adaptation plan:

- Develop roadmap of adaptation with milestones, targets, and monitoring.
- Facilitate support from sectoral and cross-sectoral development plans and institutionalize LAPA in local planning process

- Policy and institutional analysis to identify to identify entry points for mainstreaming.

**Step 5:** Integration of adaptation plan into planning process:

**Step 6:** Implementation of Adaptation Plan:

**Step 7:** Progress Assessment:

- Involving stakeholders to implement the planned activities.
- Learning, documentation, and reflection on plan

- Setting indicators and measuring the accomplishments.

Source: (GoN, 2011)

## Slide 5: Extent of the Plan:

### Target/Aim:

- The aim of the plan is to reduce the vulnerability of local people by reducing the impact and enhancing the adaptive capacity.
- The plan also aims to reduce emission from household fuelwood consumption and preserve forest to sequester carbon
- Since such plans are prepared and implemented in most VDCs, in a cumulative figure, it will contribute to large extent to meet the NDC targets committed by the Government of Nepal.

**Strategy:**

The plan is aimed to address the dual aspects of climate change viz, adaptation and mitigation. On one hand, adaptation is the prime need of local people and on other hand, the country needs to meet its NDC targets which is possible only through transformation of forest-based communities. Therefore, targeted activities in the plans are designed in such a way that they can enhance the socio-economic status of local people and make them more resilient towards climate change and at the same time reduce forest dependency by enhancing local farm-based livelihood and providing efficient cooking technology.



## Major activities and their benefits

Major Sectors	Major Activities	Benefits
Agriculture and food security	<ul style="list-style-type: none"> <li>• Training on organic and climate-adaptive cultivation and livestock management</li> <li>• Installation of Greenhouses for off-seasonal vegetable production</li> <li>• Nursery preparation, healthy seed production and regular animal health checkup</li> <li>• Construction of Vegetable collection center and marketing to the city center</li> <li>• Drip Irrigation</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces negative impacts of climate-related hazards on crops and farmland</li> <li>• Increases farm-based income throughout the year and reduces forest dependency for livelihood (for e.g., Selling of timber)</li> <li>• Enhances self-sufficiency and insurance</li> <li>• Ensures market for the production</li> <li>• Reduces water loss in dry seasons</li> </ul>
Forest and biodiversity	<ul style="list-style-type: none"> <li>• Silvicultural practices for maintaining the growing stock of forest stands</li> <li>• Forest fire protection measures</li> <li>• Regular patrolling</li> <li>• Stall feeding livestock</li> <li>• Agroforestry practices</li> </ul>	<ul style="list-style-type: none"> <li>• Increases forest biomass and hence increases the carbon sequestration</li> <li>• Reduces the risk of forest loss</li> <li>• Controls the poachers</li> <li>• Protection from overgrazing</li> <li>• Fodders for livestock</li> </ul>
Water resources and energy	<ul style="list-style-type: none"> <li>• Water source protection by plantation and intake construction</li> <li>• Construction of water reservoir tank and pipe and tap installation to each household</li> <li>• Installation of ICS in each household</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces water loss and ensures regular water flow</li> <li>• Increases efficient use of water and reduces time to bring water from the source</li> <li>• Reduces the fuelwood need by more than 50 %</li> </ul>
Climate-related disasters	<ul style="list-style-type: none"> <li>• Installation of Gabion walls in landslide and soil-erosion prone areas</li> <li>• Flood protection measures in streams (dams and embankments)</li> <li>• Bioengineering</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces the risk of damaging human settlements and forest area</li> <li>• Reduces the risk of flooding the agricultural land and damage to forest area.</li> <li>• Reduces the cost and increases the carbon sink</li> </ul>

### Slide 6: Major activities and their benefits

The plan focuses on major four sectors where the action plans or activities are designed to meet both adaptation and mitigation aims. As mentioned in slide 6, these activities have numerous benefits that support the local communities and their resources to become more resilient towards Climate Change. Basically, these activities are focused on making the local people/farmers less dependent on forest resources through livelihood-diversification. They help them become more trained and resourceful to practice sustainable agriculture for their livelihood improvement. Meanwhile, these activities aim to make small communities self-sufficient and committed towards climate footprint reduction. In the plan, activities like organic and climate-adaptive farming, agroforestry practices, co-management of resources like forest and drinking water resources, communal management of local produces and funds, and hazard protection measures are worth mentioning which could enhance the institutional capacity of local institutions like CFUGs, Farmers Groups, drinking water committees, ward committees, local cooperatives, and women and youth groups. The activities are designed to promote eco- and agro-tourism in future which could be another potential source of income for the local communities.

## **Research Question:**

Will the Climate Change Local Adaptation Plan of Action (LAPA) of Kristi VDC lead to a transformation and if yes, to what extent?

### **Slide 7: Research Question**

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## **Methods:**

### **Documents review:**

- Climate Change Local Adaptation Plan of Action (CC-LAPA) of Kristi VDC (2014-2019)
- National Framework on Local Adaptation Plan of Action (2011)
- Second Nationally Determined Contribution (2020)

### **Interview:**

- VDC chairperson, Kristi VDC
- Field Officer, Green Forest Project, CARE Nepal
- Questions: 8 questions related to the research question were prepared and asked

### **Internet surfing:**

- To acquire relevant data and information

### **Questions:**

1. What are the major goals of plan?
2. What are targeted activities to achieve these goals?
3. Does the plan also focus on mitigation and if yes, to what extent and what are targeted activities?
4. What is the funding mechanism of the plan?
5. Is there any exit plan for the supporting agency?
6. Does it support to fulfill the commitment of NDC and if yes, is there any measuring mechanism?
7. How difficult is it to mainstream the Climate Change Plans in local planning process?
8. What kind of transformation do you aim of and how successful are you?

## **Slide 8: Method:**

To obtain answer to the research question, we tried to contact the VDC chairperson for interview, but we could not so we contacted a Field Officer of CARE Nepal, Green Forest Project Mr. Gyanendra Subedi who was involved in the whole process of plan preparation and implementation. As he had worked in close coordination with VDC officials and was responsible for overall monitoring, and reporting of implementation status of the plan, our questions were adequately answered. In addition, the CC-LAPA of Kristi VDC, National Framework on Local Adaptation Plan of Action, and Second Nationally Determined Contribution documents were thoroughly reviewed. Other relevant information and data were acquired from internet surfing.

## Findings:

- Government Initiative
- Works under national framework and guideline
- Working units are Municipalities and VDCs
- Supporting agencies are (1) Green Forest Project – CARE Nepal, (2) Climate Change Support Program (NCCSP), (3) Multi-Stakeholder Forestry Program (MSFP), (4) Federation of Community Forest Users Groups (FECOFUN), and (5) National Trust for Nature Conservation (NTNC)
- Integration of Adaptation and Mitigation Measures



Government of Nepal (GoN)



NCCSP, GoN



CARE, Nepal



MSFP, Nepal



NTNC, Nepal



FECOFUN, Nepal

## Slide 9: Findings:

The plan was initiated by the Ministry of Environment, Government of Nepal in every municipality and VDC all over the country under national framework and guideline and it was supported by different projects and organizations such as Green Forest Project - CARE Nepal, National Climate Change Support Program (NCCSP), Multistakeholder Forestry Program (MSFP), Federation of Community Forest Users Groups (FECOFUN), and National Trust for Nature Conservation (NTNC). Though the plan is named as “Adaptation Plan”, it also integrates measures to support mitigation. Besides adaptation, it aims at reducing CO<sub>2</sub> emission by preserving forest and reducing forest dependency for livelihood.

## **Findings:**

### **Positive aspects:**

- Reduction in forest dependency for livelihood, energy and livestock feeding
- Shift from forest-based livelihood to farm-based livelihood
- Scientific management of forest
- Enhanced socio-economic development
- Adaptation measures for safeguarding the forest area, farmland, human settlements and water sources from landslide, erosion, and flood.
- Institutional development
- Capacity development of marginalized people/communities
- Willingness to mitigation as their need for adaptation is addressed by the plan – good local participation

### **Barriers:**

- Unskilled government staffs
- Public Perception and Climate Skepticism
- Low fund available

### **Weakness:**

- Lack of ownership of VDC office – they take it as a burden above their regular development plan
- Heavily dependent on NGOs and external sources
- Lack of coordination between different sectors

## **Slide 10: Findings:**

### **Positive aspects:**

#### **Reduction in forest dependency for livelihood, energy and livestock feeding:**

The local people are heavily dependent on forest for livelihood, energy and feeding their livestock in rural villages in Nepal. Primarily they use forest as a source of income by selling timber. Secondly, they use it for fuelwood for cooking purpose. According to research 70 % of energy requirement is fulfilled from biomass so it is quite obvious that the consumption of fuelwood is very high and so is the destruction of forest. Thirdly, people let their livestock openly graze inside the forest area because of which the seedlings and saplings are destroyed, and forest regeneration is affected. In addition, the over-grazing and trampling may cause soil compaction and desertification. Therefore, this plan reduces dependencies on all these sectors by providing alternative solutions. Local people who sell timber as income source are encouraged and supported to practice commercial farming so that they can support their family. To reduce the consumption of fuelwood, ICS are provided to each household which

reduces the fuelwood consumption to more than half. Lastly, open grazing is totally banned, and stall feeding is promoted along with livestock shed improvement programs.

### **Shift from forest-based livelihood to farm-based livelihood:**

As mentioned earlier, the traditional timber selling occupation is replaced by commercial farming practice where the farmers are provided with training on climate adaptive cultivation and livestock management. To assure all year-round production, greenhouses are installed in the farmland for off-seasonal vegetable production. For dry season, drip irrigation system is installed. In vegetable cultivation sector, the farmers are trained to prepare nursery for healthy seed production and in livestock sector, the owners are provided training on animal health and medical treatment in case of emergencies to save livestock. To assure selling of each farmers' products, a communal vegetable collection center is constructed, and joint marketing is done. In addition, agroforestry is promoted to provide foliage and fodders to the livestock.

### **Scientific management of forest:**

To increase the growing stock and hence the carbon sink, scientific forest management is needed. Regular thinning and pruning are necessary to allow enough sunlight to the below-ground vegetation. The extracts from thinning and pruning can be used as fuel for ICS. Even though burning of fuelwood is against mitigation, the local people have no green alternatives available for cooking, so it is better to use dead, dying and decaying trees for fuelwood than the young and healthy ones, as the young plants sequester more CO<sub>2</sub>. Afforestation is done in open and barren areas to compensate this. Forest fire protection measures like fire lines and forest roads are constructed. Also, regular patrolling is done to control timber poachers.

### **Enhanced socio-economic development:**

Communal management of forest and co-operated farming practice assures access of all to the resources and promotes equitable benefit sharing. It also insures each member in case of damage or loss. On a positive note, it enhances the socio-economic development of the community and makes them more resilient to climate change. Active participation on such communal management builds ownership and enhances the efficiency of climate-related adaptation and mitigation measures.

**Adaptation measures for safeguarding the forest area, farmland, human settlements and water sources from landslide, erosion, and flood:**

Gabion walls construction and bio-engineering practices from locally available materials protects the forest, farmland, human settlements and water sources from landslides, erosion, and flood. These practices not only support adaptation but also favors mitigation as they protect forest area from being destructed.

**Institutional development:**

The plan focusses on CFUGs and local farmers groups which are already existing communal institutions. The CFUGs have their own forest operational plan and are affiliated to District Forest Office but their plan lacks climate change management aspects. Therefore, CC-LAPA helps them better understand the climate change issues and reform their plans in a way to manage their forest resources accordingly. Likewise, local farmers groups learn climate adaptive commercial farming techniques through trainings and manage their farmland and products through cooperation.

**Capacity development of marginalized people/communities:**

The plan has a provision of differential impact analysis which identifies and ensures active participation of marginalized communities in each step of planning and implementation and prioritize them in resource allocation and benefit sharing. The plan also has provision of including marginalized communities in decision making committee so they can make significant and rational decisions for their personal/communal development.

**Willingness to mitigation as their need for adaptation is addressed by the plan – good local participation:**

Local people have already experienced increase in frequency and magnitude of climate disasters locally impacting their livelihood, so they are in need of prompt adaptation. Therefore, the adaptation measures in the plan encourage local people to also participate actively in mitigation measures.

**Barriers:****Unskilled government staffs:**

The local government bodies do not necessarily have skilled manpower who can handle the issues of climate change locally. There is no technical staff in VDCs. They normally have an Environment Officer in the municipality but still, climate change is not taken seriously. Because of this, it takes lot of time to convince them about the plan.

**Public Perception and Climate Skepticism:**

The local people used to perceive Climate Change impact just as a natural phenomenon before the initiation of the project and so they were not aware of their actions promoting greenhouse gas emission and reducing their own resilience capacity towards Climate Change. Through rigorous sensitization on Climate Change issues during entire tenure of the project, the knowledge and awareness on climate change increased gradually in localities and so they could logically relate how Climate Change results in higher frequency and magnitude of disasters. However, the people are not so inclined towards mitigation as they are now aware of the fact that they are not much responsible for global warming and climate change.

**Low fund available:**

The activities planned in CC-LAPA are of varied characteristics based on their magnitude and cost. A very low percent of the VDC's budget is actually allocated for environment and disaster. It is not even specifically allocated for climate change topic. So high budget activities such as Gabion retaining walls, check dams, embankments, and drinking water tanks cannot be covered from the government funds. Instead, they have to depend on NGOs and external agencies for that.

**Weakness:****Lack of ownership of VDC office:**

The VDC office lacks the feeling of ownership as they take it as a burden above their regular development plans. This is also caused due to lack of proper coordination between upper-level and lower-level government bodies. Absence of strict follow up from the upper-level government bodies makes the lower-level government bodies ignorant about the plan. In such scenarios, the sustainability of the plan becomes risky.



**Heavily dependent on NGOs and external sources:**

As already mentioned, the lack of skilled government staffs and inadequate government fund in climate change sector, the VDC depend heavily on NGOs and external sources. Because of this, the VDC lose its ownership to the plan.

**Lack of coordination between different sectors:**

The CC-LAPA focusses on different sectors such as forest and biodiversity, agriculture and food security, water resources and energy for adaptation and mitigation. These sectors are also covered at VDC level by different district offices with their own plans like forest to District Forest Office (DFO) and agriculture to District Agriculture Development Office (DADO). Due to lack of proper coordination with such offices, there is chance of duplication and budget freezing in such offices which could have been used properly in case of proper coordination.

## Conclusion/Recommendation:

### Conclusion:

- Technically robust plan but implementation part is challenging
- Semi-transformative (local people wants to transform but the government officials (VDC) do not – lacks ownership)
- Lacks sustainability

### Recommendation:

- Government officials should be motivated and take ownership
- Intersectoral coordination and co-planning is needed – District Forest Office (DFO), District Agriculture Development Office (DADO), District Electricity Office (DEO), District Drinking Water Office (DDWO), District Disaster Risk Reduction Office (DDRRO)
- Alternative green source for cooking – electrical heating from hydropower

## Slide 11: Conclusions/Recommendations:

### Conclusion:

The plan itself is technically robust as it contains all scientific techniques/methods for planning preparation. The provision of participation from all stakeholders is a strong point. The plan also supports equitable resource allocation and access to decision making. But the implementation part is questionable as it is heavily dependent on NGOs and external sources. The projects and NGOs work for certain duration, and they do have their own exit plans. The government body (VDC) need to revise and reformulate the plan for next tenure and continue working independently, but there is no assurance of future funding mechanisms which can work on remaining adaptation and mitigation measures.

Since the local residents are directly impacted by climate change, they are eager to transform and according to the interviewee, a significant transformation was achieved in five years tenure of CC-LAPA. Some worth mentioning are - the forest stock was maintained, and the forest resources were wisely used. The ICS was very effective in reducing the fuel need. There was complete control on wood poaching and timber selling. Instead, all households were practicing commercial farming and were able to make earning throughout the year. By the end of year five, the level of knowledge and

understanding of local people about climate change issues was significantly higher than before.

On the other hand, the attitude of VDC office never changed and they never owned the plan seriously. Therefore, the plan lacks sustainability, and a real transformation was needed in government officials in VDC level.

**Recommendation:**

Since sustainability of CC-LAPA is questionable, it is most important to develop motivation and ownership in local level government officials. One way of doing it could be to increase their capacity through trainings and workshops and make them proficient in climate change issues. It makes them realize that climate change adaptation and mitigation are vital parts of local development.

To solve the problem of resource allocation for planned activities, at first, it is important to separate the planned activities based on their cost. The activities which are less costly can be done by the communities themselves and with the help of VDC's environment and disaster risk reduction budget and the costly activities can be outsourced to relevant sectoral district offices.

To address the problem of program duplication and budget freezing problems in sectoral district offices, intersectoral coordination and co-planning is needed with DFO, DADO, DLSO, DEO, DDWO, DDRRO, etc. Somehow this can also solve some issues of budget inadequacy for plan implementation.

It is a huge investment but it's time to think of electrifying the cooking system and completely displace the fuelwood-based cooking. Not only for Kristi VDC but also for all other VDCs in Kaski District, it is recommended to encourage people use electric cooking system as much as possible. For this, consultation with DEO is necessary to assess the capacity of District hydropower and if it is adequate, certain subsidies can be given to those who use electric cooking in their houses.

Overall, the perception of local people has changed which is a good thing, therefore, the CC-LAPA should be revised and implemented solving the issues.

## Sources:

- Climatelinks. (2013). A Review of Nepal's Local Adaptation Plans of Action (LAPA) | Global Climate Change. Retrieved November 5, 2021, from Climatelinks website: <https://www.climatelinks.org/resources/review-nepals-local-adaptation-plans-action-lapa>
- Climatelinks. (2019). Greenhouse Gas Emissions Factsheet: Nepal | Global Climate Change. Retrieved November 4, 2021, from <https://www.climatelinks.org/resources/greenhouse-gas-emissions-factsheet-nepal>
- GoN. (2011). National Framework on Local Adaptation Plans for Action. *Government of Nepal, Ministry of Science Technology and Environment*, 56. Retrieved from [www.moenv.gov.np](http://www.moenv.gov.np)
- Government of Nepal. (2020). Second Nationally Determined Contribution (NDC). *Ministry of Forest and Environment, Government of Nepal*, 0–21. Retrieved from <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/>
- Kristinachnechaur VDC. (2014). *Climate Change Local Adaptation Plan of Action, Kristinachnechaur, Kaski, Nepal*. Retrieved from <https://dcckaski.gov.np/wp-content/uploads/2016/06/kristinechaure-LAPA-final.pdf>
- maplecroft. (2011). *Climate Change Vulnerability Index 2011*. 44(0), 2011. Retrieved from <https://www.washingtonpost.com/wp-srv/nation/green/pdfs/ClimateChangeVulnerabilityIndex2011.pdf>
- Ministry of Forests and Environment Nepal. (2019). National Level Forests and Land Cover Analysis of Nepal using Google Earth Images. Retrieved November 4, 2021, from researchgate.net website: [https://www.researchgate.net/publication/340092927\\_National\\_Level\\_Forests\\_and\\_Land\\_Cover\\_Analysis\\_of\\_Nepal\\_using\\_Google\\_Earth\\_Images\\_Ministry\\_of\\_Forests\\_and\\_Environment](https://www.researchgate.net/publication/340092927_National_Level_Forests_and_Land_Cover_Analysis_of_Nepal_using_Google_Earth_Images_Ministry_of_Forests_and_Environment)
- Ritchie, H., & Roser, M. (2020). CO<sub>2</sub> and Greenhouse Gas Emissions. Retrieved November 4, 2021, from OurWorldInData.org website: <https://ourworldindata.org/co2/country/nepal>
- Singh, A., Tuladhar, B., Bajracharya, K., & Pillarisetti, A. (2012). Assessment of effectiveness of improved cook stoves in reducing indoor air pollution and improving health in Nepal. *Energy for Sustainable Development*, 16(4), 406–414. <https://doi.org/10.1016/J.ESD.2012.09.004>
- Statista. (2021). Nepal: share of rural population. Retrieved November 5, 2021, from statista.com website: <https://www.statista.com/statistics/761008/nepal-share-of-rural-population/>
- Interviewee: Gyanendra Subedi, Field Officer, Green Forest Project, CARE Nepal