

F R A M E W O R K

to

**Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty (GECDP)
in the 11 FYP of the Local Governments**



(2013)

**Gross National Happiness Commission
Royal Government of Bhutan**

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

Table of Contents

Foreword.....	iii
Overview of Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty (GECDP) Mainstreaming.....	1
GECDP Process Steps & Application Exercise.....	2
1. Bumthang Dzongkhag.....	5
2. Chhukha Dzongkhag.....	9
3. Dagana Dzongkhag.....	12
4. Gasa Dzongkhag.....	16
5. Haa Dzongkhag.....	21
6. Lhuentse Dzongkhag.....	27
7. Mongar Dzongkhag.....	31
8. Paro Dzongkhag.....	35
9. Pemagatshel Dzongkhag.....	40
10. Punakha Dzongkhag.....	48
11. Samdrup Jongkhar Dzongkhag.....	54
12. Samtse Dzongkhag.....	59
13. Sarpang Dzongkhag.....	65
14. Thimphu Dzongkhag.....	69
15. Trashigang Dzongkhag.....	73
16. Trashiyangtse Dzongkhag.....	82
17. Trongsa Dzongkhag.....	88
18. Tsirang Dzongkhag.....	93
19. Wangduephodrang Dzongkhag.....	99

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

20. Zhemgang Dzongkhag..... 107

**Contributors to the LG framework from the
Dzongkhags..... 113**

**List of Mainstreaming Reference Group
Members..... 117**

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

Foreword

The growing environmental issues like environmental degradation and overutilization due to infrastructure development, urbanization, road construction, waste generation and pollution, unsustainable practices of agriculture farming as well as harvesting of high-value natural resources(e.g *yartsagoenbub* - Cordyceps), increasing demand for fuel wood, and climate change etc., will affect, first and foremost, the poor and the vulnerable sections of the population. The majority of the poor live in rural areas and depend on natural environment and eco-system services for clean water, timber, fuel wood, fodder, wild vegetables etc for their livelihood and well-being. Therefore the degradation of these natural resources will further marginalize the poor and vulnerable sections of our society and especially women, children, elderly and the differently-abled people. It will also have a negative impact on the country's economic future as we depend largely on natural resources and the pristine environment to support our most important sectors of hydropower, agriculture and tourism. Further, the growing occurrences and changing nature of natural disasters pose a serious threat to our hard earned developmental gains, as well as to lives and properties. In such a scenario, the constitutional requirement to protect and preserve our environment and to ensure a minimum of 60% of Bhutan's total area under forest cover, as well as Bhutan's commitment to the 15th Conference of Parties (CoP15) on Climate Change to remain carbon neutral at all times, may become a challenge. Therefore, in recognition of the fact that these issues are all cross-cutting and also inextricably linked to the overall development process, it is imperative that Gender, Environment, Climate change, Disaster, Poverty (GECDP) and other cross-cutting socio-economic issues/concerns are addressed systematically and mainstreamed in the development process by recognizing environment as a finite resource but one that presents great opportunity if managed in an integrated manner that exploits all synergies to address these important issues.

One of the important strategies is to proactively integrate or mainstream these cross-cutting issues/concerns in the government's decision-making processes such as policy making, planning and budgeting right at the outset rather than after environmental, social and economic degradation has already occurred. Such interventions through proper development management will help in enhancing environmental, social and economic conditions in an integrated manner like poverty reduction and improvement of livelihoods, environmental protection, sustainable management and utilization of natural resources, and sustaining economic growth. It will help to enhance the capability of the poor and vulnerable to adapt and respond to these issues, and improve accessibility to natural resources.

The 11th five year plan (11 FYP) guidelines provides impetus to this priority as can be seen from the overall goal of 'Self Reliance and Inclusive, Green Socioeconomic Development', paving the path for low-carbon and environment friendly development while at the same time prioritizing economic and social development through resilient, inclusive and sustainable approaches. It emphasizes development and economic growth along a GNH based middle path focused on real life outcomes but built on strategies that integrate gender, tradition and culture, pro-poor, low carbon, eco-friendly, disaster and climate adaptation and mitigation, energy and cost efficient modalities and strategies.

Towards this end, the GECDP Mainstreaming Reference Group (MRG) with members from multi-sectoral agencies, colleges and institutes has been established with an executive order from the

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

Honourable Prime Minister to support mainstreaming of all cross-cutting issues in policies, plans & programs at all levels of government and non-governmental agencies. The GECDP MRG has already conducted several mainstreaming sensitizations, trainings, and facilitated the Mainstreaming exercise for all local governments. Using a '*Six Steps Process*' tool, the workshops discussed and identified various GECDP and other cross-cutting issues and opportunities at the local level with alternatives, interventions and indicators to manage the identified issues and opportunities. This mainstreaming framework has been developed to inform and guide the LGs in the formulation of an integrated, sustainable and smarter 11 FYP and annual plans.

This is a unique effort and therefore, there is a lot of opportunity for learning to further improve it. Accordingly, the framework will remain open to improvements so that the desirable goal of mainstreaming these important issues in our development will be achieved.

Tashi Delek!



Karma Tshitem

Secretary

Gross National Happiness Commission

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

Overview of Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty (GECDP) Mainstreaming

The sustainable and equitable socio-economic development and conservation of environment are integral to Bhutan's development philosophy of Gross National Happiness(GNH) which is clearly articulated as the two important pillars of GNH. There exists a high level of support and commitment manifested profoundly in the country's Constitution stated as;

The Royal Government shall:

- a) Protect, conserve and improve the pristine environment and safeguard the biodiversity of the country;*
- b) Prevent pollution and ecological degradation;*
- c) Secure ecologically balanced sustainable development while promoting justifiable economic and social development; and.....[Article 5, The Constitution of the Kingdom of Bhutan]*

Sustainable development and conservation of ecology and biodiversity requires that environment and other cross-cutting issues like gender, disaster, poverty etc are given due considerations in pursuit of human development and economic growth. It is therefore important for all cross-cutting issues to be integrated into a mainstream development i.e in all policy making, planning, budgeting and implementation processes of the sectors at all levels of government and non-governmental entities. Sustainable development and its impacts can be better demonstrated and realized by managing all socio-economic and environmental issues and pursuance of development in an integrated, sustainable, holistic and inclusive manner.

The sustainable development approach strives for environmentally sustainable economic progress to foster low-carbon and a socially inclusive development. Environment mainstreaming recognizes that the environment is the ultimate resource on which all development depends. It also recognizes that environment while providing an opportunity for development has a limit, which if over-exploited can be constraining to the health of the environment and detrimental to sustainable development. The mainstreaming approach changes the "development versus environment" debate to one of "development that utilizes resources sustainably", placing particular emphasis on the opportunities the environment provides for development that is sustainable and inclusive(pro-poor). ***Mainstreaming is the process of integrating environment, climate change, poverty, gender and other socio-economic issues and opportunities into the formulation of all developmental policies, plans and programmes.***

The Royal Government of Bhutan has embarked on preparation of the country's 11th Five-Year Plan (11 FYP), supported by the guidelines prepared through a series of consultations with all the stakeholders

and circulated in 2011/12. The overall thrust of the 11 FYP (2013 to 2018) is guided by the country's development philosophy of GNH which forms the core value of the plans and

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

programmes and is clearly articulated in the priority goal of ‘Self-Reliance, Inclusive and Green Development’. The 11 FYP guidelines and its goal pave the path for low-carbon and environment friendly development while also prioritizing economic and social development through resilient, inclusive and self-reliant approaches. It emphasizes development and economic growth along the GNH path based on gender needs, tradition and culture, pro-poor, low carbon, eco-friendly, disaster and climate adaptation and mitigation, energy and cost efficient modalities and strategies.

In order to make mainstreaming more pragmatic in the 11 FYP to realize plan formulation and implementation in a sustainable and holistic manner, the plan preparation guideline includes a separate provision requiring all central and local agencies to formulate GECDP integrated development plans and programmes. Towards this, the GECDP Mainstreaming Reference Group(MRG) have conducted several mainstreaming sensitizations, trainings, and facilitated mainstreaming exercise for all LGs to develop the mainstreaming framework to guide them in formulating smart, innovative and sustainable local plans and programmes. The training workshop was conducted in four regions across the country in September 2012 in Paro, Tsirang, Bumthang and Mongar with adequate representation of cross-sectoral officials and selected gewog administrative officers(GAOs) from all the twenty Dzongkhags. The mainstreaming framework follows the ‘**six steps process**’ methodology for mainstreaming cross-cutting issues in an integrated manner, with illustrations of GECDP issues, trends and opportunities with possible alternative interventions at the local level.

GECDP Process Steps & Application Exercise

The following process steps have been recommended for mainstreaming cross-cutting issues into the Sectoral and LG’s 11th FYP preparation process and development planning.

The specific objectives of the process steps are:

- Provide a simple analytical framework that can be applied rapidly and effectively by all stakeholders involved in the 11 FYP process.
- Provide a minimum analytical process to identify and integrate key cross cutting concerns and pro-poor environment and climate change opportunities into plans and programmes of the 11 FYP.
- Identify priority actions and interventions to address the issues/concerns
- Propose monitoring and evaluation indicators to assess the integration of these issues in plans and programmes.
- Ensure a strong linkage with national objectives and priorities.

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

Step I

Identify the key GECDP pressures /issues/ within the sector/programme.

Step II

- Carry out an analysis of the status, trends and impacts both in the short and long term of the identified issues.
 - o Analyze the trends of identified impacts over the period of the 10th FYP and if possible forecast its trends over the coming 5 to 10 years.
 - o Identify a time series of identified indicators based on existing sources of data and information.
 - o Identify the causes/factors of the evolution that has led to the current situation analyzing current dynamics and driving forces, e.g. changes in regulatory, institutional and economic factors, policies and plans, demographic factors, market forces and changes in environment and climate.

Step III

- Identify interventions, opportunities and alternative options to overcome or mitigate the identified issues/pressures.
 - o Identify opportunities for policy options to influence/address the key GECDP issues identified in Step 1 and Step 2 by addressing several interrelated questions.
 - What are the GECDP issues that needs to be addressed and why?
 - Which opportunities: What types of problems or factors have resulted in these issues? i.e. institutional and governance arrangements, market and economic incentives, social and behavioural, underinvestment in technologies, insufficient knowledge
 - o Design alternative policy/programme options based on the above identified opportunities.
 - Elaborate policy/programme options that combine the best of all of the above responses which may require an integrated mix of policy measures and instruments addressing different areas of responses (reforming and strengthening institutions and governance; use of market measures, fiscal and non-fiscal incentives and regulations).

Step IV

- Assess both the short and long term impacts/benefits of the identified proactive opportunities and alternative options.
 - o This step is to compare proposed options by assessing positive and negative impacts based on best available knowledge.
 - o Develop a simple decision matrix and analyze positive and negative impacts of proposed options.

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

Step V

- Develop monitoring and evaluation framework with indicators both at output and outcome levels for the identified opportunities and alternative options.
 - o Define outcome and output level indicators for monitoring what the implementation of GECDP mainstreaming will lead.

Step VI

- Link identified opportunities/alternative options with the National Key Results Areas (NKRAs), Sector Key Result Areas (SKRAs) and Dzongkhag Key Result Areas (DKRAs).

Link the identified interventions and alternative options with the National, Sector and Dzongkhag Key Result Areas.

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

1. Bumthang Dzongkhag

Key GECDP pressures/concerns within the sector.	Analysis on status, trends and impacts of the GECDP pressures/concerns.	Alternatives and opportunities to address the identified GECDP pressures/concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/alternative options..	M & E for identified opportunities/alternatives with indicators.	Linkage of identified opportunities/alternatives with NKRA/SKRAs/DKRAs
<p>1. Climate change vulnerabilities to crop production</p>	<ul style="list-style-type: none"> • Early and late frost damages crops • Poor yield and quality of crops • Low household income • Farmers discouraged in farming. 	<ol style="list-style-type: none"> 1. Introduce crop compensation/ insurance (engage with financial institutions – micro credits) or other alternative schemes 2. Introduce social protection schemes at the community level¹ 3. Cultivation of crops/vegetables in green/poly house 4. Introduce climate resilient crop varieties 5. Strengthen capacity of farmers to adapt to changing climates in a gender responsive manner 6. Improve and provide safe storage facilities(post-harvest technologies) 7. Encourage low input high yielding varieties (crop diversification, mechanization, organic) 	<ul style="list-style-type: none"> • Improved food security increased rural income and reduced rural poverty • Increased active women's participation in CC adaptation/ mitigation measures • Increased farmers' preparedness and response to impacts of CC. 	<ol style="list-style-type: none"> 1. % of households with improved food security. 2. Proportion of population under Poverty. 3. Proportion of women participating in CC adaptation and mitigation interventions and capacity building (at least 30%) No. of climate resilient varieties of crops introduced 4. No. of post-harvest technologies functional. 5. No. of improved and safe storage facilities put in place and operational. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>2. Increased solid waste generation and pollution of river systems.</p>	<ul style="list-style-type: none"> • Contamination due to waste disposal and disturbing river eco-system. Increased risk of vulnerability to water borne 	<ol style="list-style-type: none"> 1. Improve and integrate waste management system for thromde and gewogs. 2. Awareness and promotion of 4 Rs. (reduce, reuse, recycle and refuse). 	<ul style="list-style-type: none"> • Improved health • River eco-systems maintained. • Enhanced awareness on waste management. 	<ol style="list-style-type: none"> 1. No. of air &water borne diseases reported by sex. 2. Quantity and type of waste collected. 3. Perception of 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the

¹Informal community saving schemes

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Environment pollution and waste of resources due to inefficient management and use of office resources.</p>	<p>diseases.</p> <ul style="list-style-type: none"> • Increase in waste generation (stationeries and e-waste), • Increase in recurrent expenditure • Reduced allocation of resources. • In-efficient service delivery 	<ol style="list-style-type: none"> 3. Improve waste segregation, collection and disposal system. 4. Assessment of waste generation – by type and quantity. 5. Purchase of waste collector van 6. Awareness creation on safe waste disposal/user education. 7. Improve storm water drainage, sewerage and affluent discharge systems. 8. Revival of relevant indigenous waste management practices. 	<p>Improved waste management systems in urban and rural areas.</p> <ul style="list-style-type: none"> • Qty. of waste reduced, reused and recycled. 	<p>population on waste management service delivery and use of traditional waste mgt. practices.</p> <ol style="list-style-type: none"> 4. No. of waste collection vehicles and sites. 	<p>community quality of urban life</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Environmental degradation due to unproductive stray cattle (Scrub animals)</p>	<ul style="list-style-type: none"> • Poor production • Poor quality of animals • Increasing competition/pressure on the existing resources and environmental degradation. • Methane gas 	<ol style="list-style-type: none"> 1. Awareness on judicious use of resources and code of conduct 2. Procurement of eco-efficient equipment 3. Streamlining allocation of equipment and resources 4. Use of ICT to enhance office efficiency and performance; 5. Efficient use of office equipment, vehicles and other utilities 	<ul style="list-style-type: none"> • Improved management of resources • Reduced office waste • Reduced recurrent expenditure • Improved service delivery 	<ol style="list-style-type: none"> 1. Minimize office waste by 25% 2. Expenditure on the purchase of office stationeries reduced by 20% 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Environmental degradation due to unproductive stray cattle (Scrub animals)</p>	<ul style="list-style-type: none"> • Poor production • Poor quality of animals • Increasing competition/pressure on the existing resources and environmental degradation. • Methane gas 	<ol style="list-style-type: none"> 1. Replace scrubanimals with improved breeds to enhance productivity. 2. Pasture development in barren and degraded community tsamdro; 3. Promotion of feed modification and fodder tree. 4. Explore bio-gas and bio-pesticide opportunity through use of animal waste. 	<ol style="list-style-type: none"> 1. Reduced pressure on environment 2. Increased livestock productivity, income and productive use of degraded land. 3. Increased feed and fodder diversity. 4. Reduced intentional forest fire incidence – as a result of 	<ol style="list-style-type: none"> 1. Acreage of degraded land/tsamdro brought under productive use 2. % reduction of scrub animals by types. 3. % increase in households income through livestock intensification 4. No. of bio-gas units 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<p>production contributing to GHG emissions.</p> <ul style="list-style-type: none"> • Depredation of crops leading to disputes and loss of crop yield. 		improved fodder and pasture development.	installed and operational.	<p>natural resources</p> <ul style="list-style-type: none"> • Enhanced transparency, and efficiency in public service delivery
<p>5. Vulnerability to various hazards (Earthquake, climate induced disasters, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Fire (Forest Fire, structural fire) • Flash flood • Crop damage due to erratic weather patterns • Risks from GLoF (no. of potential lakes upstream - Chamkhar valley) and earthquake 	<ol style="list-style-type: none"> 1. Community-based multi-hazard awareness. 2. Develop and implement local level disaster management plan using community-based disaster risk management framework (CBDRM). 3. Install early warning and response system in vulnerable areas. 4. Issue public advisory and safety tips for icy roads. 5. Put in place efficient and sustainable mechanisms to clear road blocks. 6. Enforcement of building codes, standards and guidelines for disaster resilient homes and infrastructure. 7. Vulnerability Assessment of school, health and infrastructures. 8. Retrofitting of vulnerable structures 9. Preparedness and response to pandemic outbreaks. 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Disaster preparedness response, relief and recovery mechanism enhanced. 	<ol style="list-style-type: none"> 1. Disaster management plan and contingency for dzongkhag and gewogplan in place. 2. No. of safety/mock drills conducted annually. 3. No. and frequency of DRR awareness and trainings provided. 4. Proportion of dzongkhag population by sex aware of disaster risk reduction and management. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, and effectiveness and efficiency in public service delivery
<p>6. Drying up of water sources leading to water shortage.</p>	<ul style="list-style-type: none"> • Water shortage from March-May annually due to prolonged drought and changes in weather pattern. • Implications on time 	<ol style="list-style-type: none"> 1. Watershed management and protection (plantation) improve water use efficiency through use of alternative technology (rain water harvesting etc.) 	<ul style="list-style-type: none"> • Sustainable supply of water for drinking and for irrigation. • Improved access to safe drinking water. • Improved health 	<ol style="list-style-type: none"> 1. Proportion of households with access to safe drinking water. 2. % of functional and disaster resilient 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<p>use of women and children.</p> <ul style="list-style-type: none"> Community conflict on water resources 	<ol style="list-style-type: none"> Enforcement of laws, by-laws and regulations (Water Act and Rules; Forest Act etc.) Education and awareness on sustainable use of water resources. Strengthen inter-sectoral coordination at the local level. Inventory and mapping of all existing perennial water sources and measurement of water velocity annually. 	<p>livelihood and wellbeing of the community.</p>	<ol style="list-style-type: none"> water supply schemes in place. No. of Payment for Eco-system Services schemes in place and functional. No. of watershed management schemes in place. 	<p>community</p> <ul style="list-style-type: none"> Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness & efficiency in public service delivery
	<ul style="list-style-type: none"> Strong Stereotypes and prejudices against women Limited awareness on gender issues and rights Lesser Number of Women's effective participation in public sphere (governance, education and employment) Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> Periodic rights based awareness programs to be conducted. Research of review of significant and contextual gender gaps. strengthen generation and use of gender disaggregated data. Sensitization on the importance of gender equality and rights based approach. Trainings on gender analysis Explore incorporation of support services 	<ul style="list-style-type: none"> Gender Stereotypes and Prejudices challenged Improved understanding of gender equality and rights based approach amongst the policy makers and general public Strengthened enabling environment for increased women's participation in all spheres Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> No of awareness and sensitization program on gender equality and right based approach --No of women participation in public sphere No of research on gender gaps Proportion of women and children benefiting from the support services No of cases on VAW reported 	<p>DKRAS:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

2. Chhukha Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternatives and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKARs and SKARs/DKARs
1. Solid waste generation	<ul style="list-style-type: none"> • Increasing generation of different types of waste • Lack of integrated waste management system. • Lack of sanitary landfill leading to leaching into soil and rivers & methane emission • Asset ownership with respect to electronic products is increasing 	<ol style="list-style-type: none"> 1. Advocacy/awareness on waste management and 4 Rs(reduce, reuse, recycle, refuse) 2. Develop and implement integrated waste management system including the concept of 4 Rs in line with Waste Prevention and Management Act. 3. Promote use and purchase of environment friendly ICT equipments 4. Construction of proper sanitary landfill 5. Strict monitoring of landfill operation 6. Explore possibility of using waste as refuse derive fuel(RDF) in cement industries 7. Encourage community based waste management including PPP model 8. Encourage and formalizing waste pickers 9. Revival of relevant traditional waste disposal practices 	<ul style="list-style-type: none"> • Cleaner and healthier towns and communities • Healthy environment • Less waste generated at source • Reduced air and ground water pollution • Reduced diseases related to waste • Increased income generation from efficient use of waste resource 	<ol style="list-style-type: none"> 1. % reduction in air and water borne diseases reported No. and types of waste disposal methods implemented 2. Proportion of waste generated reduced 3. Income from waste management establishment 4. No of people(by sex) employed in waste management establishment 	DKARs: <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources
2. Shortage of Safe drinking water	<ul style="list-style-type: none"> • Lack of proper identification of 	<ol style="list-style-type: none"> 1. Watershed management and protection (plantation) 	<ul style="list-style-type: none"> • Improved health, livelihood and 	<ol style="list-style-type: none"> 1. Proportion of hhs(female & male 	DKARs: <ul style="list-style-type: none"> • Enhanced rural

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>(RWSS)</p>	<ul style="list-style-type: none"> water source Drying of water sources due to changes in weather pattern. Implications on time use of women and children in fetching water. Community conflict on water resource 	<ol style="list-style-type: none"> Improve water use efficiency through use of alternative technology (rain water harvesting etc.) Enforcement of laws, by-laws and regulations (Water Act and Rules; Forest Act etc.) Education and awareness on sustainable use of water resources Strengthening of Water User Groups (WUGs) Strengthen inter-sectoral coordination on water issues at the local level. Undertake inventory and mapping of all existing perennial water sources and measurement of water velocity periodically. Promoting Payment for Environmental Services (PES) Introduce water user fees 	<ul style="list-style-type: none"> wellbeing of the community. Sustainable supply of water for drinking and for irrigation. Improved access to safe drinking water. Efficient use of water Enhanced income generation (Community and Urban) from PES and water user fees. 	<p>headed) with access to safe drinking water for 24 hrs.</p> <ol style="list-style-type: none"> % of functional and disaster resilient water supply schemes in place. No. of Payment for Eco-system Services schemes in place and functional. No. of watershed management schemes in place. Income generated from PES and Water User fees Cases of water borne diseases reported No. of WUGs formed (water care takers). 	<p>household income and food sufficiency</p> <ul style="list-style-type: none"> Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness & efficiency in public service delivery
<p>2. Environmental degradation due to farm road construction</p>	<ul style="list-style-type: none"> Increasing landslides and soil erosion Loss of soil fertility affecting crop productivity Disturbance of eco-systems 	<ol style="list-style-type: none"> Conduct strategic assessment of needs, planning and prioritization of farm roads. Explore alternative transport system (e.g ropeways) Strengthen enforcement and monitoring of environmental regulations and Environmental Friendly Road Construction(EFRC) standards and guidelines(e.g proper dumping, application of bioengineering techniques, proper drainages) Build capacity of engineers and relevant officials in 	<ul style="list-style-type: none"> Minimum environmental degradation, forest damage, arable land Reduced landslide and soil erosion Long term benefits in terms of maintenance cost 	<ol style="list-style-type: none"> Acreeage of arable land protected Kms and No. of farm roads constructed and maintained with EFRC techniques and standards No.of alternative transport system(gravity ropeway) initiated & constructed 	<p>DKRAS:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Enhanced sustainable management and conservation of natural resources

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Deforestation/ degradation due to commercial mining</p>	<ul style="list-style-type: none"> • Acres of GRF under mining operation • Loss of biodiversity • Loss of soil fertility • Depletion of air and water quality • Prevalence of acute respiratory and skin diseases 	<p>EFRC techniques and standards</p> <ol style="list-style-type: none"> 1. Afforestation 2. Introduction of environmental polluter pay principles and implement taxation policy of the government 3. Strict adherence to environmental clearance 4. Strict enforcement and monitoring of mine management and restoration plans 5. Create awareness of the community on mining policy, regulations 6. Create no mining zone and Promote Community Forestry 	<ul style="list-style-type: none"> • Responsible mining promoted • Minimize pollution • Healthy forest coverage with native species maintained • Employment and revenue generation 	<ol style="list-style-type: none"> 1. Acreage of land under forest cover maintained 2. No of community forest established 3. No. of local residents employed(by gender) 4. % of income generated(fines, fees) 5. % reduction of acute respiratory and skin diseases reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food grain sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources
<p>5. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

3. Dagana Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAs and SKRAs/DKRAs
<p>1. Deforestation and Drying of water sources</p>	<ul style="list-style-type: none"> • Bhutane traditional architecture involves excessive and inefficient use of timber. • Low quality and sub-standard constructions • Lack of capacity and accountability of contractors and contracting authorities. • Site engineers burdened with too many activities and lack of capacity (human, technical and financial resources). 	<ol style="list-style-type: none"> 1. Use of alternative construction materials including fabricated materials. 2. Encourage eco-efficient and, disaster resilient housing designs, & improve construction methods by using timber efficiently. 3. Encourage gender responsive infrastructure facilities including the needs of differently abled people (eg. alternatives to stairs; separate toilets for women and differently-abled). 4. Replenish loss of timber by encouraging plantations through cut one plant two policy. 5. Promote and facilitate community and private forestry to sustainably manage forest resources. 6. Watershed protection and management. 7. Develop capacity of engineers, contractors, site supervisors on construction standards and ECP 	<ul style="list-style-type: none"> • Sustainable use and management of forest resources. • Equitable access to infrastructure facilities and resources. • Environmental impacts minimized through reduced and efficient use of timber and plantation. • Improved construction practices/technology. • Reduced disaster risk with disaster resilient infra-structures • Gender concerns and needs of differently-abled people considered. 	<ol style="list-style-type: none"> 1. % of forest area under sustainable management through establishment of private and community forestry. 2. No. of advocacy and trainings on eco-efficient, disaster resilient codes and standards, gender responsive and needs of differently-abled people in constructions and retrofitting. 3. No. of government infrastructures responding to the needs of gender and differently-abled people. 4. Impact assessment of advocacy and training programmes – as measured through disaster preparedness and response capacity of the community. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness & efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Environment pollution: land, air and water contamination due to waste.</p>	<ul style="list-style-type: none"> • Dumping of waste in water bodies and in open areas. • Soil and water contamination by leachate • Open burning of solid waste • Incidences of diarrhea, dysentery and typhoid among children. 	<p>mainstreaming.</p> <ol style="list-style-type: none"> 1. Introduce integrated Solid Waste Management (source segregation, collection and disposal) both in urban and rural areas. 2. Construct safe sanitary land fill sites in urban areas for solid waste management. Develop waste disposal pit with proper facilities in rural areas (Gewog level) 3. Encourage waste segregation and recycling for business opportunities. 4. Advocacy and awareness on the principle and practice of 4Rs 5. Construction of sewerage treatment plants 6. Treatment of drinking water sources 7. Advocacy and awareness on health and sanitation and basic prevention and treatment of water borne diseases. 8. Improve sanitary facilities (eco-san toilet etc.) 9. Collect data and information on waste generation and management, and other environmental parameters (air, water and land.) 	<ul style="list-style-type: none"> • Improved general health indicators. • Improved waste management. • Improved quality of environment (clean water and air, and litter free surroundings) • Improved awareness and responsibility of the populace on waste management, health and sanitation. • Business opportunity enhanced. 	<ol style="list-style-type: none"> 5. No of critical watershed areas protected 0(2011)3. 6. No of alternative energy units established (Biogas technology) 0(2011)4 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources
				<ol style="list-style-type: none"> 1. % of population (by age and sex) with access to safe sanitation. 2. Incidences of water borne diseases 3. No of solid waste disposal pits constructed at the community level1(2011)5 4. No of sanitary landfill sites developed1(2011)2 5. % of HHs with access to safe drinking water 96.6% (2011) 100%. 6. No. of awareness and trainings conducted 7. No. of business entrepreneurs (PPP models) taking up waste management. 8. Data and information on environmental parameters and waste generation updated at regular intervals, and applied for policy interventions. 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Land degradation (caused by farm roads, Irrigation channels)</p>	<ul style="list-style-type: none"> • Poor alignment and design of farm roads • Non adherence to EF construction guidelines • Inadequate allocation of budget to incorporate EFRC methods. • Limited time allotted for proper planning, designing and construction. • Low capacity and technology of local contractors and community. • Poor construction and management of irrigation channels. • Low returns from farming • Farm labour shortage • Insufficiency of food grains and other sources of income. 	<ol style="list-style-type: none"> 1. Monitoring of EFRC compliance of road construction. Follow standard costing of FR constructions. 2. Adherence to technical alignment/design 3. Develop EFRC guidelines. 4. Strengthen existing framework (WUA, By-laws, traditional user rights etc.) for community participation including provisions of special incentives for vulnerable groups in irrigation channel construction and maintenance. 5. Carry out needs assessment, detail survey, design and planning prior to construction of irrigation channel. 6. Awareness, training and demonstration of Sustainable Land Management techniques and practices. 7. Explore opportunities to introduce community-based crop insurance² schemes. 8. Water source protection and management. 9. Introduce social safety nets (such as community fund, social capital) at community level 	<ul style="list-style-type: none"> • Sustainable land management • Food security and poverty reduction. • Minimized land degradation • Reduced incidence of landslides • All weather pliable farm roads. 	<ol style="list-style-type: none"> 1. Proportion of land brought under SLM practices. 2. No. of advocacy and training on SLM and EFRC. 3. Kms. of farm roads constructed with EFRC standards. 4. No. of community participating in community based crop insurance and social protection schemes. 5. Irrigation framework and EFRC guideline in place and operational. 6. Acreage of fallow lands brought under cultivation 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food grain sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources
<p>4. Low women's participation in decision-making</p>	<ul style="list-style-type: none"> • Women inadequately represented in DT and GT 	<ol style="list-style-type: none"> 1. Formation of women's group for income generation 2. Awareness and advocacy to 	<ul style="list-style-type: none"> • Augment rural household income • Increased 	<ol style="list-style-type: none"> 1. No. of women participation in DT and GT 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income

² Sustainable institutional mechanism to address human-wildlife conflict was introduced in two villages of Passangphu and Madhuwa under KangparaGewog in Trashigang.

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<ul style="list-style-type: none"> Increased incidences of domestic violence 	empower women	representation of women in DT and GT	2. Incidences of domestic violence	<p>and food grain sufficiency</p> <ul style="list-style-type: none"> Improved health status of the community Enhanced transparency, effectiveness and efficiency in public service delivery
<p>5. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> Strong Stereotypes and prejudices against women Limited awareness on gender issues and rights Lesser Number of Women's effective participation in public sphere (governance, education and employment) Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> Periodic rights based awareness programs to be conducted. Research of review of significant and contextual gender gaps. strengthen generation and use of gender disaggregated data. Sensitization on the importance of gender equality and rights based approach. Trainings on gender analysis Explore incorporation of support services 	<ul style="list-style-type: none"> Gender Stereotypes and Prejudices challenged improved understanding of gender equality and rights based approach amongst the policy makers and general public Strengthened enabling environment for increased women's participation in all spheres Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> No of awareness and sensitization program on gender equality and right based approach No of women participation in public sphere No of research on gender gaps proportion of women and children benefiting from the support services No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of the community Improved quality of urban life Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

4. Gasa Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternatives and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKARs and SKARs/DKARs
1. Environmental degradation due to construction of farm roads/mule tracks & irrigation channels	<ul style="list-style-type: none"> Increasing landslides and soil erosion Loss of forest cover/watersheds areas resulting to loss of biodiversity /wildlife habitats, drying of streams Loss of soil fertility affecting crop productivity Disturbance of eco-systems Access to basic services and market disrupted due to landslides/soil erosion Immense pressure by public to Dzongkhag (Lunana andLaya) on need of farm road/Gewog connectivity (GC) road for accessibility 	<ol style="list-style-type: none"> Conduct strategic assessment of needs, geo-hazards, planning and prioritization of farm roads. Explore alternative transport system (e.g ropeways) Strengthen enforcement and monitoring of environmental regulations and Environmental Friendly Road Construction(EFRC) standards and guidelines(e.g proper dumping, application of bioengineering techniques, proper drainages, check dams) Build capacity of engineers and relevant officials in EFRC techniques and standards Afforestation and protection of critical watershed areas, and avoiding the core/restricted areas within the Protected Areas 	<ul style="list-style-type: none"> Minimum environmental degradation, forest damage, arable land Reduced landslide and soil erosion Long term benefits in terms of maintenance cost Improved road safety and accessibility Biodiversity/ critical watershed areas are protected Quality infrastructure constructed 	<ol style="list-style-type: none"> Acreage of arable land protected Kms and No. of farm roads, mule tracks constructed and maintained with EFRC techniques and standards No.of alternative transport system(gravity ropeway) initiated & constructed Geo-hazard map produced Proportion of public expenditure on environmental related interventions 	<p>DKARs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources
2. Human-Wildlife Conflict	<ul style="list-style-type: none"> Increasing crop/livestock depredation/loss to wildlife attack(tigers, leopards, bears, wild dogs, etc.) Increase in fallow 	<ol style="list-style-type: none"> Introduce crop and livestock compensation/ insurance (engage with financial institutions – micro credits) or other alternative schemes Introduce social protection schemes at the community 	<ul style="list-style-type: none"> Improved sustainable rural livelihood. Improved food security Increased rural income and reduced rural poverty 	<ol style="list-style-type: none"> Acreage of fallow land reduced Percentage increase in productivity of crop and livestock Cases of human-wildlife conflicts 	<p>DKARs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<ul style="list-style-type: none"> land and land fragmentation Encourages switching from agriculture/livestock to other sources of livelihood (picking cordyceps, portering) 	<p>level³</p> <ol style="list-style-type: none"> Conduct awareness & capacity building on human wildlife conflict management (example. community fencing, introduce organic farming technology, replace local with improved breeds) 	<ul style="list-style-type: none"> Increased farmers (including women) preparedness and response to human wildlife conflict. Fallow land brought under cultivation and increased organic crop production Reduction in loss of crops and livestock to wild animals. 	<p>reduced</p> <ol style="list-style-type: none"> Percentage of crop and livestock loss to wild animals. Number of men and women participating in human wildlife conflict management. Changes in the volume of cordycep harvested annually. 	<ul style="list-style-type: none"> Enhanced sustainable management and conservation of natural resources
<p>3. Vulnerability to various hazards (earthquake, climate induced disasters, fires, health hazards etc.)</p>	<ul style="list-style-type: none"> Falls under the 2nd danger zone of outburst of lakes (Rapstreng, Thorthormi, Lugi Tsho, etc.) Geologically unstable, steep rugged terrain which leads to frequent landslides, flash floods, loss of lives and property (road, irrigation channel, crops, arable lands) 	<ol style="list-style-type: none"> Conduct community-based multi-hazard awareness. Develop and implement local level disaster management plan using community-based disaster risk management framework (CBDRM) in accordance with the Disaster Management Act 2013. Install early warning and response system in vulnerable areas. Put in place efficient and sustainable mechanisms to clear road blocks. Enforcement of building codes, standards and guidelines for disaster resilient homes and infrastructure. Conduct vulnerability assessment of school, health & infrastructures. Undertake retrofitting of vulnerable structures 	<ul style="list-style-type: none"> Reduced risk on property and lives Right information at right time Saves lives and property due to alertness/vigilance Immediate response to the disaster Immediate recovery/restoration/reconstruction of damaged infrastructures 	<ul style="list-style-type: none"> Reduced incidences and risks from disasters. Disaster preparedness response, relief and recovery mechanism enhanced. <p>1.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved health status of the community Improved quality of urban life Traditional & cultural heritage of the Dzongkhag preserved & promoted Enhanced sustainable management and conservation of natural resources

³Informal community saving schemes

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<p>4. Unsustainable harvesting of NWFPs (Cordyceps & incense plants)</p>	<ul style="list-style-type: none"> • Threat of extinction due to unsustainable harvesting of NWFPs • Illegal harvesting of NWFP across domestic and international borders 	<p>8. Preparedness and response to pandemic outbreaks. 9. Establishment of early warning stations in the 2nd danger zone (along Pochu/Mochhu & at strategic locations)</p>	<ul style="list-style-type: none"> • Conservation and sustenance of NWFP promoted. • Reduced illegal harvesting 	<p>1. % of HHs (male and female headed) gained knowledge and experience on sustainable harvesting 2. No of monitoring visits. 3. Reported number of conflict</p>	<p>DKRAS;</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management & conservation of natural resources
<p>5. Infections due to indoor pollution (respiratory, eyes etc)</p>	<ul style="list-style-type: none"> • Use of firewood for cooking (Laya-40%, Lunana-60%) and heating in rural areas • Poor ventilation in rural housing • Poor personal hygiene and sanitation especially women and children. 	<p>1. Conduct targeted awareness on prevention and treatment of ill effects of indoor pollution 2. Explore and encourage use of alternative energy sources and appliances. (e.g- smokeless oven, solar, wind etc.) 3. Design and encourage construction of eco and energy efficient houses 4. Conduct targeted awareness on personal hygiene and sanitation periodically.</p>	<ul style="list-style-type: none"> • Healthier lives and environment promoted. • Improved standards of living. • Reduction in the number of ARI and eye infections. 	<p>1. % reduction in ARI and eye infections. (segregated by gender) 2. % of households (headed by gender) using alternate energy sources. 3. % of households(headed by gender)using eco and energy efficient appliances. 4. No of targeted awareness programs conducted and participants(by gender).</p>	<p>DKRAS:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management & conservation of natural resources

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Solid waste generation and disposal:</p> <ul style="list-style-type: none"> • Increasing generation of different types of waste • Lack of integrated waste management system. • Asset ownership with respect to electronic products is increasing • Pollution of water bodies, ground water, etc. • Increased incidences of vector borne illness 	<ol style="list-style-type: none"> 1. Conduct advocacy/awareness on waste management and 4 Rs(reduce, reuse, recycle, refuse) 2. Develop and implement integrated waste management system including the concept of 4 Rs in line with Waste Prevention and Management Act. 3. Promote use and purchase of environment friendly ICT equipments 4. Construction of proper sanitary landfill 5. Enforce strict monitoring of landfill operation 6. Encourage community based waste management including PPP model 7. Encourage and formalize waste pickers 8. Revival of relevant traditional waste disposal practices 9. Encourage & promote use of technologies to reduce & manage waste (composting, protected land fill) 10. Initiate education & awareness(design for change, education for GNH) 11. Implementation of Waste Management Act, Rules and Regulation of 2011 12. Construction of pits at strategic locations, provide waste bins for both degradable and non-degradable wastes, 	<ul style="list-style-type: none"> • Healthy environment • Less waste generated • Reduced air and ground water pollution • Reduced diseases related to waste • Increased income generation from efficient use of waste resource 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources
			<ol style="list-style-type: none"> 1. % reduction in air and water borne diseases reported 2. No. and types of waste disposal methods implemented 3. Proportion of waste generated reduced 4. No. of HH with proper waste management practices (composting, segregation of waste) 5. No. of improved toilet and pits constructed and functional.

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Inadequate access to sanitation & hygienic services & facilities</p>	<ul style="list-style-type: none"> • Access to basic sanitation -80% • Diarrhoea and dysentery are still among the top ten diseases in the Dzongkhag 	<p>construction of toilets</p> <ol style="list-style-type: none"> 1. Promote design & construction of low cost environmental friendly sanitary facilities 2. Construction of simple pit toilets 3. Conduct awareness on hygiene and sanitation practices. 	<ul style="list-style-type: none"> • Improved hygiene and sanitation facilities • Incidence of diarrhoea and dysentery infections reduced 	<ol style="list-style-type: none"> 1. % in reduction of diarrhoea/dysentery 2. No. of HH with improved sanitation (toilets) 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>8. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

5. Haa Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRA and SKRAs/DKRAs
<p>1. High consumption of fire wood –</p>	<ul style="list-style-type: none"> • Excessive use of firewood for heating and cooking (use of Bhukhari for 8months) leading to forest de gradation. • Incidences of Acute Respiratory Infection (ARI) due to indoor air pollution. 	<ol style="list-style-type: none"> 1. Introduce more energy efficient cook stoves and heating devices. 2. Encourage use of alternative forms of energy (biomass; Briquettes, electricity, solar). 3. Conduct study on consumption of fuel wood and ARI incidences. 4. Advocacy and awareness on sustainable management and use of firewood. 	<ul style="list-style-type: none"> • Reduced forest degradation • Reduced time for collection of fire wood especially for women and children. • Reduced health impacts due to indoor air pollution. • Increased awareness on sustainable management and improved cleaner technologies. 	<ol style="list-style-type: none"> 1. Proportion of forest area brought under sustainable management. 2. No. of studies conducted and recommendations implemented. 3. No. of community and private forestry established. 4. No. of cleaner technologies introduced and adopted. 5. No. of awareness and capacity building programmes conducted. 6. No. of ARI cases reported by age and sex. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources
<p>2. Large numbers of sawmills leading to illegal harvesting &excessive use of timber for construction.</p>	<ul style="list-style-type: none"> • Excessive harvesting of timber for furniture and building purposes causing forest degradation. • Generation of excess saw dust waste leading to disposal problems. • Lack of technical 	<ol style="list-style-type: none"> 1. Use of alternative construction materials including fabricated materials 2. Encourage eco-efficient and, disaster resilient housing designs, and improve construction methods by using timber efficiently. 3. Replenish loss of timber by encouraging plantations 	<ul style="list-style-type: none"> • Sustainable use and management of forest resources. • Environmental impacts minimized through reduced and efficient use of timber and plantation. • Improved construction practices/technology. 	<ol style="list-style-type: none"> 1. % of forest area under sustainable management through establishment of private and community forestry. 2. No. of construction firms/business entity adopting alternative technologies to 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and grain sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Improper solid waste management, access to safe drinking water and sanitation.</p>	<p>know-how on alternative use of saw dust.</p>	<ol style="list-style-type: none"> 4. Promote and facilitate community and private forestry to sustainably manage forest resources. 5. Strengthen monitoring and enforcement of forest rules and regulations to reduce illegal harvesting. 6. Explore alternative use of saw dust to produce briquettes, and other opportunities. 	<ul style="list-style-type: none"> • Enhanced income generating opportunities through alternative use of saw dust. 	<ol style="list-style-type: none"> 3. No. of illegal cases compounded by forestry officials. 4. No. of briquette processing units established. 	<p>natural resources</p>
<p>3. Improper solid waste management, access to safe drinking water and sanitation.</p>	<ul style="list-style-type: none"> • Lack of knowledge on waste management • Pollution of water bodies • Waste pollution leads to sanitation and hygiene problems • Poor sanitation and hygiene practices in rural communities • Majority of HHs use pit latrines. • Access to RWSS: 90% (2012) 	<ol style="list-style-type: none"> 1. Integrated Solid Waste Mgt. 2. Advocacy and awareness on waste management (4 Rs) 3. Strict implementation of waste management rules and regulations 2012. 4. Up-grading of existing landfill to sanitary landfill. 5. Management of medical waste 6. Promote business enterprise on waste recycling. 7. Provision of facilities for sanitation 8. Collect data on waste generation and management practices. 9. Improve access to eco-efficient and environment friendly sanitary facilities (eco-san toilet. 	<ul style="list-style-type: none"> • Contribute to clean and healthy environment. • Improved waste management system in the dzongkhag. • Business opportunities enhanced on waste recycling • Increased level of awareness on waste management • Improved health and sanitation. 	<ol style="list-style-type: none"> 1. State of the environment as measured through Pressure State Impact Response (PSIR) conducted by National Environment Commission. 2. General health quotient – as measured through GNH survey. 3. Perception of communities on waste management and service delivery. 4. No. of advocacy/awareness conducted 5. No. of Gewogs/communities with proper waste management system and practices. 6. No. of sanitary 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Poor quality of farm roads</p>	<ul style="list-style-type: none"> • Farm roads are affected by monsoon rain and snow making it seasonally non-functional. • Poor design and planning and implementation • Low capacity of contractors and engineers on EFRC and DRR. • Inadequate allocation of human and financial resources. • Child labour issues and safety and harassment concerns of women not adequately addressed. 	<ol style="list-style-type: none"> 1. Ensure proper design, planning and implementation of EFRC methods in farm road construction. 2. Provision of adequate resources for construction and maintenance. 3. Develop capacity of contractors and dzongkhag engineers to monitor and enforce EFRC and DRR codes and standards. 4. Incorporate provisions in the contract document to ensure safety of women and children. Separate provisions of equipment and other resources for clearing winter snow to ensure access to all-weather farm road. 	<ul style="list-style-type: none"> • All weather pliable and quality farm roads. • Improved production, accessibility and marketing. • Capacity of contractors and engineers enhanced. • EFRC & DRR codes and standards effectively enforced and monitored. • Safe and harassment free working environment ensured for women and children. 	<p>landfill developed/maintained</p> <ol style="list-style-type: none"> 7. No. of business enterprise established on waste management. 8. Data and information on solid waste in place. 9. No. of medical centers (BHU and Hospital) adopting proper disposal of medical waste. 10. Proportion of households with safe drinking water supply. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and grain sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources
		<ol style="list-style-type: none"> 1. % of population connected by efficient and safe network of farm roads. 2. Kms. of farm roads constructed and maintained meeting EFRC& DRR standards. 3. No. of contractors and engineers trained on EFRC & DRR codes and standards in farm road construction. 4. No. of contract documents with provisions for safety of women and children. 			

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>5. Remote and socio-economically disadvantaged communities.</p>	<ul style="list-style-type: none"> High incidence of Poverty rate 13.2% (2012) Lack of access to basic socio-economic facilities Low income generating capacities Vulnerable to disasters and HWC. 	<ol style="list-style-type: none"> Assessment of socio-economic conditions and cost benefit analysis of providing socio-economic facilities and services. Incorporation of the communities under the rehabilitation program. Provisions of services and facilities based on the findings of the assessment. 	<ul style="list-style-type: none"> Reduced poverty rates Improve income generating capacities and living standards of the communities. Improve access to basic facilities and services. 	<ol style="list-style-type: none"> No. of households benefiting from rehabilitation programme. % of poverty reduced. Needs assessment study and CBA conducted and recommendations implemented. No. of communities with access to basic facilities and services. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and grain sufficiency Improved health status of the community Enhanced transparency, effectiveness and efficiency in public service delivery
<p>6. Challenges in poverty reduction due to lack of socio-economic facilities and services -</p>	<ul style="list-style-type: none"> Shortage of farm labour force Rural-urban migration because of remoteness and less income generating opportunities. 	<ol style="list-style-type: none"> Improve accessibility (all season farm roads). Diversification and commercialization of agriculture and livestock products with improved access to markets. Explore other income generating opportunities such as eco-tourism, cash crops (Cardamom, potatoes, oranges), NWFP (mushrooms, cane and bamboo) etc. Explore possibility of rehabilitation. 	<ul style="list-style-type: none"> Improved sustainable livelihood Reduced Poverty 	<ol style="list-style-type: none"> Proportion of people living below poverty No. of cottage, medium and small enterprises Acreage of cash crop cultivation by type. Level of income of household as compared to baseline year of 2012 (BLSS) Communities' perception on the accessibility of farm roads throughout the year. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources
<p>7. Crop damage and livestock depredation by wildlife and crop damage due to disaster (wind storm, floods, etc.)</p>	<ul style="list-style-type: none"> Low yield due to damage by wildlife affecting food security of the community. Crop damage by natural and climate induced disasters (early and late frost; 	<ol style="list-style-type: none"> Institute community-based insurance scheme for both crop and livestock damage. Introduce alternative and innovative measures to protect crops from wildlife damage. Introduce Compensation measure with standard 	<ul style="list-style-type: none"> Increased food security Reduced Poverty rate 	<ol style="list-style-type: none"> No. of compensation scheme initiated No. and frequency of DRR awareness and trainings provided. Proportion of budget allocated for DRR initiatives. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<p>erratic weather pattern).</p> <ul style="list-style-type: none"> • Loss of livestock to wild life • Drudgery for guarding crops against wildlife resulting in limited time for family. • It leads to social issues such as sexual harassment, extramarital affairs etc. 	<p>protocols established by agencies.</p> <ol style="list-style-type: none"> 4. Institute plough back mechanisms of revenues from tourism. 5. Awareness on health, laws and values. 6. Explore opportunities for rehabilitation and land swapping. 			<p>sustainable management and conservation of natural resources</p>
<p>8. Lack of awareness& preparedness for Climate change impacts</p>	<ul style="list-style-type: none"> • Local community lacks pro-activeness and preparedness to disaster • Not able to provide adequate and effective response services and facilities due to systemic (including attitudes towards DRR), financial and capacity constraint. • Gender related issues (trafficking), and issues concerning vulnerable groups (differently-abled, elderly, children, poor people) 	<ol style="list-style-type: none"> 1. Awareness, advocacy and education on disaster management Act 2013. 2. Implementation and enforcement of Disaster Management Act including capacity building, and institutionalizing mainstreaming of DRR. 3. Educate community on impacts of climate change issues 4. Integrate climate change concerns in local plans and budgeting. 5. Explore innovative approaches based on best practices to reduce risks from various hazards. 	<ul style="list-style-type: none"> • Reduced disaster risks by mainstreaming DRR into plans and projects. • Awareness and preparedness enhanced • Increased capacity to respond to disasters • Reduced damage and loss of lives and property. • Needs of vulnerable groups considered and addressed. 	<ol style="list-style-type: none"> 1. Proportion of budget allocated to DRR. 2. Disaster management and contingency plan in place and operational. 3. Knowledge and perception of public on disaster preparedness and response. 4. Level of impact of disasters on human lives and property as a result of mainstreaming DRR. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>9. Gender Gaps in almost every sector, including increasing reported number of Violence Against</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>Women (VAW) cases.</p>	<p>Women's effective participation in public sphere (governance, education and employment)</p> <ul style="list-style-type: none"> - Increasing reported number of cases on VAW 	<p>-strengthen generation and use of gender disaggregated data.</p> <ul style="list-style-type: none"> - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<p>amongst the policy makers and general public</p> <ul style="list-style-type: none"> -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<p>participation in public sphere</p> <ul style="list-style-type: none"> -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>status of the community</p> <ul style="list-style-type: none"> • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

6. Lhuentse Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRA and SKRAs/DKRAs
1.Land degradation and soil erosion	<ul style="list-style-type: none"> Increasing developmental activities Loss of fertile soil Decreasing cultivable land area Decrease in agricultural productions & crop productivity Continuous food imports Rural-Urban migration 	<ol style="list-style-type: none"> Conduct Land and soil management(SLM) campaigns, awareness & trainings Promote and adopt environment friendly & disaster resilient projects & road constructions Introduce high yielding crops Promote recuperation & soil fertility improvement practices Up-scale sustainable land management initiatives Construct & improve cold storage infrastructures and facilities 	<ul style="list-style-type: none"> Improved soil fertility and stability Decreased soil erosion and landslides Increased Food production & improved food sustainability Adoption of sustainable agriculture technology & practices Minimized rural-urban migration 	<ol style="list-style-type: none"> % increase in yield of crops Acres of land brought under SLM Decrease in land exchange cases due to landslide/soil erosion Environmental friendly projects implemented & environment friendly roads constructed in Kms. Proportion of land brought under sustainable land management & land use planning 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced household income and food sufficiency Improved status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
1. Over exploitation of forest resources for timber, energy; & degradation of forests & bio-diversity due to forest fires, overgrazing, etc.	<ul style="list-style-type: none"> Increased incidences of human-wildlife conflicts Increased risks to natural calamities like landslides, draughts, falling boulders, & soil erosion Rural-urban migration Depletion of non- 	<ol style="list-style-type: none"> Undertake afforestation and reforestation Introduce crop compensation/crop insurance (engage with financial institutions for micro credits or other alternative schemes Increased community based management of natural resources (community and private forests) Formation & strengthening of 	<ul style="list-style-type: none"> Ecosystem sustained Reduced incidences of man-made disasters Human wild life conflict decreased Household income enhanced Food production increased Reduced timber demand & wastage Sustainable use of 	<ol style="list-style-type: none"> Acres of land afforested and reforested No. of community groups for natural resources management (CF and NWFP groups) No. of households with biogas & solar facilities No of hhs with rain 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced household income and food sufficiency Improved status of the community Improved quality of urban life Enhanced sustainable

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Drying of water sources leading to water shortages</p>	<ul style="list-style-type: none"> wood forest products(NWFP) Increasing burden on women and children to manage households chores due to high cost of firewood and lack of it 	<ol style="list-style-type: none"> Promote & introduce green & alternative technology like solar, biogas, rain water harvesting Encourage public to for stall feed & lease land for fodder plantations Promote alternative timber substitutes(bamboo, metal)in construction Promote sustainable wood processing & re-use of logging residues and wood wastes for energy Enforce Environmental Act, Forest Act, Rules & Regulations 	<p>natural resources</p>	<ol style="list-style-type: none"> water harvesting facilities Household income from livestock Income from CFs and NWFP 	<p>management and conservation of natural resources</p> <ul style="list-style-type: none"> Enhanced transparency, and effectiveness and efficiency in public service delivery
	<ul style="list-style-type: none"> Occurrence of drinking & irrigation water shortage due to prolonged drought and changes in weather pattern. Occurrence of community conflict on water resources Poor hygiene & sanitation Outbreak of diseases Low farm productivity Additional cost incurred for facilities and health care Increasing burden on women and children in fetching water 	<ol style="list-style-type: none"> Protect & maintain water sources, spring water Introduce & promote of rain water harvesting techniques Promote formation of water users group and provision of water management awareness Implementation of Water Act, water rules & regulations 	<ul style="list-style-type: none"> Health and sanitation improved Increased life expectancy Farm & food production improved Improved sustainable use of water resources Decreased cost of health care systems Reduced poverty 	<ol style="list-style-type: none"> Reduced incidences of water borne diseases No. of water user groups formed and strengthened No. of spring water protection increased % of HH with access to the adequate drinking water 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, and effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Vulnerability to various hazards (Earthquake, climate induced disasters, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> Incidence of Fire (forest fire, structural fire) Incidence of Flash floods Crop damage due to erratic weather patterns Risk to cultural infrastructure and heritage from all hazards 	<ol style="list-style-type: none"> Conduct community-based multi-hazard awareness & trainings. Develop and implement local level disaster management plan using community-based disaster risk management framework (CBDRM). Issue public advisory and safety tips for landslides etc. Enforce building codes, standards& guidelines for disaster resilient homes and infrastructures. Conduct vulnerability assessment of school, health, culture and other infrastructures. Retrofitting of vulnerable structures Improve preparedness and response to pandemic outbreaks. Integrate the needs for women, children & differently-abled in the disaster mgt plan & contingency plan 	<ul style="list-style-type: none"> Reduced incidences and risks from disasters. Enhanced disaster preparedness response, relief and recovery mechanisms Culture & traditions preserved and promoted 	<ol style="list-style-type: none"> Disaster management plan and contingency for dzongkhag and gewog plan in place. No. of safety/mock drills conducted annually. No. and frequency of DRR awareness and trainings provided. Proportion of dzongkhag population by sex aware of disaster risk reduction and management. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of health the community Improved quality of urban life Traditional and cultural heritage of the Dzongkhag preserved and promoted Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Increased solid waste generation and pollution of river systems</p>	<ul style="list-style-type: none"> Contamination due to waste disposal and disturbance to river eco-system. Land & air pollution Increased risk of vulnerability to water & vector borne diseases. 	<ol style="list-style-type: none"> Improve & implement integrated waste management system for Dzongkhag throm and gewogs. Initiate awareness raising and promotion of 4 Rs (reduce, reuse, recycle and refuse), safety waste disposal and user education. Improve waste segregation, collection and disposal system. Conduct assessment of waste generation by type and quantity. Purchase and manage waste collector vans 	<ul style="list-style-type: none"> Improved health of the people and environment River eco-systems and its quality maintained. Enhanced awareness on waste management. Improved waste management systems in Dzongkhag's urban and rural areas. Quantity of waste reduced, reused and 	<ol style="list-style-type: none"> No. of segregated waste disposal sites developed No. of environment friendly car washing facilities established Public transport service introduced Decreased record of vector borne disease cases 	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved status of community health Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>5. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<p>6. Construct and improve storm water drainage, sewerage and effluent discharge systems.</p> <p>7. Implement and enforcement and regulation of Waste Management Act</p> <p>8. Monthly mass cleaning/advocacy programme/campaign both in the town and villages</p> <p>9. Develop public transportation system & introduce public transport buses</p> <p>10. Establish waste crushing plant for plastics & transfer centers</p> <p>11. Subsidize transportation of plastic wastes to Mongar recycling unit</p>	<ul style="list-style-type: none"> recycled. • Incidences of vector borne diseases reduced • Employment opportunity 		<p>effectiveness and efficiency in public service delivery</p>
		<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

7. Mongar Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRA and SKRAs/DKRAs
1. Insufficient drinking water in Mongar towns	<ul style="list-style-type: none"> • Degrading of water resources due to: drying up water source, ; • Degradation of watershed (forest degradation). • Population pressure • Erratic rainfall pattern • Inefficient management of water resources (Inefficient water supply infrastructure; Management and distribution problem). 	<ol style="list-style-type: none"> 1. Implementation and enforcement of water Act 2010 and regulations. 2. Advocacy and awareness on efficient use and management of water resources from household to community level. 3. Protection of water catchment and afforestation 4. Rainwater harvesting 5. Pumping of water from Themnangbi 6. Construction of reservoir to store rainwater and excess flows from springs and streams. 7. Demand management – through water pricing. 8. Build on experiences of Payment for Environmental Services (PES) arrangement and implementation with Yakpugang community⁴. 	<ul style="list-style-type: none"> • Increased availability of water for all purposes. • Minimize waste of water through sustainable use. • Improved health outcomes (water borne, skin diseases etc.) 	<ol style="list-style-type: none"> 1. Availability of water for domestic and commercial purposes as measured by number of hours of water available per day. 2. Proportion of population having access to safe drinking water. 3. Area brought under plantation and catchment protection 4. No. of cottage and small industries established. 5. No. of PES schemes initiated. 6. Workable system of water pricing in place and operational. 7. No. of innovative measures adopted. 	DKRAs: <ul style="list-style-type: none"> • Improved status of community health • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

⁴The scheme focuses on protection and enhancement of the Yakpugang community forest, which forms a catchment area and serves as the main source of water for Mongar township. The PES scheme is based on a contractual agreement signed between the Yakpugang community forest management group (as service providers) and the municipal authority of Mongar town (as service recipients). The agreement lists six specific activities pertaining to grazing control, protection of community forest against illegal extraction, maintenance of buffer area (with no clearance of vegetation) along the streams and above the source, and removal of forest debris from the streams. In fulfillment of the specified activities (verified by the verification and monitoring team), the community forest management group is to receive Nu. 52,000 annually from the municipal authority of Mongar town (reference: Report on benefit sharing for eco-system service by Watershed Management Division, 2012).

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

		<p>9. Intensive awareness on water user</p> <p>10. Maintenance of water supply infrastructure</p> <p>11. Expansion of urban town to be based on the availability of basic resources such as water, land etc.</p> <p>12. Promote innovative measures to make water available (water vendors to supply water to water scarce areas).</p>			
<p>2. Human-wildlife conflict</p>	<ul style="list-style-type: none"> • 4 gewogs fall under national parks (TNP & BWS) and are subject to stringent conservation policy constraining communities for development. • Habitat fragmentation (encroachment into wildlife habitat). • Crop damage and livestock depredation by wildlife. 	<ol style="list-style-type: none"> 1. Initiate community-based crop and livestock insurance scheme 2. Introduce compensation measures with standard protocols. 3. Initiate integrated conservation development programmes (eco-tourism, CBRM) 4. Introduce innovative technology(wild life repellent/solar fencing). 	<ul style="list-style-type: none"> • Reduce poverty • Increase food security and self-sufficiency • Increased appreciation of conservation initiatives by the community • Increase household income (eco-tourism) 	<ol style="list-style-type: none"> 1. People's perception towards conservation. 2. No. of benefit sharing introduced (eg. Tourism) 3. Compensation schemes introduced and operational. 4. No. of innovative technology implemented 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved status of health community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>3. Solid waste management</p>	<ul style="list-style-type: none"> • Increase in population leading to generation of more waste. • Lack of awareness • Poor service delivery • Lack of infrastructure/refuse collector (dustbin van) • Lack of business unit for waste management • Social stigma 	<ol style="list-style-type: none"> 1. Undertake survey on waste generation and management. 2. Sensitization on waste management at households and community level. 3. Introduction of integrated solid waste management (generation, segregation, collection and disposal) 4. Promote 4 Rs both in rural and urban areas. 5. Promote waste enterprises - 	<ul style="list-style-type: none"> • Reduced waste • Cleaner town and villages • Improved health outcomes and aesthetic value • Business and Employment opportunities. • Increased 	<ol style="list-style-type: none"> 1. Qty. Of waste generated. 2. Integrated solid waste management in place and operational. 3. No. Of waste management facilities (collection, segregation and disposal). 4. No. Of business enterprises 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved status of health community • Improved quality of urban life • Enhanced sustainable

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<ul style="list-style-type: none"> Lack of direct waste recycling plant Poor public participation Lack of capacity Budget constraint 	<p>through PPP arrangement (focusing on recycling, waste segregation and collection)</p> <ol style="list-style-type: none"> Tax incentives for adopting green initiatives in waste management. Capacity development of thromde, dzongkhag, gewogs and private sectors. 	<p>established and employment generated.</p> <ol style="list-style-type: none"> People's perception of service delivery by LG including waste management (GNH survey) 	<p>management and conservation of natural resources</p> <ul style="list-style-type: none"> Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Unproductive livestock contributing to GHG emission and forest degradation.</p> <ul style="list-style-type: none"> Farmers unaware of the negative impacts of rearing unproductive livestock. Religious sentiment towards culling. Conventional livelihood practice through subsistence farming. Lack of innovative farming practices and diversification. 	<ol style="list-style-type: none"> Promote integrated farming practices (bio-gas technology, organic manure, and bio-pesticide). Promote livestock cooperatives to enhance production and marketing. Encourage use of technologies to improve local breeds (through AI & cross-breeding). Promote fodder development and technology for storage. 	<ol style="list-style-type: none"> No. of cooperatives formed and functional. No. of innovative technologies introduced. % of households rearing improved livestock breeds. % of household income. No. of fodder storage facilities developed and adopted by communities. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of health community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<ul style="list-style-type: none"> Inadequate survey and design of farm roads. Lack of budget to incorporate EFRC design and construction techniques in farm road construction. Limited capacity of dzongkhag engineers and contractors. 	<ol style="list-style-type: none"> Explore the possibility of including additional budget to incorporate EFRC, disaster resilient and climate proofing components. Ensure quality control through performance measures and auditing (to be reflected in contract document and guidelines). Encourage community 	<ol style="list-style-type: none"> Proportion of expenditure on maintenance of farm roads (reduction by %). Perception of community on functionality of farm roads throughout the year. No. of engineers and 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of health community Improved quality of urban life

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> • Ineffective monitoring mechanisms to ensure quality construction. • Lack of inter-sectoral coordination to undertake quality design and survey (with NLC/MoAF) • Problem in alignment of farm roads because of community disputes over land acquisition. • Poor maintenance due to lack of community ownership 	<p>contract for construction and maintenance of farm roads (following community contract protocol).</p> <ol style="list-style-type: none"> 4. Strengthen capacity of dzongkhag and gewog engineers on farm road construction. 5. Strengthen capacity of tshogpas/gewog functionaries on basic engineering skills for farm road monitoring and maintenance. 6. Formation of user group for monitoring and maintenance of farm roads. 7. Provision of adequate budget for regular maintenance of farm roads. 	<p>- Gender Stereotypes and Prejudices challenged</p> <ul style="list-style-type: none"> - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<p>gewog functionaries</p>	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<p>- No of awareness and sensitization program on gender equality and right based approach</p> <ul style="list-style-type: none"> -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

8. Paro Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concern (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAs and SKRAs/DKRAs
<p>1. Farm roads not usable & accessible during monsoon</p>	<ul style="list-style-type: none"> • 60% of farm roads are degraded and non-functional especially during monsoon. • Lack of proper drainage & permanent structures. • 10% of budget surrendered due to Community's unwillingness to contribute their land for the farm road. • Roads constructed departmentally resulting in poor quality of roads 	<ol style="list-style-type: none"> 1. Provide adequate funds & technology for construction & regular maintenance 2. Invest in climate proofing, environment friendly and disaster resilient farm roads construction techniques & methods 3. Provide capacity building in advanced roads engineering and planning, construction/maintenance techniques & methods for climate proofing, environment friendly & disaster resilient roads, roads user groups 4. Capacity building & enforcement of EIA application on roads plans. 5. Enforcement of Road Act, Farm Roads guidelines 6. Ensure incorporation & construction of necessary permanent structures like drains, walls & bridges in roads construction 7. Outsource construction & maintenance of farm roads to private or community contractors wherever relevant for quality, timeliness & ownership. 	<ul style="list-style-type: none"> • Improved roads quality(resilience) and accessibility(all seasons) • Reduced landslides • Reduced damage to the environment • Reduced cost of roads maintenance especially in the long term • Improved rural accessibility & improved livelihood • Enhanced greenery and aesthetic value 	<p>1.No of kms of disaster resilient, climate proofed & environment friendly farm roads maintained/constructed</p> <p>2.No of roads functional and accessible in a year</p> <p>3.No of roads engineers, planners & contractors trained on advanced roads engineering and environment friendly roads construction & maintenance</p>	<p>DKRAS:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Drying up of water sources leading to water shortages for drinking, irrigation & commercial purposes.</p>	<ul style="list-style-type: none"> • Occurrence of water shortage & water sources drying due to prolonged drought, changes in weather pattern • Occurrence of community conflict on water resource • 95% rural water supply schemes (RWSS) coverage achieved. • Non-functional RWSS. • Water loss & seepage due to poor quality of water infrastructures & lack of maintenance • Existence of traditional water user laws • Increased burden on women and children in fetching water. • Increasing demand for water due to increase in population. 	<ol style="list-style-type: none"> 1. Undertake awareness programs on sustainable use of water & improve watershed management(plantation), & protection of water sources 2. Explore alternative sources of water & technology(rain water harvesting etc.) 3. Improve water use and efficiency through regular maintenance, proper management & upgradation of water infrastructures 4. Introduce water pricing & payment for eco-system services 5. Regular maintenance of RWSS schemes, reservoirs, water source, irrigation channels etc 6. Use inventory and maps of all existing perennial water sources and water discharge 7. Enforce laws, by-laws and regulations (Water Act and Rules; Forest Act etc.) 8. Explore & initiate one irrigation project to benefit the whole paddy fields of Paro valley. 	<ul style="list-style-type: none"> • Improved water infrastructure & sustainable supply of water for drinking, irrigation, construction etc • Improved access to safe drinking water. • Improved health, livelihood and wellbeing of the community. • Enhanced farm & crop production • Reduced conflicts related to water 	<ol style="list-style-type: none"> 1. Proportion of hbs with access to safe drinking water. 2. % of functional and disaster resilient water supply schemes in place. 3. No. of Payment for Eco-system Services schemes in place and functional. 4. No. of watershed management schemes in place. 5. No. of irrigation channels & sources improved & maintained. 6. % increase in food production. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved status of health the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, and effectiveness and efficiency in public service delivery
<p>3. Increased solid waste generation leading to air, water and river pollution</p>	<ul style="list-style-type: none"> • Contamination due to waste disposal, and disturbance to land & river eco-system. • Increased risk of vulnerability to water & vector borne diseases. • Lack of waste disposal 	<ol style="list-style-type: none"> 1. Improve & implement an integrated waste management system for Dzongkhag throm and gewogs. 2. Initiate awareness raising and promotion of 4 Rs (reduce, reuse, recycle and refuse), safe waste disposal and user education. 	<ul style="list-style-type: none"> • Improved health of the people and environment • Land & river eco-systems maintained. • Enhanced awareness on waste management. • Improved waste management systems 	<ol style="list-style-type: none"> 1. No. of air & water borne diseases reported by sex. 2. Quantity and type of waste collected. 3. Perception and awareness of population on waste management service 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved status of health the community • Improved quality of urban life

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<ul style="list-style-type: none"> • sites (only one land fill with a capacity of about 10,000 MT of waste) • Increasing indiscriminate waste disposal. • Lack of community participation in waste management. • Lack of dust bins & garbage trucks. • Lack of waste segregation. • Lack of civic sense amongst the community. 	<ol style="list-style-type: none"> 3. Improve waste segregation, collection and disposal system. 4. Conduct assessment of waste generation by type and quantity. 5. Purchase and manage waste collector vans 6. Construct and improve storm water drainage, sewerage and affluent discharge systems. 7. Identify & develop alternative disposal sites 8. Village wise identification of waste collection. 9. Enforce waste mgt act & regulations. 	<ul style="list-style-type: none"> • in Dzongkhag's urban and rural areas. • Improved quality of waste management infrastructures • Quantity of waste reduced, reused and recycled. • Responsible Community. 	<p>delivery & waste mgt. practices.</p> <ol style="list-style-type: none"> 4. No. of waste collection vans and sites. 5. No of hhs with access to an integrated waste management and collection system 6. Units of fines/revenue generated by municipality. 	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Vulnerability to various hazards (Earthquake, climate induced disasters, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of Flash floods • Crop damage due to erratic weather patterns • Damaged cultural infrastructures & heritage -83 Lhakhangs and 50 chortens destroyed by 18th Sept. earthquake. • Multi-storied Lhakhangs. 	<ol style="list-style-type: none"> 1. Conduct community-based multi-hazard awareness & trainings on good construction techniques & practices 2. Develop and implement local level disaster management plan using community-based disaster risk management framework (CBDRM). 3. Install early warning and response system in vulnerable areas. 4. Issue multi-hazard public advisory and safety tips. 5. Enforcement of building codes, standards and guidelines for disaster resilient homes and infrastructures including lhakhangs & cultural monuments. 6. Conduct vulnerability 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness • response, relief and recovery mechanisms • Disaster resilient and environment friendly cultural sites sustained. 	<ol style="list-style-type: none"> 3. Disaster management plan and contingency for dzongkhag and gewog plan in place. 4. No. of safety/mock drills conducted annually. 5. No. and frequency of DRR awareness and trainings provided. 6. Proportion of dzongkhag population by sex aware of disaster risk reduction and management. 7. No. of disaster resilient and environment friendly cultural sites re- 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

		assessment of school, health, culture & other infrastructures & retrofit if needed. 7. Improve preparedness and response to pandemic outbreaks.		built/renovated. 6. Budget allocated for disaster resilient and environment friendly cultural sites.	service delivery
5. Loss of arable land to other land use purpose	<ul style="list-style-type: none"> Increasing developmental activities Decreasing cultivable land area Decrease in farm & crop productivity Continuous food imports Rural-urban migration Uncontrolled land transactions and conversions. Wetlands converted to other land use categories disturbing source-sink relationship of Co2 and affecting food security. Illegal construction of houses in wetland. 	<ol style="list-style-type: none"> Conduct awareness raising & capacity building on sustainable Land and soil management(SLM) Promote and enforce sustainable farming & construction of environment friendly & disaster resilient projects & roads Introduce high yielding seeds for improved crop productivity Promote recuperation & soil fertility improvement practices Improve cold storage infrastructures and facilities Encourage conservation of wetland through subsidy/incentives & trainings. Enforce Land Act, Forest Act, rules & regulations 	<ul style="list-style-type: none"> Decreasing rural-urban migration Wetland/arable land protected & conserved. Reduced loss of wetland/arable land to other development activities & their associated impacts Improved farm & food productivity 	<ol style="list-style-type: none"> land exchange cases due to landslide/soil erosion & constructions reduced Nos & kms of environmental friendly projects implemented & environment friendly roads constructed Proportion of land brought under sustainable land management & land use planning & practices Area of wet lands converted to Khimsa. No of incentives introduced to promote wetland conservation. % food production 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced household income and food sufficiency Improved status of health community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
6. Human-Wild life conflict.	<ul style="list-style-type: none"> Increasing crop/livestock depredation due to wildlife attack Loss of cattle& horses to predators (tigers, 	<ol style="list-style-type: none"> Strengthening sustainable & intensive farming practices Explore possibilities of land swapping Improve use of crop storage/post-harvest 	<ul style="list-style-type: none"> Improved/sustainable rural livelihood. Improved food production Increased rural income and reduced rural 	<ol style="list-style-type: none"> Acreege of fallow land reduced Percentage increase in productivity of crop and livestock Cases of human- 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced household income and food sufficiency Improved status of health community

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<p>leopards, bears, wild dogs, etc.)</p> <ul style="list-style-type: none"> • Increase in fallow land and land fragmentation • Encourages community to switch livelihood from agriculture to other forms of livelihood (NWFP, livestock rearing, portering) • Pose risks to human lives and property due to wildlife attack. • Encourages farmers to retaliate & kill wild animals which affecting their conservation 	<p>technologies to reduce damage by pests and diseases</p> <ol style="list-style-type: none"> 4. Introduce crop and livestock compensation/ insurance (engage with financial institutions – micro credits) or other alternative schemes 5. Introduce social protection schemes at the community level⁵ 6. Awareness raising & capacity building on human wildlife conflict management by gender 7 Capacity building of farmers on new technology & use of new technology like electric fencing etc to protect crops & livestock from wild animals 8 Replace local with improved breeds for improved livestock production 	<p>poverty</p> <ul style="list-style-type: none"> • Increased farmers (including women) preparedness and response to human wildlife conflict. • Fallow land brought under cultivation and increased organic crop production • Reduction in loss of crops and livestock to wild animals. 	<p>wildlife conflicts</p> <ol style="list-style-type: none"> 4. % of crops and livestock loss to wild animals. 5. No of men and women participating in human wildlife conflict management trainings & awareness programs. 6. Changes in the volume of NWFP harvested annually 7. No. of electric/solar fencing established. 	<p>community</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>7. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women’s effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women’s participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

⁵Informal community saving schemes

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9. Pemagatshel Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRA and SKRAs/DKRAs
<p>1. Drying up of water sources</p>	<ul style="list-style-type: none"> • Inadequate access to safe drinking water (people have to walk long distances to fetch water) • Poor in sanitation and hygiene. • Water disputes among households and communities leading to social disharmony. • Declining vegetable productions (due to inadequate water supply. • High opportunity cost – involved in fetching drinking water. 	<ol style="list-style-type: none"> 1. Rehabilitation of socio-economically disadvantaged communities including water stressed communities 2. Identification and protection of critical water catchment area (fencing and plantations) 3. Research and development for alternative opportunities such as ground and rain water harvesting technology. 4. Formation of community water user groups 5. Streamline water management system 6. Awareness and sensitization on efficient utilization and management of water resources including protection of catchment areas 7. Capacity building of dzongkhag engineers and gewog functionaries on the adoption and application of new technologies to tap water resources. 	<ul style="list-style-type: none"> • Provision of adequate drinking water for the communities • Improved health outcomes and livelihood. • Capacity of engineers, gewog functionaries and WUAs enhanced. • Enhanced opportunities for increased economic activities and family time. 	<ol style="list-style-type: none"> 1. Proportion of people having access to safe drinking water. 2. % of water supply coverage and functional RWSS. 3. No. of water user groups established, trained and operational. Incidences of water disputes. 4. Perception of people on efficient water use and management. 5. No. of alternative technologies identified and adopted. 6. No. of awareness programmes conducted. 	<p>DKRAs</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved status of the community health • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Human wildlife conflict</p>	<ul style="list-style-type: none"> Declining agriculture production Livestock depredation Additional time and resources consumed in guarding crops and livestock Women vulnerable to sexual exploitation while guarding crops and livestock Increased rural-urban migration Increase in fallow land Mental stress due to time spent on guarding crops against wildlife. 	<ol style="list-style-type: none"> Explore alternative measures for crop guarding (such as solar/electric fencing) Rehabilitation of the affected communities. Sensitization of women and men on health issue (STDs, HIV/AIDS, teenage pregnancy, early marriages, etc.) Introduce community based insurance/ compensation schemes. Implementation of proper livestock herding practices. 	<ul style="list-style-type: none"> Food security and self-sufficiency ensured. Reduced rural-urban migration Time and resources saved Reduced social issues (sexual exploitation) Improved livelihoods. Increased awareness of communities on STDs and adolescent sexual reproductive health issues. 	<ol style="list-style-type: none"> Compensation schemes introduced and operational. No. of innovative technologies implemented Annual production of cereal crops by type. Trend of rural-urban migration (as measured by 'gungtung⁶') Incidences of crop and livestock damage, and loss of human lives reported. Incidences of social issues reported. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>3. Environmental degradation due to farm road construction</p>	<ul style="list-style-type: none"> Land degradation Displacement of poor households falling within the right of way. Drying of water sources due to forest degradation. Noise and dust pollution Damage to Agricultural land and environment. Proliferation of illegal settlements along the roads. Poor quality of farm roads disrupting access and local 	<ol style="list-style-type: none"> Ensure quality control through performance measures and auditing (to be reflected in contract document and guidelines). MoF (DNB/DPA) to institute mechanisms whereby release of budget is contingent upon fulfilling standard criteria for farm road construction (including EIA clearance; community consultation and participation). Encourage community contract for construction and maintenance of farm roads (following community contract 	<ul style="list-style-type: none"> All weather pliable and quality farm roads. Improved production, accessibility and marketing. Capacity of contractors and engineers enhanced. EFRC & DRR codes and standards effectively enforced and monitored. Safe and harassment free working environment ensured for women and children. 	<ol style="list-style-type: none"> Proportion of expenditure on maintenance of farm roads (reduction by %). Perception of community on functionality of farm roads throughout the year. No. of engineers and gewog functionaries trained on EFRC and basic engineering. No. of user group formed and functional. Rate of compliance in to EFRC standards in 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

⁶ Detail explanation to be provided.....

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty (GECDP)

	<p>businesses, including additional cost.</p> <ul style="list-style-type: none"> • Change in vegetation and disturbance to ecosystems. • Inadequate budget to incorporate EFRC standards – leading to soil erosion, road landslides, road blockages etc. 	<p>protocol).</p> <ol style="list-style-type: none"> 4. Strengthen capacity of dzongkhag and gewog engineers on farm road construction. 5. Strengthen capacity of tshogpas/gewog functionaries on basic engineering skills and mainstreaming EFRC standards for farm road monitoring and maintenance. 6. Formation of user group for monitoring and maintenance of farm roads. 7. Ensure consultation of the communities in particular with affected household right from planning to implementation of farm road construction including land acquisition. 8. Initiate sustainable land management practices where needed. 9. Provision of adequate budget for regular maintenance of farm roads. 10. Explore the possibility of including additional budget to incorporate EFRC, disaster resilient and climate proofing components. 11. Strictly adhere to EFRC guidelines 12. Strictly observe road Right of Way 13. Intensification of 	<p>farm road construction and maintenance.</p> <ol style="list-style-type: none"> 6. Utility of farm roads as measured by increased production and market accessibility (income level). 7. Kms. of environment friendly farm road constructed. 8. Areas of land brought under sustainable land management. 	
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<p>4. Impacts of gypsum mining on the nearby human settlements.</p>	<ul style="list-style-type: none"> • Land degradation/land instability • Noise and dust/air pollution • Ecosystem disturbance. • Deterioration of road condition and safety issues especially to school children due to over speeding of trucks. • Damage to agricultural crops leading to low yields due to dust pollution. • Increased health hazards from air/dust pollution. • Loss of land stability due to mining thus posing risk to infrastructure (schools, dzongs, etc.) • Disturbance to entire eco-system including aquatic (Loss of rare and endemic species). • Contamination of surface and ground water. 	<p>agriculture production</p> <p>14. Formation of farm road user group</p> <p>15. Adoption of SLM</p> <ol style="list-style-type: none"> 1. Provide employment opportunities particularly to the affected communities. 2. Ensure strict compliance with the provisions of EIA. 3. Adequate attention should be given to conduct comprehensive social impact assessment as part of the EIA process. 4. Awareness programmes and strict compliance to traffic rules and safety by the truckers. 5. Installation of safety measures and speed breakers where required. 6. Undertake assessment of the impacts of mining operation on infrastructures and undertake remedial measures where necessary. 7. Strict monitoring of mining operation and compliance with the implementation of environmental management plan by the proponent and authorities. 8. Initiate health hazard survey/research and explore relevant measures 9. Awareness and advocacy on health issues such as STDs; adolescent reproductive health; 10. Mining authorities should 	<ul style="list-style-type: none"> • Sustainable mineral development and management. • Creation of employment leading to improved livelihood of the communities. • Enhanced traffic and safety conditions. • Minimized disturbance to environment and agricultural crops. • Reduced health hazard • Socio-economic benefits realized through CSR. 	<ol style="list-style-type: none"> 1. SEA & EIA conducted. 2. Perception of communities on the impacts of mining activities. 3. % of fund (of the total revenue generated) invested on CSR interventions. 4. Reduction in incidences of accidents and health issues by type. 5. Penalties for non-compliance of environmental management plan. 6. No. of social facilities and services supported by the mining company. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food • Improved sufficiency of health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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			<p>incorporate the following in to the agreement: (1) to ensure work leisure balance of the employees; (2) occupational health and safety of workers; (3) gender equality (mainstreaming gender friendly work environment and in terms of wages)</p> <p>11. Assess extent of damage to agricultural crops and compensate adequately where necessary.</p> <p>12. Initiate SEA⁷ on mineral development and management in the dzongkhag (Proposal for SEA to originate from dzongkhag and to source technical & financial support from NEC/GNHC).</p> <p>13. Initiate Corporate Social Responsibility (CSR) such as (1) community development fund; (2) provision of social facilities and services; (3) provide scholarship to deserving and under-privileged children; (4) construct recreational facilities for the communities (5) restoration and beautification of mining sites with establishment of</p>		
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⁷Strategic Environment Assessment: A range of analytical and participatory approaches that aim to integrate environmental considerations into Policies, Plans and Programmes and evaluates inter- linkages with economic and social considerations (Source: OECD-DAC SEA Guidance 2006).

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<p>5. Improper solid waste management</p>	<ul style="list-style-type: none"> • Increase in population leading to generation of more waste. • Lack of awareness • Poor service delivery • Lack of infrastructure (collection point; sanitary landfill; collection van) • Lack of business unit for waste management • Poor public participation • Lack of capacity of thromde, dzongkhag, gewog functionaries on waste management. • Increased waste generation and open disposal leading to pollution of air, water and land. • Exposure to hazardous waste and infectious diseases due to poor waste management. 	<p>nature parks, botanical garden and other amenities.</p> <ol style="list-style-type: none"> 1. Integrated waste management – through establishment of waste management facilities and services in both rural and urban areas (segregation, collection, transportation and disposal) 2. Awareness on the provisions and enforcement of Waste Prevention and Management Act and Rules. 3. Encourage private firms to take up waste management initiatives through Public Private Partnership arrangements. 4. Undertake survey on waste generation and management. 5. Sensitization on waste management at households and community level both in rural and urban areas (focusing on 4Rs – reduce, reuse, recycle and refuse). 6. Promote tax incentives for adopting green initiatives in waste management. 7. Capacity development of thromde, dzongkhag, gewogs and private sectors. 8. Proper disposal and management of medical and hazardous wastes 9. Awareness on e-waste 	<ul style="list-style-type: none"> • Improved waste management. • Improved health, sanitation and aesthetics. • Increased awareness on the legal framework and managing different types of waste. • Waste infrastructures in place (sanitary land fill; disposal pits& bins; compost plants; transportation) • Business and employment opportunities created. • Quality of air, water and land improved. 	<ol style="list-style-type: none"> 1. Integrated waste management in place and operational. 2. Qty. of waste generated 6. No. Of waste management facilities in rural and urban areas (collection, segregation and disposal). 3. No. of business enterprises established and employment generated. 7. People’s perception of service delivery by LG including waste management 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved status of community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>6. Lack of awareness & preparedness on natural and Climate change induced disasters</p>	<ul style="list-style-type: none"> Local community lacks pro-activeness and preparedness to respond to disaster Increased incidences of wind storm. Not able to provide adequate and effective response services and facilities due to systemic (including attitudes towards DRR), financial and capacity constraint. Gender related issues (trafficking), and issues concerning vulnerable groups (differently-abled, elderly, children, poor people) 	<p>management and promote green procurement (equipment, stationery etc.)</p> <p>10. Promote local initiatives (cleaning and awareness campaigns) by involving school children and the general public.</p>	<ul style="list-style-type: none"> Reduced disaster risks with mainstreaming DRR into plans and projects. Awareness and preparedness enhanced Increased capacity to respond to disasters Reduced damage and loss of lives and property. Needs of vulnerable groups considered and addressed. 	<p>4. Proportion of budget allocated for DRR initiatives.</p> <p>5. Disaster management and contingency plan in place and operational.</p> <p>6. Knowledge and perception of public on disaster preparedness and response.</p> <p>7. Level of impact of disasters on human lives and property as a result of mainstreaming DRR.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced household and food sufficiency Improved status of community health Improved quality of urban life Traditional and cultural heritage of the Dzongkhag preserved and promoted Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>7. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> Strong Stereotypes and prejudices against women Limited awareness on gender issues and rights Lesser Number of Women's effective participation in public sphere (governance, 	<p>1. Awareness, advocacy and education on disaster management Act 2013.</p> <p>2. Implementation and enforcement of Disaster Management Act including capacity building, and institutionalizing mainstreaming of DRR.</p> <p>3. Educate community on impacts of climate change issues</p> <p>4. Integrate climate change concerns in local plans and budgeting.</p> <p>5. Explore innovative approaches based on best practices to reduce risks from various hazards specially wind storms.</p> <p>6. Enforcement of disaster resilient standards in construction of rural homes and other infrastructures.</p>	<ul style="list-style-type: none"> Gender Stereotypes and Prejudices challenged improved understanding of gender equality and rights based approach amongst the policy makers and general public Strengthened enabling 	<p>- No of awareness and sensitization program on gender equality and right based approach</p> <p>-No of women participation in public sphere</p> <p>-No of research on gender</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved status of community health

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	<p>education and employment) - Increasing reported number of cases on VAW</p>	<p>- Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services</p>	<p>environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW)</p>	<p>gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported</p>	<ul style="list-style-type: none"> • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

10. Punakha Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concern (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRA's and SKRA's/DKRAs
<p>1. Vulnerability to various hazards (earthquake, climate induced disasters, fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of flash floods • Crop damage due to erratic weather patterns • Risks from GLOF (no. of potential lakes upstream - Punatshangchu valley) and earthquake • Depletion of wildlife, loss of bio-diversity, and soil degradation 	<ol style="list-style-type: none"> 1. Undertake community-based multi-hazard awareness programs 2. Develop and implement disaster management plan & contingency plan using community-based disaster risk management (CBDRM). 3. Install early warning and response system in vulnerable areas. 4. Issue multi hazard public advisory and safety tips. 5. Enforcement of building codes, standards and guidelines for environment friendly & disaster resilient homes and infrastructures. 6. Conduct vulnerability assessment of school, health and other infrastructures. 7. Retrofit vulnerable structures 8. Improve preparedness and response to pandemic outbreaks 9. Improve forest fire management 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness response, relief and recovery mechanisms • Safe health, properties and forest 	<ol style="list-style-type: none"> 1. Disaster management plan and contingency plan for dzongkhag and gewog in place. 2. No. of safety/mock drills conducted annually. 1. No. and frequency of DRR awareness and trainings provided. 2. Proportion of population by sex aware of disaster risk reduction and management. 3. Frequency of forest fire incidences 4. No. of people trained on forest fire management 5. No. of forest fire management committees formed 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>2. Incidence of pests and diseases</p>	<ul style="list-style-type: none"> • Increasing no. of pests and diseases due to 	<ol style="list-style-type: none"> 1. Promote & train farmers on integrated pest management 	<ul style="list-style-type: none"> • Decreased pests and diseases 	<ol style="list-style-type: none"> 1. Annual crop production 2. Annual meat/dairy /poultry 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECCDP)

	<p>climate change & increasing temperature</p> <ul style="list-style-type: none"> • Loss of biodiversity • Increasing cost of farming • low farm and crop productivity which discourages farming 	<p>in a gender responsive manner</p> <ol style="list-style-type: none"> 2. Implement disease control program 3. Introduce crop compensation/crop insurance (engage with financial institutions for micro credits or other alternative schemes 4. Introduce social protection schemes at the community level⁸ 5. Encourage cultivation of crops/vegetables in green/poly house 6. Provide improved and safe storage facilities(post harvest technologies) 7. Encourage low input high yielding varieties and other innovative practices (crop diversification, mechanization, green and organic) 	<ul style="list-style-type: none"> • Improved farm & food productivity • Increased rural income and reduced poverty • Increased farmers preparedness and response to challenges of pests & diseases 	<ol style="list-style-type: none"> 3. % of households with improved food security. 4. Proportion of population under poverty. 5. Proportion of women participating in pest mgt & diseases control trainings(at least 30%) 6. No. of pests & diseases resilient varieties of crops introduced 7. No. of post harvest technologies introduced and functional. 	<p>household income and food sufficiency</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>3. Drying up of water sources leading to water shortage.</p>	<ul style="list-style-type: none"> • Water shortage for drinking and irrigation due to drying water source and changes in weather pattern • Occurrence of community conflict on water resource • Non-functional rural water supply schemes(RWSS) • Increasing demand for water from expanding 	<ol style="list-style-type: none"> 1. Improve watershed management & protection (plantation), & explore alternative technology(rain water harvesting etc.) 2. Improve water use and efficiency through regular maintenance, upgradation of water infrastructures & through water pricing 3. Regular maintenance of existing RWSS schemes. 4. Conduct education and 	<ul style="list-style-type: none"> • Sustainable supply & use of water for drinking and for irrigation. • Improved access to safe drinking water. • Improved health, livelihood and wellbeing of the community. • Enhanced farm & crop production through enhanced 	<ol style="list-style-type: none"> 1. Proportion of hhs with access to safe drinking water. 2. % of functional and disaster resilient water supply schemes in place. 3. No. of watershed management schemes in place. 4. No and kms of irrigation channels & drinking water system improved. 5. No of water source protected. 6. % increase in food 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced

⁸Informal community saving schemes

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<p>population.</p> <ul style="list-style-type: none"> Water loss & seepage due to poor quality of storage tanks, pipes, canals/channel. Increasing burden on women and children in fetching water. Poor health and sanitation 	<p>awareness raising on sustainable use of water resources.</p> <ol style="list-style-type: none"> Undertake inventory and mapping of all existing perennial water sources and measurement of water discharge annually Strict enforcement of laws, by-laws and regulations (Water Act and Rules; Forest Act etc.) Formation of Water Users' Association 	<p>irrigation.</p> <ul style="list-style-type: none"> Reduced conflicts on water Improved health and hygiene 	<p>production</p> <ol style="list-style-type: none"> Incidence of sanitation related diseases 	<p>sustainable management and conservation of natural resources</p> <ul style="list-style-type: none"> Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Less no. of women's participation in decision making processes</p>	<ul style="list-style-type: none"> Very low number of women's local government(LG) portfolio holders Stereotypes and prejudices against women Limited awareness on gender issues and rights Lesser number of women's effectively participation in public sphere (education and employment) Increasing number of cases on violence against women(VAW) 	<ol style="list-style-type: none"> Conduct periodic rights based awareness programs Conduct research or review of significant and contextual gender gaps. Strengthen generation and use of gender disaggregated data Increase sensitization on the importance of gender equality and rights based approach. Conduct trainings on gender analysis Explore incorporation of support services 	<ul style="list-style-type: none"> Advocate for increasing the number of women holding LG portfolios Gender stereotypes and prejudices challenged Improved understanding of gender equality and rights based approach amongst the policy makers and general public Strengthened enabling environment for increased women's participation in all spheres Increased safety and security for women (especially victims of VAW) Improved holistic 	<ol style="list-style-type: none"> No of awareness and sensitization programs on gender equality and right based approach No of women participation & representatives in public sphere & LGs No of research on gender gaps Proportion of women and children benefiting from the support services No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Traditional and cultural heritage of the Dzongkhag preserved and promoted Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>5. Increasing no. of youth related crimes</p>	<ul style="list-style-type: none"> Increasing youth involvement in unhealthy social activities like substance abuse, gang culture, etc 	<ol style="list-style-type: none"> Conduct youth programs Enable youth empowerment through capacity building Enhance sensitization and awareness creation on social and other issues for the youth 	<ul style="list-style-type: none"> Improved youth participation in healthy social activities Reduced crime and substance abuse Healthy and happy society 	<ol style="list-style-type: none"> No. of youth related crimes recorded annually 	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved health status of the community Improved quality of urban life Enhanced transparency, effectiveness and efficiency in public service delivery
<p>6. Increased solid waste generation and pollution of air, land and water</p>	<ul style="list-style-type: none"> Contamination due to waste disposal and disturbance to land & river eco-system. Increased risk of vulnerability to water & vector borne diseases. Lack of waste disposal sites & waste management system Lack of community participation in waste management. No garbage trucks. No waste segregation & no proper disposal of waste Lack of civic sense amongst the community. No sewerage plant 	<ol style="list-style-type: none"> Improve & implement integrated waste management system for Dzongkhag throm and gewogs. Educate, create awareness & promote 4 Rs (reduce, reuse, recycle and refuse) & on safe waste disposal Improve waste segregation, collection and disposal system. Assess waste generation by type and quantity. Purchase and manage waste collector vans Construct and improve storm water drainage, sewerage and effluent discharge systems. Identify & develop alternative disposal site Village wise identification of waste collection. Enhance capacity building 	<ul style="list-style-type: none"> Improved health of the people & environment Land & river eco-systems maintained. Enhanced awareness on waste management. Improved waste management system in Dzongkhag's urban and rural areas. Quantity of waste reduced, reused and recycled. Responsible Community. 	<ol style="list-style-type: none"> No. of air & water borne diseases reported by sex. Quantity and type of waste collected. Perception and awareness of population on waste management service delivery & waste mgt. practices. No. of waste collection vans and sites. % of population educated on waste management. Units of fines/revenue generated by municipality No. of HHs availing waste management facilities No. of HHs connected to sewerage system 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Non-functional farm roads</p>	<ul style="list-style-type: none"> • Poor quality & non-functional farm roads especially during monsoon. • Lack of proper drainage and permanent structures. • Increasing maintenance cost 	<p>10. Ensure the presence of waste bins in every HH</p> <p>11. Construction of sewerage plant and network in Khuruthang</p> <p>12. Procure & use excavator and compactor</p>	<ul style="list-style-type: none"> • Improved roads quality(resilience) and accessibility(all seasons) • Minimized damage to environment, forest & agriculture land • Reduced cost of roads maintenance especially in the long term • Reduced poverty through improved rural accessibility • Enhanced greenery and aesthetic value 	<p>1. Nos & Kms of disaster resilient and environment friendly farm roads maintained/ constructed</p> <p>2. No of functional and accessible roads in a year</p> <p>3. No of roads engineers, planners & contractors trained on advanced roads engineering and environment friendly roads construction & maintenance techniques & methods</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>10. Ensure the presence of waste bins in every HH</p> <p>11. Construction of sewerage plant and network in Khuruthang</p> <p>12. Procure & use excavator and compactor</p>	<ul style="list-style-type: none"> • Provide adequate funds for construction and maintenance of farm roads, & introduce new technology for the construction & maintenance • Invest & construct farm roads and other type of roads for climate proofing and in environment friendly & disaster resilient manner • Capacity building for engineers & contractors in advanced roads engineering and planning, and in environment friendly methods & techniques of roads construction/maintenance • Promote awareness & enforce EIA, roads act, farm roads guidelines on road plans and construction • Enforce incorporation of all requirements of roads standards & guidelines in road constructions. • Ensure quality maintenance & renovation of existing farm roads 	<p>1. Nos & Kms of disaster resilient and environment friendly farm roads maintained/ constructed</p> <p>2. No of functional and accessible roads in a year</p> <p>3. No of roads engineers, planners & contractors trained on advanced roads engineering and environment friendly roads construction & maintenance techniques & methods</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 		

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<p>8. Loss of Governed Forest (GRF) land & degradation of forest and biodiversity due to increasing developmental activities</p>	<ul style="list-style-type: none"> • Increased degradation of forest • Increased loss of livestock and crops to wildlife predation • Increased risks to natural calamities like landslides, draughts, falling boulders, and soil erosion • Depletion of NWFP • Increasing burden on women and children to manage households chores due to high cost of firewood and lack of it 	<ol style="list-style-type: none"> 1. Undertake afforestation and reforestation programs 2. Introduce crop compensation/crop insurance (engage with financial institutions for micro credits or other alternative schemes 3. Enhance capacity for community based management of natural resources (community and private forests) 4. Promote & introduce green technology like solar, biogas 5. Encourage public for stall feeding and land lease for fodder plantations 6. Promote & introduce use of alternative timber substitute(bamboo, metal)in construction/maintenance 7. Promote sustainable wood processing & re-use of logging residues and wood wastes for energy & construction 8. Enforce Environment & Forest Acts, rules & regulations 	<ul style="list-style-type: none"> • GRF cover maintained • Ecosystem sustained • Reduced incidences of man-made disasters • Decreased human wild life conflict • Household income enhanced • Reduced timber demand & wastage • Sustainable use of natural resource 	<ol style="list-style-type: none"> 1. Total GRF land coverage and reforested 2. No. of community trained & groups formed for sustainable natural resource management 3. No. of households with biogas & solar facilities 4. No of hhs with rain water harvesting facilities 5. Household income from livestock & crops 6. Income from CFs and NWFP 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

11. Samdrup Jongkharchang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKARs and SKARs/DKARs
<p>1.Environmental degradation due to development activities(farm roads, irrigation, health, education, buildings & mining activity</p> <ul style="list-style-type: none"> • Increasing proposals for construction & maintenance of farm roads, irrigation etc • Increasing landslides and soil degradation • Degradation of water catchment areas & water sources(drinking, irrigation) • Increased incidences of human-wildlife conflicts • Loss of arable land for construction activities • Depletion of NWFP • Increasing burden on women and children to manage households chores due to high cost of firewood and lack of it • Rural-urban migration • Disturbance of eco-systems & loss of vegetation/biodiversity • Increase in air, water & noise pollution • Prevalence of acute respiratory and skin diseases due to dust 	<ol style="list-style-type: none"> 1. Conduct strategic assessment of infrastructure needs, conduct proper planning and prioritization of infrastructures like farm roads, irrigation etc. 2. Explore & introduce alternative transport system (e.g ropeways) 3. Enforce & monitor environmental & forest rules, regulations & guidelines, and environmental friendly & disaster resilient roads, irrigation, health, education infrastructure constructions 4. Enhance capacity of engineers & relevant officials in environment friendly construction techniques and standards 5. Introduce environmental polluter pay principles 6. Enforce & monitor mine/quarry management and restoration plans 7. Create community awareness on mining policy, regulations etc 8. Encourage & introduce 	<ul style="list-style-type: none"> • Reduced environmental degradation(forest, arable land) • Reduced landslide and soil erosion • Long term benefits in terms of maintenance cost & increased savings • Responsible mining practices enforced • Reduced pollution • Employment and revenue generation opportunities tapped • Forest coverage maintained • Improved market accessibility • Reduced incidences of man-made disasters • Decreased human wild life conflict • Enhanced household income • Increased food & farm production • Reduced timber demand & wastage • Practices of 	<ol style="list-style-type: none"> 1. Acreage of arable land protected 2. Kms and No. of infrastructures & farm roads constructed and maintained with environment friendly methods and standards 3. No. of alternative transport system(gravity ropeway) constructed 4. Acreage of land under forest cover maintained 5. No of improved mining/quarry technology & methods 6. % of income generated(fines, fees) % reduction of acute respiratory and skin diseases reported 8. Proportion of functional irrigation channels in Gewogs 10. Incidence of landslides 11. No. of community groups for natural resources management (CF and NWFP groups) 12. No. of households with biogas & solar facilities 12. No of hhs with rain water 	<p>DKARs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>from mining & mine transportation</p> <ul style="list-style-type: none"> Poor health and sanitation Lack of skilled human resources(engineers) and inadequate financial resources to deal with this issue 	<p>improved mining technology & methods</p> <p>9. Introduce crop compensation/crop insurance (engage with financial institutions for micro credits or other alternative schemes</p> <p>10. Increase community based management of natural resources (community & private forests)& formation of groups</p> <p>11. Promote & introduce green technology like solar, biogas production</p> <p>12. Training and awareness on biogas and other clean energy/alternatives among women/girls</p> <p>13. Encourage public for stall feeding and land lease for fodder plantations</p> <p>14. Introduce disease-tolerant crops</p> <p>15. Use of alternative timber substitutes & materials (steel, aluminum, rubber for window frames, roof truss, beams, flooring, insulation, etc.</p> <p>16. Promote sustainable wood processing & re-use of logging residues and wood wastes for energy</p> <p>17. Adopt disaster mitigation and restoration measures (relief fund, flood protection walls, DMC)</p> <p>18. Undertake watershed</p>	<p>sustainable use of natural resource & timber by the local communities</p> <ul style="list-style-type: none"> Eco-efficient and disaster resilient infrastructures constructed Improved supply of safe drinking water Reduced incidence of respiratory diseases especially among women/girls Improved health and sanitation Enhanced agricultural/livestock & food production Improved civic responsibility (ownership) 	<p>harvesting facilities</p> <p>13. Household income from livestock & agriculture</p> <p>14. Income from CFs and NWFP</p> <p>15. No. of Eco-efficient and disaster resilient infrastructures constructed</p> <p>16. No. of engineers trained on construction of Eco-efficient and disaster resilient infrastructures</p> <p>17. % of households with access to adequate drinking water and sanitation in the Dzongkhag</p> <p>18. Area under watershed protection (Acre)</p>	
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Vulnerability to various hazards (Earthquake, climate induced disasters, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of Flash floods • Depletion of wildlife, loss of bio-diversity, and soil degradation • Incidence of windstorm damaging roofs & crops 	<p>management (afforestation/reforestation)</p> <ol style="list-style-type: none"> 19. Undertake awareness & sensitization on water management 20. Explore alternative water sources & technology(ground water, rain water harvesting) 21. Promotion of water user groups 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness response, relief and recovery mechanisms • Safe health, properties and forest 	<ol style="list-style-type: none"> 1. Create community-based awareness on multi-hazards 2. Develop and implement local disaster management plan & contingency plan using community-based disaster risk management (CBDRM). <ol style="list-style-type: none"> 1. Install community based early warning and response system in vulnerable areas. 2. Issue multi hazard public advisory and safety tips. 3. Enforcement of building codes, standards and guidelines for environment friendly & disaster resilient homes and infrastructures. 4. Conduct vulnerability assessment of school, health and other infrastructures. 5. Retrofitting of vulnerable structures 6. Improve preparedness and response to pandemic outbreaks 	<ol style="list-style-type: none"> 1. Disaster management plan and contingency plan for dzongkhag and gewog in place. 2. No. of safety/mock drills conducted annually. 3. No. and frequency of disaster risk reduction awareness and trainings provided. 4. Proportion of population by sex aware of disaster risk reduction and management. 5. No. of people trained on fire safety trainings 	
				<ol style="list-style-type: none"> 1. Disaster management plan and contingency plan for dzongkhag and gewog in place. 2. No. of safety/mock drills conducted annually. 3. No. and frequency of disaster risk reduction awareness and trainings provided. 4. Proportion of population by sex aware of disaster risk reduction and management. 5. No. of people trained on fire safety trainings 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Increased solid waste generation leading to air, land & water pollution</p>	<ul style="list-style-type: none"> • Contamination due to waste disposal, & disturbance to land & river eco-system. • Increased risk of vulnerability to water & vector borne diseases. • Lack of waste disposal sites & waste management system • Lack of community participation in waste management. • Insufficient garbage trucks • No waste segregation. • Lack of civic sense amongst the community. • Lack of sewerage treatment plant • Impairment of aesthetic scenery • No information/data on how much waste is being generated in the Gewogs/Dzongkhag 	<ol style="list-style-type: none"> 1. Improve & implement an integrated waste management system for Dzongkhag throm and gewogs. 2. Educate. create awareness & promote 4 Rs (reduce, reuse, recycle and refuse), & on safe waste disposal 3. Improve waste segregation, collection and disposal system 4. Explore & establish pet bottle crushing plant. 5. Assess waste generation by type and quantity. 6. Purchase and improve management of waste collector vans 7. Construct and improve storm water drainage, sewerage and effluent discharge systems. 8. Identify & develop alternative disposal sites. 9. Capacity building on ISWM 10. Ensure the presence of waste bins in every hhs 11. Promote use of advanced technologies to reduce paper usage 12. Adopt common resource system to minimize use of electronic equipments (printers, photocopy, computers, etc.) 	<ul style="list-style-type: none"> • Improved health of the people and environment • Land & river eco-systems maintained. • Improved waste management system in Dzongkhag's urban and rural areas. • Quantity of waste reduced, reused and recycled. • Maintained aesthetic beauty of the surrounding • Income and employment generated • Effective and efficient use of government resources 	<ol style="list-style-type: none"> 1. No. of air & water borne diseases reported by sex. 2. Quantity and type of waste collected. <ol style="list-style-type: none"> 1. Perception and awareness of population on waste management & service delivery. 2. No. of waste collection vans and sites 3. Units of fines/revenue generated by municipality 4. No. of hhs availing waste management facilities 5. % of annual budget spent on office equipments reduced 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<p>13. Encourage use of energy saving appliances/devices</p> <ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

12. Samtse Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concern (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Increase in solid waste generation and sanitation problem</p> <ul style="list-style-type: none"> • Low coverage and inadequate sewerage network • Poor sanitation facilities in the Gewogs • Improper maintenance of sanitation facilities in urban areas. • Lack of proper drainage system • Lack of awareness on solid waste management. • About 3 tons of wastes generated everyday • Lack of waste management facilities solid waste disposal/land fill sites) 	<ol style="list-style-type: none"> 1. Improve and increase coverage of the existing sewerage network in the urban area. 2. Development of Integrated Solid Waste Management System. 3. Construction of wastewater treatment plant. 4. Promote proper sanitation facilities in the rural areas (disaster resilient and eco-efficient toilets). 5. Advocacy and awareness on waste management 6. Construction of proper storm water drainage system. 7. Construction of efficient water distribution system. 8. Strengthen coordination between municipality and other relevant agencies. 9. Promote business enterprise for waste management through involvement of private sectors with special focus on informal sector. 	<ol style="list-style-type: none"> 1. Improved waste management and sanitation. 2. Improvement of livelihood for urban poor 3. Clean, green and liveable dzongkhag. 4. Outbreak of epidemics and endemic diseases reduced. 5. Private entrepreneurs including informal sectors in waste management promoted. 	<ol style="list-style-type: none"> 1. Integrated waste management in place and operational. 2. No. of households with proper sanitation facilities (toilet) 3. No. of houses connected to sewerage network. 4. Perception of community to basic service delivery by the LG. 5. Liveability index? 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Water shortage due to drying up of water sources and increase in population.</p> <ul style="list-style-type: none"> • Drying up of water source especially in the gewogs of Bara, Ugyentse and Yoeseltse. • Inadequate watershed protection and management. • Lack of water management and proper distribution • Inefficient water infrastructures. • Lack of awareness on efficient use and management of water resource. 	<ol style="list-style-type: none"> 1. Undertake vulnerability assessment and design appropriate mitigation and adaptation measures. 2. Promote integrated water resource management – this includes (1) efficient water distribution and storage through development of a water management plan; (2) demand management through pricing and advocacy. 3. Conduct an assessment of water resources and explore alternatives of tapping ground and surface water. 4. Strengthen partnerships and coordination through dialogues and sharing of good practices amongst thromdes/dzongkhags and stakeholders (public owned companies and private businesses). 5. Construction of water treatment plant and treatment of water at source. 6. Initiate cost sharing modality between dzongkhag and companies for accessing water resources and construction of infrastructures. 7. Promote community based watershed management based on the findings of 	<ol style="list-style-type: none"> 1. Sustainable and adequate water 2. Sustainable, adequate and quality water available 3. Reduced health risks 	<ol style="list-style-type: none"> 1. Vulnerability assessment and assessment of water resources. 2. Integrated water resource management plan for dzongkhag in place. 3. No. of advocacy and awareness workshops/campaigns/materials. 4. Incidences of water borne diseases 5. No. of community-based watershed management initiatives such as spring protection and rehabilitation (per/year). 6. Coverage of RWSS across dzongkhag 7. No. of RWSS constructed and functional. 8. Perception of communities on water service delivery by LG. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Inadequate and poor urban amenities leading to inefficient delivery of services and wasteful practices.</p>	<ul style="list-style-type: none"> Inadequate and inefficient lighting system; traffic congestion; lack of proper parking lots; poorly designed and maintained road network. Lack of proper transport services. 	<p>water resource assessment.</p> <ol style="list-style-type: none"> Provision of energy efficient street lighting; improvement of road network; pedestrian footpath and cycle lane. Enforce proper building codes and guidelines for eco-friendly and disaster resilient homes. Creation of green spaces, parks and recreational amenities. 	<ul style="list-style-type: none"> Clean, green and liveable dzongkhag. Disaster risks reduced Safe, disaster resilient and eco-efficient infrastructures. 	<ol style="list-style-type: none"> Liveability index Kms. of road network with provisions of pedestrian walkways, cycle lanes, and walkways for differently-abled people. Perception of people on provisions of urban services and facilities by LGs. No. of alternate modes of transport (mass public transport, electric car, bicycle etc.) 	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Human-wildlife conflict</p>	<ul style="list-style-type: none"> Crop damaged by wild animals such as elephants, wild pigs, deer, monkeys and peacock. About 15-20% of crops are damaged by wild animals every year. 141 households affected by elephants in 2011 (Source: Dzongkhag Agriculture Sector). Poses risk to human lives and properties. Most of the land left fallow and abandoned in rural communities. Inadequate preparedness and mitigation measures 	<ol style="list-style-type: none"> Introduce community-based insurance and compensation schemes. Introduce compensation measures with standard protocols. Introduce innovative technology (wild life repellent/solar fencing). 	<ul style="list-style-type: none"> Reduce poverty Increase food security and self-sufficiency Rural-urban migration decreased. Increased farm productivity. 	<ol style="list-style-type: none"> Inter dzongkhag migration Poverty incidence No. of incidences of crop damage, livestock depredation, loss of lives and properties reported. Compensation schemes introduced and operational. No. of innovative technologies implemented 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>5. Environmental degradation due to mining and industrial activities.</p>	<p>against wildlife depredation.</p> <ul style="list-style-type: none"> • Increased mining activities/quarrying (limestone, dolomite, stone quarry, talc etc.) • Pollution from industrial areas (dust and air) • Loss of soil productivity • Landslides, soil erosion, flooding/inundation • Impacts on health (cases of ARI due to dust and air pollution). • Deterioration of air and water quality. • Inequitable benefits from mining industries. • Minimal benefits to the affected communities from the mining industries. • Drying of water sources. 	<ol style="list-style-type: none"> 1. Enforcement of environmental standards and mining regulations. 2. Promote and enforce clean technologies in industries such as back filters. 3. Institute certification (ISO 15000) and incentives (tax holidays & concessions; award system) for adopting clean technologies 4. Mining lease agreement should include provisions for certain percentage of employment opportunities for local people with priority given to affected communities (including Community Development Fund - CDF). 5. Provisions of socio-economic facilities and services where necessary (such as scholarship to underprivileged and deserving children; transport facilities; health and school infrastructures on full cost or cost sharing basis; school feeding programme). 6. Awareness on health issues (STD/HIV AIDS occupational and safety standards; waste management). 7. Afforestation and 	<ul style="list-style-type: none"> • Sustainable management and utilization of mineral resources. • Clean and energy efficient technologies introduced. • Improved health of people living around the industrial areas • Improved livelihood and equitable distributions of benefits. • Clean, green and liveable environment. 	<ol style="list-style-type: none"> 1. No. of mining industries adopting clean and energy efficient technologies. 2. No. of mining industries meeting environmental threshold standards (as measured by air quality daily and industrial discharge standards reported annually) 3. % of locals gainfully employed by mining companies/industries. 4. EIA/Strategic Environmental Assessment conducted. 5. Incidences of ARI and diseases due to air, water and noise pollution. 6. Proportion of investment in community development initiatives and contribution to CDF by mining companies/industries. 	<p>DKRAS:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Degradation of land due to over-grazing of pastures in forest and open meadows.</p>	<ul style="list-style-type: none"> • Decline in land productivity and soil erosion. • Loss of biodiversity • Depletion of NWFPP • Increased number of cattle competing for limited pastures. 	<p>8. Leasing of mines and quarries to be based on the carrying capacity of the area</p> <p>9. Strict monitoring and compliance to environmental management plan (restoration of mining sites; beautification and aesthetics of the area).</p> <p>10. Ensure public consultation and participation as prerequisite for leasing mines.</p>	<ul style="list-style-type: none"> • Improved livelihood of communities through increased sale of dairy products. • Land degradation reduced. • Reduction in methane emission from livestock due to supply of improved breeds. 	<p>1. Acreage of land brought under sustainable land/pasture management.</p> <p>2. Proportion of households owning improved breeds of cattle.</p> <p>3. No. of new technologies and storage facilities on fodder management adopted.</p> <p>4. Percentage of household self-sufficient in terms of livestock products.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>7. Vulnerabilities due to change in climate (Outbreak of diseases; disasters)</p>	<ul style="list-style-type: none"> • Outbreak of different types of disease due to change in climate (hot & humid) • Loss of livestock to pandemic diseases like 	<p>1. Raising awareness and adopting precautionary and pro-active measures against emerging diseases, disaster risk reduction and impacts of climate change.</p>	<ul style="list-style-type: none"> • Capacity to cope with the impacts of climate change enhanced. • Preparedness and response to disaster strengthened. 	<p>1. Preparedness and response capacity as measured by number of training and awareness workshops conducted in schools and communities.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>8. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> • bird flu; foot and mouth diseases etc. • Improper enforcement of building codes and standards resulting into high damage to infrastructures during Sep. 2011 earthquakes (Samtse reported one the highest damages in the country). • Increased use of energy for cooking, heating and cooling contributing to greenhouse gas emissions. • Perceived loss of floral and faunal species due to weather events. 	<ol style="list-style-type: none"> 2. Capacity building of health, livestock and BAFRA officials on the prevention, control and treatment of diseases. 3. Strict enforcement of building codes and standards for infrastructure development. 4. Promote eco-friendly and good construction techniques in rural areas. 5. Explore alternative use of clean and renewable energy sources (such as bio-gas, solar, zero cold storage etc.) 	<ul style="list-style-type: none"> • Decrease in emission of greenhouse gas (GHG) • Reduction in loss of lives and property during disasters. 	<ol style="list-style-type: none"> 2. Disaster management and contingency plan developed and operational (for the dzongkhag and all gewogs). 3. No. of alternative technologies adopted. 4. Number of cases of disease outbreaks. 5. Number of pro-active measures undertaken to prevent diseases. 	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAS:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

13. Sarpang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Decline in agricultural farming.</p>	<ul style="list-style-type: none"> • Decrease in agriculture production due to farm labour shortage; human wildlife conflict; Land fragmentation; poor soil fertility; Water scarcity • Rural urban migration • Land degradation due to flash floods. • Existence of fallow land (land owned by non-farming individuals). 	<ol style="list-style-type: none"> 1. Address human-wildlife issues through innovative alternative measures (solar fencing, trenching, repellent crops, insurance scheme, etc.) 2. Explore opportunities for income generating initiatives (cottage and small industries; fisheries, poultry; vegetables; cereal crops; agro-based industries; and NWFPs). 3. Promote farm mechanization and commercialization 4. Encourage integrated farming (organic/use of bio-fertilizers, bio-pesticides etc.) 5. Research & development in agriculture farming and marketing for niche products (such as mandarin; cardamom). 6. Explore opportunities to market agricultural produce to other dzongkhags. 7. Provide incentives/enforce fees to encourage 	<ul style="list-style-type: none"> • Improved food security, livelihood and wellbeing of the people • Less labor-intensive farming • Increased economic activities and adoption of new farming practices and techniques. 	<ol style="list-style-type: none"> 1. Acreage of farm land under cultivation 2. % of households practicing income generating activities by type (eg. Piggery; poultry; fishery; off-season vegetable production) 3. Qty. of off-season vegetable produced and marketed. 4. No. of cooperatives set-up and functional. 5. Perception of community towards human-wildlife conflict initiatives 6. No. of successful initiatives undertaken to mitigate HWC. 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Degradation of natural resources</p>	<ul style="list-style-type: none"> • Unsustainable collection and harvesting of NWFPs. • Deforestation and degradation of forests • Drying up of water sources • Increase in population and competing demand for scarce natural resources (timber; fuelwood; water, etc.) 	<p>8. Protection of fallow-land. areas through mitigation measure (river protection works; bio-engineering; study the possibility of mangrove plantation).</p>	<ul style="list-style-type: none"> • Sustainable forest development and management enhanced. • Community-based natural resource management strengthened. • Improved livelihood of communities • Alternatives for timber and renewable energy adopted. 	<ol style="list-style-type: none"> 1. Area brought under sustainable forest management (Community and Private Forestry; Forest Management Units) 2. Area under new plantations. 3. No. of innovative technologies/alternatives to reduce wastage of timber adopted. 4. No. of trainings & advocacy on sustainable harvesting and management of forest resources. 5. No. of innovative initiatives undertaken to adopt renewable sources of energy. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>3. Poor health and hygiene leading to pandemic and vector borne diseases.</p>	<ul style="list-style-type: none"> • Poor waste management • Drying up of water sources • Poor sanitation (coverage of toilet; 	<ol style="list-style-type: none"> 1. Provision of quality infrastructures for safe drinking water and sanitation (toilets including public toilets; 	<ul style="list-style-type: none"> • Improved health and sanitation • Improved waste management • Enhanced capacity 	<ol style="list-style-type: none"> 1. Integrated waste management plan in place and operational. 2. % of houses connected to sewerage network. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<p>inadequate drainage system; limited coverage of sewage network)</p> <ul style="list-style-type: none"> Emergence of pandemic/ vector borne diseases 	<p>drainage & sewerage network)</p> <ol style="list-style-type: none"> Timely maintenance of storm water drainage and sewerage network. Integrated waste management plan (collection, segregation and disposal) Promote advocacy and awareness on waste management for both urban and rural areas (of 4 Rs – Reduce, reuse, recycle and refuse). Promote waste business enterprise through involvement of private and informal sectors (scrap dealers and waste collectors). Encourage peer learning and sharing of best practices amongst thromdes and dzongkhags. Safe treatment and disposal of medical waste (incineration). Integrated water resource management (supply and demand management such as water pricing; conservation and efficient use; storage and management of leakages, etc.) Strengthen capacity of LG functionalities and communities on 	<p>of LG functionalities and communities.</p> <ul style="list-style-type: none"> Clean, green and liveable dzongkhag. 	<ol style="list-style-type: none"> Incidence of water borne diseases Perception of community in terms of basic service delivery (waste management and water). No. of waste enterprises and employment generated. No. of awareness and training workshops, and no. of LG functionaries and communities trained. 	<p>quality of urban life</p> <ul style="list-style-type: none"> Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<p>integrated waste management.</p> <ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

14. Thimphu Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Drying up of water sources leading to water shortages for drinking, irrigation & other commercial purposes</p> <ul style="list-style-type: none"> • Drying up of water sources • Occurrence of water shortage due to prolonged drought and changes in weather pattern • Poor management of water supply and uses. • Increasing burden on women and children in fetching water. • Occurrence of community conflict over water use. • Poor sanitation and hygiene • Increased cases of water borne and skin diseases • Rural-urban migration • Rapid urbanization & construction activities • Low farm and food productivity • Increased acreage of fallow farm land 	<ol style="list-style-type: none"> 1. Improve watershed management & water source protection/maintenance (plantation) 2. Improve water resource management & efficiency of water supply and uses. 3. Explore & promote alternative water sources(rain water harvesting, ground water) & new water supply & irrigation technology 4. Strictly enforce Water Act & Regulations; Forest Act etc.) 5. Build capacity, create awareness on watershed management, sustainable & efficient use of water & systems 6. Use of water resource inventory and maps for water management planning 7. Formation of water users group 8. Introduce drought resistance crops 9. Promote organic and 	<ul style="list-style-type: none"> • Improved & sustainable supply of water for drinking, irrigation & commercial activities. • Improved access to safe drinking water. • Improved health, livelihood & wellbeing of the community • Improved forest coverage • Good sanitation and hygiene. • Improved agricultural practices • Improved farm & food productivity 	<ol style="list-style-type: none"> 1. % of hhs with access to reliable & safe drinking water. 2. % of functional and disaster resilient water supply schemes in place. 3. No. of Payment for Eco-system Services schemes in place and functional. 4. No. of watershed management schemes in place. 5. Areas of watersheds planted with native trees and fencing of all water sources 6. Reduction in water borne diseases (%) 7. Increased cereal and vegetable production (%) 8. Acreage of fallow land cultivated 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2.Increased solid waste generation leading to air, land & water pollution</p>	<ul style="list-style-type: none"> • Increasing urbanization & construction activities • Increasing contamination due to waste disposal, & disturbance to land & river eco-system • Increased risk of vulnerability to water & vector borne diseases. • Lack of waste disposal sites, garbage trucks & waste management system • Lack of community participation in waste management. • Lack of civic sense amongst the community • No sewerage treatment plant • Impairment of aesthetic scenery • No information/data on how much waste is being generated in the Gewogs/Dzongkhag 	<p>sustainable agricultural farming practices</p> <ol style="list-style-type: none"> 1. Develop & implement integrated waste management system for Dzongkhag throm & gewogs. 2. Create awareness, educate & promote 4 Rs (reduce, reuse, recycle and refuse) & on safe waste disposal 3. Improve waste segregation, collection and disposal system <ol style="list-style-type: none"> 1. Assess waste generation by type & quantity by gewogs 2. Purchase and improve management of waste collector vans 3. Construct and improve storm water drainage, sewerage and effluent discharge systems. 4. Identify & develop alternative disposal site 5. Build capacity on ISWM 6. Ensure provision of waste bins for every hh 7. Adopt common resource system to minimize use of electronic equipments (printers, photocopy, computers, etc.) 8. Encourage & use energy efficient appliances/devices 13.Encourage biogas production & composting of biodegradable wastes 14.Liaise with recycling 	<ul style="list-style-type: none"> • Improved health of the people and environment • Land & river eco-systems maintained. • Improved waste management systems in Dzongkhag's urban and rural areas. • Quantity of waste reduced, reused and recycled. • Maintained aesthetic beauty & cleanliness of the surrounding • Created income and employment generation opportunities • Effective and efficient use of government resources • Income from sale of recyclable waste 	<ol style="list-style-type: none"> 1.No. of air & water borne diseases reported by sex. 2.Quantity and type of waste collected. 3.Perception and awareness of population on waste management & service delivery. 4.No. of waste collection van/trucks and sites. 5.Units of fines/revenue generated by municipality 6.No. of hhs availing waste management facilities 7.% of annual budget spent on office equipments 8. No of landfills for Gewogs 9.A collection center for recyclable items 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECPD)

<p>3. Land Degradation</p>	<p>companies to reduce and reuse waste for disposal</p>	<ul style="list-style-type: none"> • Increased mining and quarrying activities • Rapid urbanization and construction activities • Over grazing • Increasing farm roads and access roads construction (30 approvals for access road construction issued within 6 months) • Increasing landslides and soil erosion • Low agricultural and food productivity 	<ol style="list-style-type: none"> 1. Proper scrutinizing the issuance of approval for mines, quarries & major construction projects 2. Enforce strict monitoring & compliance of the mines/quarries & major construction activities & disposals 3. Strict implementation of mine/quarry management & reclamation plans 4. Encourage environment friendly roads construction & other infrastructure constructions & projects. Undertake afforestation and reforestation. 6. Enhance integrated land management and Pasture development practices 	<ul style="list-style-type: none"> • Improved health and environment • Improved agriculture and crop productivity • Improved forest coverage & biodiversity • Reduced soil erosion and landslides 	<ol style="list-style-type: none"> 1. No of mines approved 2. No of mining areas restored according to reclamation plans 3. No & Kms. of roads & other developments constructed in an environment friendly manner 4. No of projects implemented in environmental friendly manner 5. Acreage of pastureland developed 6. Acreage of land under forest coverage 7. Quality of water and soil 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Human-Wildlife conflict</p>	<ol style="list-style-type: none"> 1. Introduce crop and livestock compensation/ insurance (engage with financial institutions – micro credits) or other alternative schemes 2. Introduce social protection schemes at the community level⁹ such as formation of farmers 	<ul style="list-style-type: none"> • Increasing predation on livestock (30-40 yaks killed per year) by wild animals • Loss in rural income & livelihood • Rural-urban migration • Low agriculture/livestock 	<ul style="list-style-type: none"> • Improved/sustainable rural livelihood. • Increased rural income and food security • Increased farmers (including women) preparedness and response to human 	<ol style="list-style-type: none"> 1. No of insurance/compensation mechanism developed & implemented 2. Cases of human-wildlife conflicts 3. No of human-wildlife conflict cases compensated 4. % of crops & livestock lost to wild pest 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community 	

⁹Informal community saving schemes

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>5. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> -No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
				<ul style="list-style-type: none"> 8. Acreage of fallow land 9. Percentage of crop and livestock productivity 10. Number of men and women participating in human wildlife conflict management. 	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery <p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

15. Trashigang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Farm roads not accessible through all seasons.</p>	<ul style="list-style-type: none"> Not able to follow EFRC standards and required road structures during construction due to shortage of funds. Limited and inadequate allocation of annual maintenance fund Shortage and lack of capacity of engineers, environmental officers and agriculture staff on EFRC and road engineering techniques. Steep and fragile topography pose challenges to road construction including application of EFRC. Implementing agency and stakeholders' lack awareness and knowledge on the impacts of climate change and mainstreaming. 	<ol style="list-style-type: none"> Ensure quality control through performance measures and auditing (to be reflected in contract document and guidelines). MoF (DNB/DPA) to institute mechanisms whereby release of budget is contingent upon fulfilling standard criteria for farm road construction (including EIA clearance; community consultation and participation). Encourage community contract for construction and maintenance of farm roads (following community contract protocol). Strengthen capacity of dzongkhag and gewog engineers on farm road construction. Strengthen capacity of tshogpas/gewog functionaries on basic engineering skills and mainstreaming EFRC standards for farm road monitoring and 	<ul style="list-style-type: none"> All weather pliable and quality farm roads and maintenance cost reduced. Improved production and accessibility to market and socio-economic facilities and services. Capacity of contractors and engineers enhanced. EFRC & DRR codes and standards effectively enforced and monitored. Safe and harassment free working environment ensured for women and children. 	<ol style="list-style-type: none"> Proportion of public expenditure on maintenance of farm roads (reduction by %). Perception of community on functionality of farm roads throughout the year. No. of engineers and gewog functionaries trained on EFRC and basic engineering. No. of user group formed and functional. Compliance to EFRC standards in farm road construction and maintenance (through rapid impact assessment). Utility of farm roads as measured by increased production and market accessibility (income level). Kms. of environment friendly farm road constructed. Areas of land brought under sustainable land management. 	<p>DKRAAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Deforestation due to developmental activities</p>	<ul style="list-style-type: none"> Increasing farm road construction (more farm road constructions proposed in the 11thFYP). Land swapping between private and government reserve forest (land substitute) Land slide and erosion along the farm road Degradation of water source and catchment area. 	<p>6. Formation of user group for monitoring and maintenance of farm roads.</p> <p>7. Ensure consultation of the communities in particular with affected household right from planning to implementation of farm road construction including land acquisition.</p> <p>8. Initiate sustainable land management practices where needed.</p> <p>9. Provision of adequate budget for regular maintenance of farm roads.</p> <p>10. Explore the possibility of including additional budget to incorporate EFRC, disaster resilient and climate proofing components.</p>			
		<ol style="list-style-type: none"> Restricting development on eco-fragile areas. Farm road beneficiaries should comply with the alternative options and mitigations measures as identified in the EIA Development of community forests with proper management plan Establishment of private forest with proper management plan (afforestation and 	<ul style="list-style-type: none"> Reduced forest loss Improved soil and water conservation 	<ol style="list-style-type: none"> Area of land under community forest (Acres) Area of land under private forest (Acres) Area of land under plantation (Acres) Area of land under watershed management (Acres) 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>3. Human-wildlife conflict</p>	<ul style="list-style-type: none"> • Reduced crop production resulting in food insecurity and self-sufficiency. • Increased fallow land. • Increase in rural-urban migration (Out migration from eastern region 45,694 representing 16.2% of the total population as of PHCB 2005) • Increased conflicts between human and wildlife. • Crops damaged by wild animals 55.77 acres (Source-Annual Dzongkhag Statistics, 2010) • Presence of protected areas (Sakteng and Khaling wildlife sanctuaries) – causing increased human-wildlife conflict. 	<p>reforestation)</p> <ol style="list-style-type: none"> 5. Protection and plantation of water source and catchment area 6. Land management programme 7. Introduction of payment system for environment services <ol style="list-style-type: none"> 1. Enhance crop protection measures through solar/electric fencing audio-visual crop deterrents, and alternative crop cultivations. 2. Develop community-based crop insurance schemes. 3. Establish community-based livestock insurance scheme through formation of Gewog Conservation Committee. 4. Rehabilitation of the affected communities. 5. Sensitization of women and men on health issue (STDs, HIV/AIDS, teenage pregnancy, early marriages, etc.). 6. Educate and create awareness for wildlife conservation and human wildlife conflicts. 7. Capacity development of staffs and stakeholders on the use of innovative technologies. 8. Promote high value horticultural crops to 	<ul style="list-style-type: none"> • Food security and self-sufficiency ensured. • Reduced rural-urban migration • Reduced crop guarding time and frequency. • Reduced social issues. • Improved livelihoods. • Increased awareness of communities on STDs and adolescent sexual reproductive health issues. • Reduction of crop depredation by wild animals • Increase in awareness and knowledge on the importance of wildlife conservation. 	<ol style="list-style-type: none"> 1. Compensation schemes introduced and operational. 2. No. of innovative technologies for crop protection introduced and adopted. 3. Trend of rural-urban migration 4. Incidences of crop and livestock damage, and loss of human lives reported. 5. Incidences of social issues reported. 6. Annual increase in agriculture production 7. No. of community-based crop insurance scheme initiated and operational. 8. Proportion of population reporting reduction in crop damage and livestock depredation. 9. Proportion of fallow land brought under cultivation. 	<p>transparency, effectiveness and efficiency in public service delivery</p> <p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>4. Land degradation due unsustainable land use practices and developmental activities.</p>	<ul style="list-style-type: none"> Loss of fertile soil due to run-off and poor soil management leading to loss of crop productivity and yields. Loss of arable land due to change in land use. Loss of biodiversity and forest degradation due to land swapping and other developmental activities. 	<p>offset losses from crop damaged by wildlife. 9. Promote regional growth centers for balanced and equitable socio-economic development and to reduce rural-urban migration.</p>	<ul style="list-style-type: none"> Increased crop productivity and rural livelihood. Improved land management Improved soil fertility. Capacity of farmers and technical staff on SLM techniques enhanced. Reduced loss of natural resources 	<ol style="list-style-type: none"> 1. Acreage of land brought under sustainable land management. 2. Perception of communities on the success and benefits of pilot SLM initiatives. 3. Crop productivity as measured by yield/acre and income. 4. No. of LG functionaries and farmers trained on SLM. 5. No. of households adopting SLM practices. 6. % of forest coverage for dzongkhag&gewog. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>5. Waste management issues</p>	<ul style="list-style-type: none"> Increase in population leading to generation of more waste. Lack of awareness Poor service delivery Lack of infrastructure (collection point; sanitary landfill; collection van) 	<p>1. Integrated waste management – through establishment of waste management facilities and services in both rural and urban areas (segregation, collection, transportation and disposal). 2. Awareness on the</p>	<ul style="list-style-type: none"> Reduce risks of health hazards from medical wastes. Prevention and control of emerging waste related health problems Income generating opportunities 	<ol style="list-style-type: none"> 1. No. of waste mgt. facilities in the dzongkhag and gewogs. 2. Waste management facilities to deal with hazardous and medical waste in place and operational. 3. Perception of people on 	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved health status of the community Improved quality of urban life Enhanced sustainable management and

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<ul style="list-style-type: none"> • Lack of business unit for waste management • Poor public participation • Lack of capacity of thromde, dzongkhag, gewog functionaries on waste management. • Increased waste generation and open disposal leading to pollution of air, water and land. • Exposure to hazardous waste and infectious diseases due to poor waste management. • Lack of effective waste storage and disposal facility in the hospitals and BHUs. • No proper waste management facilities in the Gewog and Chiwog level. • Increased generation of paper and electronic wastes from offices. 	<p>provisions and enforcement of Waste Prevention and Management Act and Rules.</p> <ol style="list-style-type: none"> 3. Encourage private firms to take up waste management initiatives through Public Private Partnership arrangements and engagement of informal sectors (scrap dealer, waste collectors). 4. Undertake survey on waste generation and management. 5. Sensitization on waste management at households and community level both in rural and urban areas (focusing on 4Rs – reduce, reuse, recycle and refuse). 6. Promote tax incentives for adopting green initiatives in waste management. 7. Capacity development of thromde, dzongkhag, gewogs and private sectors on waste management. 8. Proper disposal and management of medical and hazardous wastes (eg. Incinerator) 9. Awareness on e-waste management and promote green procurement (equipment, stationery 	<p>through proper waste management.</p> <ul style="list-style-type: none"> • Reduction in waste generated from offices through efficient procurement and use of ICT. • Efficient and Sufficient human resources to deal with waste 	<p>waste service delivery by thromdes and gewogs.</p> <p>Waste generated by quantity and type in the dzongkhag and gewogs.</p> <ol style="list-style-type: none"> 4. No. of private entrepreneurs dealing in waste recycling. 5. Qty. of waste recycled and processed. 	<p>conservation of natural resources</p> <ul style="list-style-type: none"> • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Acute Respiratory Infection</p>	<ul style="list-style-type: none"> Exposure to indoor air pollution leading to ARI (including eye infections) especially amongst children under five years. Use of firewood and traditional heating/cooking methods. 	<p>etc.)</p> <p>10. Promote local initiatives (cleaning and awareness campaigns) by involving school children and the general public.</p> <p>11. Introduce community-based waste management programmes at Gewog and Chiwog level.</p> <p>12. Construction of waste transfer stations or integrated resource recovery facilities to promote private participation in waste recycling.</p> <p>13. Use of common resource systems and use of modern IT Technologies</p>	<ul style="list-style-type: none"> Improved health and hygiene. Reduction of ARI morbidity and mortality. Innovative efficient and eco-friendly technologies introduced. Improved capacity of LG functionaries and communities. 	<p>1. Incidences of ARI</p> <p>2. % reduction mortality due to ARI.</p> <p>3. No. of biogas and other alternative clean energy sources adopted.</p> <p>4. No. of households using improved cook stoves.</p> <p>5. No. of awareness workshops and trainings conducted.</p> <p>6. Cost-benefit analysis.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Shortage of water resources including drinking water.</p>	<ul style="list-style-type: none"> • Degradation of water source and catchment area, resulting in drying up of water sources • Lack of water source in some villages. • In-efficient use and conflicts over water resources. • Increase in water borne diseases (diarrhoea and dysentery) 	<p>6. Cost-benefit analysis of bio-gas technology in rural areas.</p> <ol style="list-style-type: none"> 1. Undertake vulnerability assessment and design appropriate mitigation and adaptation measures. 2. Promote integrated water resource management – this includes (1) efficient water distribution and storage through development of a water management plan; (2) demand management through pricing and advocacy. 3. Carry out research and development for alternative opportunities such as ground and rain water harvesting technology. 4. Strengthen partnerships and coordination through dialogues and sharing of good practices amongst thromdes/dzongkhags and stakeholders. 5. Construction of water treatment plant and treatment of water at source. 6. Promote community based watershed management based on the findings of water resource assessment. 	<ul style="list-style-type: none"> • Improved health and livelihoods in community • Sustainable and quality water available • Reduced risks to water borne disease through improved access to safe drinking water. 	<ol style="list-style-type: none"> 1. Vulnerability assessment and water resource assessment. 2. Integrated water resource management plan for dzongkhag in place. 3. No. of advocacy and awareness workshops/campaigns/materials. 4. Incidences of water borne diseases 5. No. of community-based watershed management initiatives such as spring protection and rehabilitation (per/year). 6. Coverage of RWSS across dzongkhag 7. No. of RWSS constructed and functional. 8. Perception of communities on water service delivery by LG. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>8. Disaster risk (earthquake, flood, wind storm and fire).</p>	<ul style="list-style-type: none"> Increased vulnerabilities to forest fires and other natural disasters. No. of forest fires 16 (2007), 6 (2008) and 9 (2009), - <i>Source-Annual Dzongkhag Statistics, 2010</i> Fire (Forest Fire, structural fire) Frequent occurrence of flash flood (latest major one in 2009) Crop damage due to erratic weather patterns. High risks to climate induced disasters. 	<ol style="list-style-type: none"> Community-based multi-hazard awareness. Develop and implement local level disaster management plan using community-based disaster risk management framework (CBDRM). Put in place efficient and sustainable mechanisms to clear road blocks. Enforcement of building codes, standards and guidelines for disaster resilient homes and infrastructure. Vulnerability Assessment of school, health and infrastructures. Retrofitting of vulnerable structures. Preparedness and response to pandemic outbreaks. Forest fire awareness/workshop and training of Gewog and Chiwog level forest fire management committee. Promote forest fire volunteers and provide basic training and equipment. 	<ul style="list-style-type: none"> Reduced incidences and risks from disasters. Disaster preparedness response, relief and recovery mechanism enhanced. Decreased forest fire incidences. Enhanced capacity of LG functionalities, communities and forest fire volunteers. Disaster resilient infrastructures in place. 	<ol style="list-style-type: none"> Disaster management and contingency plan for dzongkhag and gewogs in place. No. of safety/mock drills conducted annually. No. and frequency of DRR awareness and trainings provided. Knowledge and perception of public on disaster preparedness and response. Incidences of forest fire. Proportion of budget allocated for DRR initiatives. Level of impact of disasters on human lives and property as a result of mainstreaming DRR. No of LG functionalities, communities and volunteers trained on forest fire management. No. of new infrastructures (both rural and urban) constructed with disaster resilient features. 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Traditional and cultural heritage of the Dzongkhag preserved and promoted Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>9. Land degradation due to over grazing of natural pastures.</p>	<ul style="list-style-type: none"> Decline in land productivity and soil erosion. Loss of biodiversity Increased number of cattle competing for limited pastures 	<ol style="list-style-type: none"> Promote sustainable pasture management. Promote improved breeds which can adapt to local conditions (such as cross breeds) Feed and fodder 	<ul style="list-style-type: none"> Improved livelihood of communities through increased sale of dairy products. Land degradation reduced. 	<ol style="list-style-type: none"> Acreage of land brought under sustainable pasture management. Proportion of households owning improved breeds of cattle. No. of new technologies 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty (GECDP)

	<ul style="list-style-type: none"> Increasing dairy farming activities with more numbers of less productive livestock. Extensive grazing pressure on natural pasture (trampling and overgrazing) 	<p>development and storage technology/facility.</p> <ol style="list-style-type: none"> Adopt innovative measures for storing feed & fodder. Diversification of livestock products through cooperative formation. Discourage rearing of unproductive dairy animals/cattle Assess carrying capacity of pasture land (both individual owned and community pasture) and promote indigenous knowledge on rotational grazing. 	<ul style="list-style-type: none"> Introduction of sustainable pasture management plans. 	<p>and storage facilities on fodder management adopted.</p> <ol style="list-style-type: none"> Percentage of households self-sufficient in terms of livestock products. Establishment of biogas plants Area of land under community pasture (Acres) 	<p>community</p> <ul style="list-style-type: none"> Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>10. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> Strong Stereotypes and prejudices against women Limited awareness on gender issues and rights Lesser Number of Women's effective participation in public sphere (governance, education and employment) Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> Periodic rights based awareness programs to be conducted. Research of review of significant and contextual gender gaps. strengthen generation and use of gender disaggregated data. Sensitization on the importance of gender equality and rights based approach. Trainings on gender analysis Explore incorporation of support services 	<ul style="list-style-type: none"> Gender Stereotypes and Prejudices challenged improved understanding of gender equality and rights based approach amongst the policy makers and general public Strengthened enabling environment for increased women's participation in all spheres Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> No of awareness and sensitization program on gender equality and right based approach No of women participation in public sphere No of research on gender gaps proportion of women and children benefiting from the support services No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

16. Trashiyangtse Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Environmental degradation due to development activities/ farm roads, irrigation, health, education infrastructures, & mining activity)</p>	<ul style="list-style-type: none"> • Increasing proposals for construction & maintenance of farm roads, irrigation etc • Increasing landslides and soil degradation • Degradation of water catchment areas & water sources(drinking, irrigation) • Increased incidences of human-wildlife conflicts • Loss of arable land for construction activities • Depletion of NWFPP • Increasing burden on women and children to manage households chores due to high cost of firewood and lack of it • Rural-urban migration • Increase in air, water & noise pollution • Disturbance to land & river eco-systems • Loss of vegetation/biodiversity • Interference to 	<ol style="list-style-type: none"> 1. Formation of community based roads & water users groups. 2. Conduct strategic assessment of infrastructure needs, proper planning and prioritization of infrastructure like farm roads, irrigation etc 3. Explore & introduce alternative transport system (e.g ropeways) 4. Enforce monitoring & compliance of environmental & forest laws, regulations & guidelines 5. Enforce environmental friendly & disaster resilient constructions of roads, irrigation, health, education infrastructure 6. Enhance capacity of engineers & contractors in EFRS techniques and standards 7. Introduce environmental polluter pay principles 8. Strict enforcement and monitoring of mine/quarry management and restoration plans 	<ul style="list-style-type: none"> • Minimized environmental degradation(forest, arable land) • Reduced landslide and soil degradation • Long term benefits in terms of maintenance cost & increased savings • Responsible mining practices • Minimized pollution • Employment and revenue generation • Existing forest coverage maintained • Reduced incidences of man-made disasters • Human wild life conflict decreased • Farm production increased • Household income enhanced • Reduced timber demand & wastage • Sustainable use of natural resource & timber by the local communities 	<ol style="list-style-type: none"> 1. Connectivity between Dzongkhag and Geogs. 2. Acreage of arable land protected 3. Kms and No. of farm roads & other infrastructures constructed and maintained with environment friendly techniques and standards 4. No. of alternative transport system(gravity ropeway) constructed 5. Acreage of land under forest cover maintained 6. No of improved mining technology & methods used 7. % of income generated(fines, fees) 8. % reduction of acute respiratory and skin diseases reported 9. % of hhs with access to reliable drinking & irrigation supply schemes in Gewogs 10. Incidences of Landslides 11. No. of community groups for natural resources management (CF and NWFPP groups) 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Development of hydro-power project at Kholongchu</p>	<ul style="list-style-type: none"> wildlife migration, Interference to local cultural values. Prevalence of acute respiratory and skin diseases due to dust from mining/stone quarry & mine transportation especially for hydropower projects Poor health and sanitation Lack of skills & human resources(engineers)to address environmental issues related to development 	<p>9. Create awareness of the community on mining policy, laws & regulations</p> <p>10. Encourage introduction of improved mining technology & methods</p> <p>11. Introduce crop compensation/crop insurance (engage with financial institutions for micro credits or other alternative schemes)</p> <p>12. Increased community based management of natural resources (community & private forests)& formation of groups</p> <p>13. Explore & introduce use of alternative timber substitutes & materials (steel, aluminum, rubber for window frames, roof truss, beams, flooring, insulation, etc.)</p> <p>14. Promote sustainable wood processing & re-use of logging residues and wood wastes for energy</p> <p>15. Adopt disaster mitigation and restoration measures (relief fund, flood protection walls, DMC)</p> <p>16. Awareness, sensitization & management of watersheds(afforestation/reforestation)</p>	<ul style="list-style-type: none"> Eco-efficient and disaster resilient infrastructures constructed Improved and sustainable safe drinking water Incidence of respiratory diseases reduced especially among women/girls Improved health and sanitation 	<p>12. Household income from livestock</p> <p>13. Income from CFs and NWFP</p> <p>14. No. of Eco-efficient and disaster resilient infrastructures constructed</p> <p>15. No. of engineers trained on construction of Eco-efficient and disaster resilient infrastructures</p> <p>16. Area under watershed protection (Acre)</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food
	<ul style="list-style-type: none"> Increasing waste generation and pollution(noise, air, water, land) 	<p>1. Proper management & scheduling in operation of project machineries</p> <p>2. Improve & enforce</p>	<ul style="list-style-type: none"> Reduced negative impact on environment, forest, land, water,& air 	<p>1. No. of local people employed</p> <p>2. Acreage of afforestation/reforestation</p>	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<ul style="list-style-type: none"> • Loss of agricultural land to construction activities • Increasing land prices leading to increase in land transaction • Land degradation and change in landscape & aesthetic • Destruction of forest & disturbance to bio-diversity & ecosystem • Increase risk to public health • Increasing vehicles & traffic congestion • Rising cost of goods & services • Pressure on social amenities • Interference in local cultural values • Economic and income generation opportunities available 	<p>transport and traffic management regulations & monitoring</p> <ol style="list-style-type: none"> 3. Explore & provide land substitution & fair compensation for land lost by the community 4. Prepare & enforce plans for reclamation of degraded land after the project construction phase & mine/quarry activities 5. Undertake reforestation & afforestation 6. Collaborate with project management to give priority to local people in providing employment in the area by gender 7. Awareness creation & education on health, environment, waste management & 4 Rs(reduce, reuse, recycle & refuse)to the community & project 8. Develop & implement integrated waste management system including 4 Rs in the area 9. Expand & construct road network in an environmental friendly manner 10. Create awareness & build capacity of local communities to take advantage of increased income earning opportunities 	<ul style="list-style-type: none"> • Enhanced rural income • Reduced rural poverty • Social, religion, cultural & environmental harmony maintained • Improved & integrated waste management system in place 	<ol style="list-style-type: none"> 3. No of farmers compensated with land & other assets 4. No. of awareness & education on health, environment & waste management 5. Income from sale of local produce & other services. 6. No of hhs with access to waste management system 	<p>sufficiency</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>3. Low crop productivity</p>	<ul style="list-style-type: none"> • Decrease in crop yield in lower altitude • Erratic weather pattern(untimely rainfall frequent hailstorm/rainstorm/w indstorm) • Prolonged droughts leading to water shortages for irrigation • Increased pests & diseases • Increasing use of chemical fertilizers • Recurrent use of same land for growing crop without crop rotation • Lack of capacity and technical knowledge for undertaking modern & improved farming methods 	<p>11. Sensitize the foreign labourers & local community on dos and donts of local tradition & culture, law & order regulations, crime & other social issues</p> <p>12. Improve law & order vigilance & enforcement.</p> <p>1. Explore & enhance application of sustainable farming methods & technology</p> <p>2. Improve and expand irrigation facilities & irrigation management system</p> <p>3. Encourage increased use of organic fertilizers</p> <p>4. Encourage use of improved & drought resistant seeds</p> <p>5. Provide capacity building on new sustainable farming methods & technology by gender</p>	<ul style="list-style-type: none"> • Enhanced crop & food productivity • Enhanced rural income • Reduced rural poverty • Sustainable/organic farming promoted. • Improved capacity to adapt to climate change 	<p>1. No. of irrigation channels improved & constructed</p> <p>2. No. of farmers(by gender) sensitized & trained on improved technologies & sustainable farming.</p> <p>3. Qty of improved & drought resistant seeds supplied</p> <p>4. Annual hhs income</p> <p>5. Qty of crop production</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Vulnerability to various hazards (earthquake, climate induced disasters, fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of flash floods • Depletion of wildlife, loss of bio-diversity, and soil degradation 	<p>1. Raise awareness for community-based multi-hazard preparedness.</p> <p>2. Develop and implement local level disaster management plan & contingency plan using community-based disaster risk management (CBDRM).</p> <p>3. Install community based early</p>	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness response, relief and recovery mechanisms 	<p>1. Disaster management plan and contingency plan for dzongkhag and gewog in place.</p> <p>2. No. of safety/mock drills conducted annually.</p> <p>3. No. and frequency of DRR awareness and trainings provided.</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food grain sufficiency • Improved health status of the community

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

	<ul style="list-style-type: none"> Incidence of windstorm damaging roofs & crops 	<p>warning and response system in vulnerable areas.</p> <ol style="list-style-type: none"> Issue multi hazard public advisory and safety tips. Strict enforcement of building codes, standards and guidelines for disaster resilient homes and other infrastructures. Conduct vulnerability assessment of school, health and other infrastructures for better development planning. Retrofitting of vulnerable structures Improve preparedness and response ability to pandemic outbreaks 	<ul style="list-style-type: none"> Safe health, properties and forest 	<ol style="list-style-type: none"> Proportion of dzongkhag population by sex aware of disaster risk reduction and management. No. of people trained on fire safety trainings Cases of properties & lives lost to disasters 	<ul style="list-style-type: none"> Improved quality of urban life Traditional and cultural heritage of the Dzongkhag preserved and promoted Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>5. Increased solid waste generation leading to air, land & water pollution</p>	<ul style="list-style-type: none"> Increasing contamination due to waste disposal and disturbance to land & river eco-systems. Increased risk of vulnerability to water & vector borne diseases. Lack of waste disposal sites & waste management system Lack of community participation in waste management. Lack of civic sense amongst the community. Insufficient garbage trucks No waste segregation. 	<ol style="list-style-type: none"> Improve & implement an integrated waste management system for Dzongkhag throm and gewogs. Awareness creation and promotion of 4 Rs (reduce, reuse, recycle and refuse), safe waste disposal and user education. Improve waste segregation, collection and disposal system Assessment of waste generation by type and quantity. Purchase and improve management of waste collector vans Construct and improve storm water drainage, sewerage and effluent discharge systems. Identify and develop alternative disposal site. Build capacity on ISWM 	<ul style="list-style-type: none"> Improved health of the people and environment Land & river eco-systems maintained. Improved waste management systems in place in Dzongkhag's urban and rural areas. Quantity of waste reduced, reused and recycled. Maintained aesthetic beauty of the surrounding Increased income and employment Effective and efficient use of government 	<ol style="list-style-type: none"> No. of air & water borne diseases reported by sex. Quantity and type of waste collected. Perception and awareness of population on waste management & service delivery. No. of waste collection vans and sites. Units of fines/revenue generated by municipality No. of HHs availing waste management facilities % of annual budget spent on office equipments reduced 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> • No sewerage treatment system • Impairment of aesthetic scenery • No information/data on how much waste is being generated in the Gewogs/Dzongkhag 	<p>9. Ensure the presence of waste bins in every HH 10. Use of advanced technologies to reduce paper usage 11. Adopt common resource system to minimize use of electronic equipments (printers, photocopy, computers, etc.) 12. Encourage use of energy saving appliances/devices</p>	<p>resources</p>		
	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

17. Trongsa Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Soil erosion and landslides due to construction of farm roads</p> <ul style="list-style-type: none"> • Most of the farm roads are constructed without complying with EFRC standards. • Farm roads not accessible through all seasons. • Loss of soil fertility and reduced crop yield and productivity – leading to lack of food self-sufficiency. • Disturbance to biodiversity and ecosystem services. • Increased landslides due to loss of top soil and vegetation. 	<ol style="list-style-type: none"> 1. Ensure quality control through performance measures and auditing (to be reflected in contract document and guidelines). 2. MoF (DNB/DPA) to institute mechanisms whereby release of budget is contingent upon fulfilling standard criteria for farm road construction (including EIA clearance; community consultation and participation). 3. Encourage community contract for construction and maintenance of farm roads (following community contract protocol). 4. Strengthen capacity of dzongkhag and gewog engineers on farm road construction. 5. Strengthen capacity of tshogpas/gewog functionaries on basic engineering skills and mainstreaming EFRC standards for farm road monitoring and maintenance. 	<ul style="list-style-type: none"> • All weather pliable and quality farm roads. • Improved production, accessibility and marketing. • Increased crop productivity and enhanced food security • Capacity of contractors and engineers enhanced. • EFRC & DRR codes and standards effectively enforced and monitored. • Safe and harassment free working environment ensured for women and children. • Reduced soil erosion 	<ol style="list-style-type: none"> 1. Proportion of expenditure on maintenance of farm roads (reduction by %). 2. Perception of community on functionality of farm roads through all seasons. 3. No. of engineers and gewog functionaries trained on EFRC and basic engineering. 4. No. of user group formed and functional. 5. Rate of compliance to EFRC standards in farm road construction and maintenance. 6. Utility of farm roads as measured by increased production and market accessibility (income level). 7. Kms. of environment friendly farm road constructed. 8. Area of land brought under sustainable land management. 9. Travel time reduced by(hours) 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

		<p>6. Formation and strengthening of user group for monitoring and maintenance of farm roads.</p> <p>7. Ensure consultation of the communities in particular with affected household right from planning to implementation of farm road construction including land acquisition.</p> <p>8. Initiate sustainable land management practices where needed.</p> <p>9. Provision of adequate budget for regular maintenance of farm roads.</p> <p>10. Explore the possibility of including additional budget to incorporate EFRC, disaster resilient and climate proofing components.</p>		<p>10. % reduction in maintenance cost due to EFRC.</p>	
<p>2. Degradation of forest and pasture due to increasing number of cattle.</p>	<ul style="list-style-type: none"> • Decline in land productivity and soil fertility. • Loss of biodiversity • Depletion of NWFP • Increased number of cattle competing for limited pastures. • Land shortage for fodder development. • Labour shortage in the communities. 	<ol style="list-style-type: none"> 1. Promote sustainable land/pasture management with soil conservation technology and rotational grazing. 2. Promote improved breeds which can adapt to local conditions (such as cross breeds) 3. Feed and fodder development and storage technology/facility. 4. Adopt innovative measures for storing feed & fodder. 5. Production and diversification of livestock products. 	<ul style="list-style-type: none"> • Improved livelihood of communities through increased sale of dairy products, and for self-consumption. • Land degradation reduced. • Improved pasture management. 	<ol style="list-style-type: none"> 1. Acreage of land brought under sustainable land/pasture management. 2. Proportion of households owning improved breeds of cattle. 3. No. of new technologies and storage facilities on fodder management adopted. 4. Percentage of household self-sufficient in livestock products. 5. Percent increase in income from livestock 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

		6. Encourage land leasing for pasture development. 7. Make use of cattle waste for alternative energy using biogas technology.	1. Improved waste management and sanitation. 2. Improvement of livelihood for urban poor 3. Clean, green and liveable dzongkhag. 4. Private entrepreneurs including informal sectors in waste management promoted. • Capacity of LG functionaries and communities on waste management enhanced • Sanitary land fill established and properly managed.	products and services.	public service delivery
<p>3. Increase of solid waste due to population and development pressures.</p> <ul style="list-style-type: none"> • Increase in development activities and population due to implementation of mega hydro-power project. • Poor waste management – in terms of segregation, collection & disposal facilities. • Shortage of staff and lack of capacity to manage wastes. • Inadequate landfill management • Lack of awareness on proper waste management practices. • Absence of sewerage network. 	<ol style="list-style-type: none"> 1. Advocacy and awareness on waste management for urban and rural areas (focusing on 4 Rs – reduce, reuse, recycle and refuse). 2. Development of Integrated Solid Waste Management System. 3. Strengthen coordination between municipality and other relevant agencies 4. Capacity building of LG functionaries and communities on waste management. 5. Construction of sewerage network adapting to local geographical situation. 6. Promote proper sanitation facilities in the rural areas (disaster resilient and eco-efficient toilets). 7. Construction of proper storm water drainage system. 8. Construction of efficient water distribution system. 9. Promote business enterprise for waste management through involvement of private sectors with special focus on informal sectors. 10. Development of sanitary land fill site with proper management mechanism. 	<ol style="list-style-type: none"> 1. Integrated waste management in place and operational. 2. No. of households with proper sanitation facilities (toilet) 3. No. of houses connected to sewerage network. 4. Perception of community to basic service delivery by the LG. 5. Liveability index 6. Sanitary landfill developed and operational. 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 		

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Environmental and social impacts due to major infrastructure development (Mangdechu Hydro Power Project, stone quarry and other infrastructures)</p>	<ul style="list-style-type: none"> • Dust, air, water and noise pollution • Disturbance biodiversity, ecosystem and settlements falling within and beyond the project area. • Traffic congestion and safety issues. • Damage and loss of agricultural land and reduction in crop yield. • Pressure on existing socio-economic facilities (health, education, road, housing) • Perceived impacts on cultural heritage sites and values. • Increased business opportunities for local entrepreneurs. 	<ol style="list-style-type: none"> 1. Enforcement of environmental standards and compliance to EIA. 2. Enforce provisions of contract agreement between dzongkhag and Mangdechu Hydropower Project authority, among others, in providing employment opportunities for local people with priority given to affected communities. 3. Provisions of socio-economic facilities and services where necessary (such as scholarship to underprivileged and deserving children; transport facilities; health and school infrastructures on full cost or cost sharing basis; school feeding programme). 4. Awareness on health issues (STD/HIV AIDS occupational and safety standards; waste management). 5. Afforestation and reforestation. 6. Strict monitoring and compliance to environmental management plan (restoration of sites; beautification and aesthetics of the area). 7. Ensure public consultation and participation where needed. 	<ul style="list-style-type: none"> • Clean and environmental friendly technologies introduced. • Improved health of people living around the project area. • Improved livelihood and income through employment and other economic activities such as sale of local produce; businesses, rental etc. • Clean, green and liveable environment. 	<ol style="list-style-type: none"> 1. Project activities meeting environmental threshold standards. 2. % of locals gainfully employed by the project authority and companies. 3. EIA/Strategic Environmental Assessment conducted. 4. Incidences of ARI and diseases due to air, water and noise pollution. 5. Proportion of investment in community development initiatives and contribution to CDF by project. 	<p>DKRAS:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty (GECDP)

<p>5. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> -No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

18. Tsirang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Vulnerability of the people, infrastructure & environment due to poor quality infrastructure</p>	<ul style="list-style-type: none"> • Poor planning and construction monitoring • Inadequate enforcement of construction(building, roads, town planning) quality standards, by-laws & regulations • Inadequate skills in construction planning, technology & practices of engineers & contractors • Increasing recurrent & maintenance cost • Increasing demand for timber & other raw materials for maintenance • Increasing forest/environmental degradation due to timber & other raw materials extraction leading to landslides, floods, soil erosion, and loss of bio-diversity • Poor public service delivery • Increasing demand for 	<ol style="list-style-type: none"> 1. Conduct strategic assessment of infrastructure needs, conduct proper planning and prioritization of infrastructures like farm roads, irrigation & other infrastructures. 2. Strict enforcement & monitoring of planning & construction standards, resilience codes and quality of all infrastructures 3. Strict enforcement & monitoring of environmental friendly roads standards & construction 4. Enhance capacity of engineers and contractors in construction planning, technology & practices, EPRC, retrofitting 5. Sensitize & educate people by gender on good construction practices, quality and standards 6. Explore possibilities to provide wages equivalent to minimum wage rate after certain levels of contribution 7. Proper planning of 	<ul style="list-style-type: none"> • Reduced maintenance cost & improved savings • Less environmental damages/degradation • Better public service delivery • Minimized multi-hazards • Safe, resilient & environment friendly houses, roads & other infrastructures • Users participate/contribute/pay within their capacities • Improved work quality and sense of ownership • Timely completion of project 	<ol style="list-style-type: none"> 1. % reduction in expenditure on maintenance 2. Observations and records of landslides and floods 3. Acreage of arable land protected 4. Kms and No. of farm roads & other infrastructures constructed and maintained as per codes & standards 5. Acreage of land under forest cover maintained 6. No of trainings & awareness conducted on improved technology & methods, standards & regulations 7. No. of community implemented plans/projects and activities 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and grain sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Increased solid waste generation leading to air, land & water pollution</p>	<ul style="list-style-type: none"> labour contribution by the community in re-construction & maintenance of infrastructures Less time available for farming & household works Need for compensation with hard earned money in case labour contribution cannot be provided 	<p>activities so as to avoid disturbance to farming activities</p>	<ul style="list-style-type: none"> Improved health of the people and environment Land & river eco-systems maintained. Improved waste management systems in place in Dzongkhag's urban and rural areas. Quantity of waste reduced, reused and recycled. Maintain aesthetic beauty of the surrounding Income and employment generation opportunities created Effective and efficient use of government resources 	<ol style="list-style-type: none"> No. of air & water borne diseases reported by sex. No. of employment created in waste management Quantity and type of waste collected. Perception and awareness of population on waste management & service delivery. No. of waste collection vans and sites. Units of fines/revenue generated by municipality No. of HHs availing waste management facilities % of annual budget spent on office equipments reduced 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<ul style="list-style-type: none"> Increasing contamination due to waste disposal and disturbance to land, air and river eco-systems. Increased risk of vulnerability to water & vector borne diseases. Lack of waste disposal sites, garbage trucks & waste management system Lack of community participation in waste management. No waste segregation. Lack of civic sense amongst the community. No sewerage treatment plant Impairment of aesthetic scenery No information/data 	<ol style="list-style-type: none"> Improve & implement an integrated waste management system for Dzongkhag throm and gewogs. Create awareness & promote 4 Rs (reduce, reuse, recycle and refuse), safe waste disposal and user education. Improve waste segregation, collection and disposal system Assessment of waste generation by type and quantity. Purchase and improve management of waste collector vans Construct and improve storm water drainage, sewerage and effluent discharge systems. Alternative disposal site to be identified & developed. Build capacity on ISWM 				

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>4. Drying up of water sources leading to shortages of water supply for drinking, irrigation, commercial purpose etc</p>	<p>on how much waste is being generated in the Gewogs/Dzongkhag</p> <ul style="list-style-type: none"> • Increasing pressure on limited water sources • Expanding settlements disturbing watershed areas • Drying up of water sources due to prolonged drought and changes in weather pattern • Poor management of water source, water supply and uses. • Increasing burden on women and children in fetching water. • Occurrence of community conflict over water use. • Poor sanitation and hygiene • Increased cases of water borne and skin diseases • Low attendance of students in school due to poor health and 	<p>9. Ensure the presence of waste bins in every HH</p> <p>10. Outsource waste management to private entrepreneurs. (income generation)</p> <p>11. Adopt common resource system to minimize use of electronic equipments (printers, photocopy, computers, etc.)</p> <p>12. Encourage use of energy saving appliances/devices</p> <p>1. Discourage settlement in critical watersheds and water sources areas</p> <p>2. Improve care, undertake proper planning and implementation of water resource & its efficient supply & utilization for all purpose</p> <p>3. Encourage & provideland swapping or other alternatives for those settled in watersheds</p> <p>4. Improve watershed management & water source protection/maintenance (plantation)</p> <p>5. Explore alternative sources of water such as (rain water harvesting, groundwater)</p> <p>6. Enforcement of Water Act and Regulations; Forest Act etc.</p> <p>7. Conduct education and awareness on sustainable use of water resource.</p>	<ul style="list-style-type: none"> • Sustained supply of adequate, and quality water for all purposes • Improved water retention and harvesting systems • Improved watershed management & conservation • Improved access to reliable drinking water. • Improved health, livelihood & wellbeing of the community • Improved forest coverage • Improved agricultural productivity & food security 	<p>1. Proportion of hhs with access to safe, clean and reliable drinking water, & water for irrigation</p> <p>2. % of functional and disaster resilient water supply schemes in place.</p> <p>3. No. of Payment for Eco-system Services schemes in place and functional.</p> <p>4. No. of watershed management schemes in place.</p> <p>5. % watershed areas planted with native tress and fencing of all water sources</p> <p>6. Reduction in water borne diseases (%)</p> <p>7. Increased cereal and vegetable production (%)</p> <p>8. Acreage of fallow land cultivated</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>increased time spent on fetching water</p> <ul style="list-style-type: none"> • Rural-urban migration • Rapid urbanization • Low farm & food productivity • Increased acreage of fallow farm land • Increased import and expenses on basic cereals and vegetables 	<p>8. Use of water resource inventory and maps for water management planning</p> <p>9. Formation of water users group</p> <p>10. Explore & introduce innovative water supply system technology & designs(e.g for irrigation)</p> <p>11. Capacity building to manage watersheds and water supply system</p> <p>12. Promote sustainable agricultural practices</p>	<p>9. No. of water users group formed</p>	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>5. Arable land degradation and loss due to unsustainable agriculture practices & other land use for development.</p> <ul style="list-style-type: none"> • Prime agriculture land increasingly used for urbanization and commercial purposes • More land being left fallow • Land fragmentation through land transaction & land distribution • Decrease in agricultural productions & crop productivity • Decreasing cultivable land area • Continuous food imports • Rural-urban migration • Wetlands converted to other land use categories disturbing carbon source/sink and affecting food security. 	<p>1. Arable land and wetlands protected and maintained</p> <p>2. Development taking place in a sustainable manner</p> <p>3. Decreasing rural-urban migration</p> <p>4. Reduced illegal construction in Wetland.</p>	<p>1. Cases of land fragmentation and transactions</p> <p>2. Decrease in land exchange cases due to landslide/soil erosion</p> <p>3. Environmental friendly projects implemented & environment friendly roads constructed in Kms.</p> <p>4. Proportion of land brought under sustainable land management & land use planning</p> <p>5. Area of wet lands converted to Khimisa.</p> <p>6. No of incentives introduced to promote wetland conservation.</p> <p>7. % increase in food productivity</p>	<p>1. Encourage urbanization & infrastructure development in non-prime arable land</p> <p>2. Conduct proper planning and realistic acquisition of land for development (<i>For instance, a community school acquires 15 acres</i>)</p> <p>3. Enforce and revert fallow land to government land</p> <p>4. Discourage conversion of prime agriculture land and land fragmentation</p> <p>5. Conduct sustainable Land and soil management campaign, awareness & trainings</p> <p>6. Promote and adopt Environment friendly & disaster resilient projects & road constructions</p> <p>7. Introduce high yielding crops</p> <p>8. Promote recuperation & soil fertility improvement</p>

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>6. Environmental, social and economic impacts due to Hydropower Projects of Dagachu & Punatshangchu I/II in neighbouring dzongkhags</p>	<ul style="list-style-type: none"> • Increasing waste generation and pollution(noise, air, water, land) • Increasing land prices leading to increase land transactions • Increased risk to public health and environment • Increasing traffic congestion & accidents • Rising cost of goods & services • Increasing pressure on social amenities • Increase in crime rate • Economic and income generation opportunities available 	<p>practice</p> <ol style="list-style-type: none"> 9. Improve cold storage infrastructures and facilities 10. Encourage conservation of wetland through subsidy/incentives. 11. Enforce Land Act, Forest Act, rules & regulations 	<ul style="list-style-type: none"> • Improved health of the people and environment • Reduced negative impact on environment(forest, land, water, air) • Enhanced income and employment generation • Social, religion, cultural and environmental harmony maintained 	<ol style="list-style-type: none"> 1. Annual hhs income from sale of local produce and other services 2. No. of local people employed 3. Acreage of afforestation/reforestation 4. No. of awareness & education on health, environment & waste management 5. Improved waste management 6. No of hhs with access to an integrated waste management system 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<p>don'ts of local tradition & culture, law and order regulations, crime and other social issues</p> <p>8. Improve law & order vigilance & enforcement</p> <ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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19. Wangduephodrang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAAs
<p>1. Drying up of water sources and poor management of water resource</p> <ul style="list-style-type: none"> • Occurrence of water shortage for drinking and irrigation due to prolonged drought and changes in weather pattern • Poor management of water supply and uses. • Increasing burden on women and children in fetching water. • Incidences of community conflict over water use. • Poor sanitation and hygiene • Increased cases of water borne and skin diseases • Low attendance of students in school due to poor health • Rural-urban migration • Hydropower development and rapid urbanization • Increased population due to influx of foreign labourers • Low agriculture and food productivity 	<ol style="list-style-type: none"> 1. Improve watershed management & water source protection/maintenance (plantation) 2. Improve efficiency of water supply and uses through integrated water management system. 3. Explore other sources of water such as rain water harvesting, & explore & develop innovative water supply technology & design for drinking and irrigation 4. Enforce Water Act and Regulations; Forest Act etc.) 5. Conduct education and awareness on sustainable use of water resources. 6. Use of water resource inventory and maps for water management planning 7. Formation of water users group 8. Build capacity to manage watershed areas and water supply system 9. Enhance cash crop production 	<ul style="list-style-type: none"> • Food security enhanced through increased agriculture & crop production • Enhanced income generation from cash crops • Sustainable supply of water for drinking, irrigation & commercial activities. • Improved access to safe drinking water. • Improved health, livelihood & wellbeing of the community • Improved forest coverage • Improved sanitation and hygiene. 	<ol style="list-style-type: none"> 1. Annual hhs income 2. No. of cash crop introduced 3. Proportion of hhs with access to safe drinking water. 4. % reduction in time consumed for fetching water 5. % of functional and disaster resilient water supply schemes in place. 6. No. of Payment for Eco-system Services schemes in place and functional. 7. No. of watershed management schemes in place. 8. % deduction in water borne diseases 9. % increased in cereal and vegetable production 10. Acreage of fallow land cultivated 11. No. of water users group 	<p>DKRAAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Reduced production of high land crop like potato due to climate change</p>	<ul style="list-style-type: none"> Increased acreage of fallow farm land Increased import and expenses on basic cereals and vegetables Change in weather pattern Decrease in soil moisture Increasing susceptibility of crops to droughts, pests and diseases Threat to rural livelihood and local economy 	<p>10. Promote sustainable agricultural practices</p>	<ol style="list-style-type: none"> Enhance practices of sustainable land and farm management Explore and introduce innovative technologies like water sprinkler and drip irrigation Encourage and revive growing of traditional /customary crop like buckwheat and wheat for livelihood diversification Enhance practices of integrated pest and disease management using biological measures and applying traditional knowledge Promote diversification of local economy (eco-tourism, community tourism) for enhanced income generation and improved rural livelihood Enhance sensitization and trainings on climate change adaptation 	<ul style="list-style-type: none"> Increased income and improved livelihood Increased food production Enhanced capacity to adapt to climate change impacts Minimized Environmental impacts 	<ol style="list-style-type: none"> % increase in food production Annual household income No. of employment created No of trainings and sensitization on climate change adaptation carried out 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
<p>3. Human-wild life conflict</p>	<ul style="list-style-type: none"> Risk to human lives from wildlife attack Predation on domestic animals and crops Loss in rural income due to loss of livestock and crops Rural-urban migration 	<ol style="list-style-type: none"> Strengthening intensive & sustainable farming practices Explore possibilities of land swapping Improve use of crop storage/post-harvest technologies to reduce 	<ul style="list-style-type: none"> Human wild life conflict minimized Crop and livestock damage decreased Improved food security & sustainable rural livelihood. Increased rural income 	<ol style="list-style-type: none"> No. of post harvest technologies introduced Acreage of land swapped No of insurance/compensation mechanism 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community 	

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<ul style="list-style-type: none"> • Low agricultural productivity and food shortages • Encouraging shift from agriculture to other sources of livelihood practices (cordyceps picking, portering) 	<p>damage by pests and diseases</p> <ol style="list-style-type: none"> 4. Introduce crop and livestock compensation/ insurance (engage with financial institutions – micro credits) or other alternative schemes 5. Introduce social protection schemes at the community level¹⁰ such as formation of farmers group (seed money for crop and animal compensation) 6. Proper fencing or electric fencing of agricultural land wherever feasible & needed 7. Awareness raising & capacity building on human wildlife conflict management by gender 8. Replace local livestock breeds with improved production 	<p>and reduced rural poverty</p>	<p>developed & implemented</p> <ol style="list-style-type: none"> 4. No of human-wildlife conflicts & cases compensated 5. % of crop and livestock lost to wildlife 6. No of men & women participating in human wildlife conflict awareness and training programs 	<ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>4. Environmental & land degradation due to developmental activities(farm roads, irrigation, health, education ,hydropower projects & mining activities)</p>	<ul style="list-style-type: none"> • Increasing proposals for construction & maintenance of farm roads, irrigation etc • Low productivity due to increasing landslides and soil degradation • Degradation of water catchment areas & decreasing water sources(drinking, irrigation) 	<ul style="list-style-type: none"> • Reduced environmental, forests & arable land degradation • Reduced landslide and soil erosion • Long term benefits in terms of reduced maintenance cost • Practices of responsible mining adopted • Improved market accessibility 	<ol style="list-style-type: none"> 1. No. of land management campaigns organized 2. % increase in food productivity 3. Acreage of arable land protected 4. Kms and No. of farm roads constructed and maintained with EFRC techniques & standards 5. No.of alternative transport 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag

¹⁰Informal community saving schemes

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<ul style="list-style-type: none"> • Increased incidences of human-wildlife conflicts • Loss of arable land due to construction activities • Depletion of NWFP • Increasing burden on women & children to manage households chores due to high cost of firewood and lack of it • Rural-urban migration • Increase in air, water & noise pollution • Prevalence of acute respiratory and skin diseases due to dust from mining & mine transportation • Loss of vegetation/biodiversity leading to ecosystem disturbance • Poor health and sanitation • Lack of skilled human resources(engineers) and inadequate financial resources to deal with this issue 	<p>environmental regulations, guidelines,& Environmental Friendly & disaster resilient roads, irrigation, health, education infrastructure constructions</p> <ol style="list-style-type: none"> 5. Enhance capacity of engineers & relevant officials in EFRC techniques and standards 6. Explore & introduce polluter pay principles 7. Strict enforcement and monitoring of mine management & restoration plans 8. Create awareness of the community on mining policy & regulations 9. Explore & introduce improved mining technology & methods 10. Improve community based management of natural resources (community & private forests)& formation of groups 11. Encourage public for stall feeding and land lease for fodder plantations 12. Promote use of alternative timber substitutes & materials (steel, aluminum, rubber for window frames, roof truss, beams, flooring, insulation, etc.) 13. Promote sustainable wood processing & re-use of logging residues and wood wastes for energy 	<ul style="list-style-type: none"> • Reduced incidences of man-made disasters • Reduced Human wild life conflict • Household income enhanced • Farm and food productivity increased • Reduced timber demand & wastage • Sustainable use of natural resource & timber by the local communities • Eco-efficient and disaster resilient infrastructures constructed • Incidence of respiratory diseases reduced especially among women/girls • Improved health and sanitation 	<p>system(gravity ropeway) constructed</p> <ol style="list-style-type: none"> 6. Acreage of land under forest cover maintained 7. No of improved mining technology & methods 8. % of income generated(fines, fees) 9. % reduction of acute respiratory and skin diseases reported 10. Incidence of Landslides & soil erosion 11. No. of community groups for natural resources management (CF and NWFP groups) 12. No. of Eco-efficient and disaster resilient infrastructures constructed 13. No. of engineers trained on construction of eco-efficient and disaster resilient infrastructures 14. Area under watershed protection (Acre) 	<p>preserved and promoted</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>5. Vulnerability to various hazards (Earthquake, climate induced disasters GLOF, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of flash floods & soil degradation • Crop damage due to erratic weather patterns • Risks to lives and properties from GLOF (no. of potential lakes upstream - punatshangchu valley) and earthquake • Depletion of wildlife & loss of diversity • Loss of economic and income generation opportunities in risk areas 	<ol style="list-style-type: none"> 1. Conduct community based multi-hazard awareness and trainings. 2. Develop and implement local level disaster management plan & contingency plan using community-based disaster risk management (CBDRM). 3. Strengthen early warning and response system in vulnerable areas. 4. Issue multi hazard public advisory and safety tips. 5. Strict enforcement of building codes, standards & guidelines for disaster resilient homes & infrastructures 6. Conduct vulnerability assessment of school, health and other infrastructures. 5. Retrofitting of vulnerable structures 6. Improve forest fire management 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness response, relief and recovery mechanisms • Safe health, properties & forests 	<ol style="list-style-type: none"> 1. No. of infrastructure in the red zone area 2. Disaster management plan & contingency plan for dzongkhag and gewog in place. 3. No. of safety/mock drills conducted annually. 4. No. and frequency of DRR awareness and trainings provided. 5. Proportion of dzongkhag population by sex aware of disaster risks reduction and management. 6. Frequency of forest fire incidences 7. No. of people trained on forest fire management 8. No. of forest fire management committees formed 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>6. Development of mega hydro-power projects (Punatshangchu I & II).</p>	<ul style="list-style-type: none"> • Increase in population due to foreign labourers & in-country migration for business opportunities • Loss of agricultural land & other land meant for public amenities • Increasing land prices & land transaction • Land degradation, 	<ol style="list-style-type: none"> 1. Improve transport & traffic management 2. Proper management & scheduled use of heavy machineries 3. Involve the community during hydropower project planning & implementation stages 4. Provide fair compensation for loss of land & source of income due to hydro 	<ul style="list-style-type: none"> • Reduced negative impact on environment (forest, land, water, air) • Enhanced local economy and income • Reduced rural poverty • Social, religion and cultural harmony maintained 	<ol style="list-style-type: none"> 1. No. of local people employed 2. Acreage of afforestation/reforestation 3. No of farmers compensated with land & other assets 4. No. of awareness & education conducted on health, environment & waste management 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage

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<p>change in landscape & aesthetic beauty</p> <ul style="list-style-type: none"> • Increase destruction of forest • Increasing number of vehicles & traffic congestion • Waste generation & pollution(noise, air, water, land) • Rising cost of goods & services • Increasing pressure on social amenities & infrastructures • Interference in local cultural values & tradition • Increase risk to public health from pollution, diseases & accidents • Availability of business and income generation opportunities 	<p>power project.</p> <ol style="list-style-type: none"> 5. Priority to be given to affected community if any local economic opportunities arises from the project 6. Prepare & implement plans for reclamation of degraded land after the project construction phase 7. Undertake reforestation & afforestation 8. Introduce benefit sharing mechanism between the project and the community 9. Provide employment to local people by gender 10. Awareness creation & education on health, environment, waste management & 4 Rs(reduce, reuse, recycle & refuse) 11. Develop & implement integrated waste management system including 4 Rs 11. Introduction of polluter pay principles 12. Construction of road network in an environmental friendly manner 13. Create awareness for the foreign labourers & local community on dos and don'ts of local tradition & culture, law & order regulations, crime & other social issues 	<ol style="list-style-type: none"> 5. No. of waste management initiatives 6. No of business opportunities availed 7. Income from sale of local produce & other services. 8. Income from sale of local produce & other services. 	<p>of the Dzongkhag preserved and promoted</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>9. Increased solid waste generation leading to air, land & water pollution</p> <ul style="list-style-type: none"> Increasing contamination due to waste disposal and disturbance to land & river eco-system. Increased risk of vulnerability to water & vector borne diseases. Lack of proper waste disposal sites, garbage trucks & waste management system Lack of efficient community participation in waste management. Lack of waste segregation. Lack of civic sense amongst the community. No sewerage treatment plant Impairment of aesthetic scenery No information/data on how much waste is being generated in the Gewogs/Dzongkhag 	<ul style="list-style-type: none"> Improve & implement integrated waste management system for Dzongkhag throm and gewogs. Create awareness & promote 4 Rs (reduce, reuse, recycle and refuse), safe waste disposal and user education. Improve waste segregation, collection and disposal system Assess waste generation by type and quantity. Purchase and improve management of waste collector vans Construct and improve storm water drainage, sewerage and effluent discharge systems. Identify & develop alternative disposal site Build capacity on ISWM Ensure the presence of waste bins in every hhs Adopt common resource system to minimize use of electronic equipments (printers, photocopy, computers, etc.) Promote & increase use of energy saving appliances/devices 	<ul style="list-style-type: none"> Improved health of the people and environment Land & river eco-systems maintained. Improved waste management system in Dzongkhag's urban and rural areas. Quantity of waste reduced, reused and recycled. Maintain aesthetic beauty of the land & environment Improved income and employment generation opportunities Effective and efficient use of government resources & equipments 	<ol style="list-style-type: none"> 1. No. of air & water borne diseases reported by sex. 2. Quantity and type of waste segregated & collected. 3. Perception and awareness of population on waste management & its service delivery. 4. No. of waste collection vans and sites. 5. Units of fines/revenue generated by municipality 6. No. of hhs availing waste management facilities 7. % of annual budget spent on office equipments reduced 	<p>DKRAS:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>8. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery
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20. Zhemgang Dzongkhag

Key GECDP Concerns/ Pressure within the sector.	Analysis on status, trends and impacts of the identified GECDP concerns/pressure.	Alternative options and opportunities to address the identified GECDP concerns (Programme/activities to be mainstreamed into 11 th Plan).	Impacts/benefits of identified opportunities/ alternative options.	M & E for identified opportunities/alternative options with indicators.	Linkage of identified opportunities/ alternative options with NKRAAs and SKRAAs/DKRAs
<p>1. Drying up of water sources leading to water shortages</p>	<ul style="list-style-type: none"> • Increasing pressure on limited water sources • Occurrence of water shortages due to prolonged drought and changes in weather pattern • Poor management of water supply and uses. • Increasing burden on women and children in fetching water. • Incidences of community conflict over water use. • Poor sanitation and hygiene • Increased cases of water borne diseases • Low attendance of students in schools due to poor health • Low farm productivity • Increased acreage of fallow farm land • Increased import and expenses on basic cereals and vegetables 	<ol style="list-style-type: none"> 1. Proper planning and implementation of water resource utilization -for drinking and irrigation 2. Improve watershed management & water source protection/maintenance (plantation) 3. Improve efficiency of water supply and uses e.g innovative irrigation system 4. Explore other sources of water like rain water harvesting, groundwater 5. Enforce Water Act and Regulations; Forest Act etc.) 6. Educate & create awareness on sustainable use of water resources. 7. Use of water resource inventory and maps for water management planning 8. Formation of water user group 9. Enhance capacity building to manage watershed areas and water supply system 10. Promote sustainable agricultural practices 	<ul style="list-style-type: none"> • Sustained supply of adequate and good quality water for all purposes • Watershed conserved • Improved access to safe drinking water. • Improved health, livelihood & wellbeing of the community • Improved forest cover • Good sanitation and hygiene. • Improved agricultural productivity & food security 	<ol style="list-style-type: none"> 1. No. of alternative sources of water 2. Proportion of hhs with access to safe drinking water. 3. % of functional and disaster resilient water supply schemes in place. 4. No. of Payment for Eco-system Services schemes in place and functional. 5. No. of watershed management schemes in place. 6. % of watershed areas planted with native trees and fencing of all water sources 7. Reduction in water borne diseases (%) 8. Increased cereal and vegetable production (%) 9. Acreage of fallow land cultivated 10. No. of water user group formed 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>2. Increased solid waste generation leading to air, land & water pollution</p>	<ol style="list-style-type: none"> 1. Increasing contamination due to waste disposal and disturbance to land, air and river eco-system. 2. Increased risk of vulnerability to water & vector borne diseases. 2. Lack of waste disposal sites & waste management system 3. Lack of community participation in waste management. 4. Insufficient garbage trucks 5. No waste segregation. 6. Lack of civic sense amongst the community. Indiscriminate waste disposals/littering 7. No sewerage treatment plant 8. Impairment of aesthetic beauty 9. No information/data on how much waste is being generated in the Gewogs/Dzongkhag 	<ol style="list-style-type: none"> 1. Develop & implement integrated waste mgt plans & system for Dzongkhag and Gewogs 2. Form sanitation committee and inspectors 3. Conduct a baseline survey on amount of waste generation, types of waste, segregation, etc. 4. Explore waste related business (PPP) opportunities & implement 5. Initiate awareness and promotion of 4 Rs (reduce, reuse, recycle and refuse), safe waste disposal and user education. 6. Improve waste segregation, collection and disposal system 7. Purchase and improve management of waste collector vans 8. Construct and improve storm water drainage, sewerage and effluent discharge systems. 9. Identify & develop alternative disposal site 10. Build capacity on ISWM 11. Ensure the presence of waste bins in every HH 12. Conduct feasibility studies on opportunities for private sector participation in waste management and outsourcing 13. Adopt common resource system to minimize use of 	<ul style="list-style-type: none"> • Improved health of the people and environment • River eco-systems and its quality maintained • Improved waste management system in place in Dzongkhag's urban and rural areas. • Quantity of waste reduced, reused and recycled. • Maintain aesthetic beauty of the surrounding • Creation of income and employment generation opportunities • Effective and efficient use of government resources 	<ol style="list-style-type: none"> 1. Increased no. of waste related interventions 2. No. of sanitary landfill sites in place 3. No of private firms involved in waste management (through PPP) established 4. No. of air & water borne diseases reported by sex. 5. Quantity and type of waste collected. 6. Perception and awareness of population on waste management & service delivery. 7. No. of waste collection vans 8. Units of fines/revenue generated by municipality 9. No. of HHs availing waste management facilities 10. % decrease in annual budget spent on office equipments and stationaries 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
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<p>3. Vulnerability of the people, infrastructure & environment due to poor quality infrastructure(farm roads, buildings, irrigation)</p>	<ul style="list-style-type: none"> Frequent damages to farm roads Poor planning and construction Inadequate skills in monitoring practices Inadequate planning, technology & practices of engineers & contractors Weak enforcement of construction(building, roads, town planning) quality standards, by-laws & regulations Increasing recurrent & maintenance cost for infrastructures Increasing demand for timber & other raw materials for maintenance Increasing forest/environmental degradation leading to landslides, floods, erosion, and loss of bio-diversity Poor public service delivery Increasing labour contribution by the community in re-construction & 	<p>electronic equipments (printers, photocopy, computers, etc.)</p> <p>13. Increase use of energy saving appliances/devices</p> <ol style="list-style-type: none"> Conduct strategic assessment of infrastructure needs & conduct proper planning and prioritization of the proposed infrastructures. Strict enforcement & monitoring of planning & construction standards, resilience codes and quality of all infrastructures Strict enforcement & monitoring of environmental friendly roads guidelines and standards & construction Enhance capacity of engineers and contractors in construction planning, technology & practices, EFRC, retrofitting Sensitize & educate people by gender on good construction practices, quality and standards Explore possibilities of providing wages equivalent to minimum wage rate after certain levels of labour contribution Proper planning of activities so not to disturb farming activities 	<ul style="list-style-type: none"> Reduced maintenance cost & improved savings Less environmental damages/degradation Better public service delivery Minimized multi-hazards Safe, resilient & environment friendly houses, roads & other infrastructures constructed Users participate/contribute/pay within their capacities Improved quality of infrastructures and improved sense of ownership Improved delivery of projects 	<ol style="list-style-type: none"> % reduction in expenditure on maintenance Observations and records of landslides and floods Acreege of arable land protected] Kms and Nos. of farm roads & other infrastructures constructed and maintained as per codes & standards Acreege of land under forest cover maintained No of trainings & awareness on improved technology & methods, standards & regulations 	<p>DKRAs:</p> <ul style="list-style-type: none"> Enhanced rural household income and food sufficiency Improved health status of the community Improved quality of urban life Enhanced sustainable management and conservation of natural resources Enhanced transparency, effectiveness and efficiency in public service delivery
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	<p>maintenance of community infrastructures</p> <ul style="list-style-type: none"> • Less time for farming and household work • Compensation with hard earned money in case labour contribution cannot be provided 				
<p>4. Arable land degradation and soil loss due to unsustainable agriculture practices & other land use for development</p>	<ul style="list-style-type: none"> • Change in livelihood practices; people resort to other forms of livelihood like labour work, harvesting forest products for sale, etc. • More land being left fallow • Land fragmentation through land transaction and land distribution • Decreasing soil fertility • Decreasing agricultural productions & crop productivity • Decreasing cultivable land area • Continuous food imports • Rural-urban migration • Wetlands converted to other land use practices disturbing carbon source/sink 	<ol style="list-style-type: none"> 1. Conduct proper planning and realistic acquisition of land for development (<i>For instance, a community school acquires 15 acres</i>) 2. Enforce and revert fallow land to government land 3. Discourage conversion of prime agriculture land and land fragmentation 4. Conduct sustainable Land and soil management campaign, awareness & trainings 5. Promote and adopt Environment friendly & disaster resilient projects & road constructions 6. Promote recuperation & soil fertility improvement practices 7. Improve cold storage infrastructures and facilities of wetland through subsidy/incentives. 9. Enforce Land Act, Forest Act, rules & regulations 	<ul style="list-style-type: none"> • Arable land and wetlands protected and maintained • Decreasing rural-urban migration • Wetlands used for only agricultural purposes • Improved soil fertility and increased food production • Adopted sustainable agricultural practices 	<ol style="list-style-type: none"> 1. Cases of land fragmentation and transaction 2. Decrease in land exchange cases due to landslide/soil erosion 3. Environmental friendly projects implemented & kms of environment friendly roads constructed 4. Proportion of land brought under sustainable land management & land use planning 5. Area of wet lands conversion 6. No of incentives to promote wetland conservation. 7. % increase in food productivity 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery

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<p>5. Unsustainable harvesting of Non-Wood Forest Products(NWFP)</p>	<p>and affecting food security.</p> <ul style="list-style-type: none"> • Depletion of NWFP resources due to overexploitation • Unsustainable harvesting of Bamboo, Cane and Yula • High dependency on NWFP for income generation • Erosion of bamboo and cane arts and crafts making tradition and skills. • Impact on income generation and local economy 	<ol style="list-style-type: none"> 1. Plantation of Yula, Cane and Bamboo in Community forest(CF)/government reserve forest(GRF)/private forest(PF) 2. Formation of Yula, Cane and Bamboo management & user groups 3. Conduct awareness creation and trainings to the community on sustainable harvesting practices 4. Diversify income generation activities 5. Provide trainings and skills development of the community on value addition of NWFP 6. Create awareness and trainings on preservation and promotion of NWFP arts and crafts making. 	<ul style="list-style-type: none"> • Increased level and sources of household income • Sustainable management of NWFP resources • Healthy and productive stock of NWFP resources • Improved livelihood • Vibrant traditional arts and crafts 	<ol style="list-style-type: none"> 1. Acres of CF/GRF/PF under Yula, Cane and Bamboo plantation 1. % increase in HH income 2. No. of people trained on sustainable management of NWFP resources 4. No. of innovative NWFP products 5. No. of other sources of income generation 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Traditional and cultural heritage of the Dzongkhag preserved and promoted • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
<p>6. Vulnerability to various hazards (Earthquake, climate induced disasters, Fires, health hazards etc.)</p>	<ul style="list-style-type: none"> • Incidence of Fire (forest fire, structural fire) • Incidence of flash floods • Depletion of wildlife, loss of species diversity, and soil degradation • Incidence of windstorm damaging roofs & crops 	<ol style="list-style-type: none"> 1. Conduct community-based multi-hazard awareness & trainings. 2. Develop and implement local level disaster management plan & contingency plan using community-based disaster risk management (CBDRM). 3. Issue multi hazard public advisory and safety tips. 4. Enforcement of building codes, standards and 	<ul style="list-style-type: none"> • Reduced incidences and risks from disasters. • Enhanced disaster preparedness response, relief and recovery mechanisms • Safe health, properties and forest 	<ol style="list-style-type: none"> 1. Disaster management plan and contingency plan for dzongkhag and gewog in place. 2. No. of safety/mock drills conducted annually. 3. No. and frequency of DRR awareness and trainings provided. 4. Proportion of population by sex aware of disaster risk reduction and 	<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food grain sufficiency • Improved health status of the community • Improved quality of urban life • Traditional and cultural heritage of the Dzongkhag

Framework to Mainstream Gender, Environment, Climate Change, Disaster Risk Reduction and Poverty(GECDP)

<p>7. Gender Gaps in almost every sector, including increasing reported number of Violence Against Women (VAW) cases.</p>	<ul style="list-style-type: none"> - Strong Stereotypes and prejudices against women - Limited awareness on gender issues and rights - Lesser Number of Women's effective participation in public sphere (governance, education and employment) - Increasing reported number of cases on VAW 	<ul style="list-style-type: none"> 5. guidelines for disaster resilient homes and infrastructures. 5. Conduct vulnerability assessment of school, health and other infrastructures. 6. Undertake retrofitting of vulnerable structures 	<ul style="list-style-type: none"> - Gender Stereotypes and Prejudices challenged - improved understanding of gender equality and rights based approach amongst the policy makers and general public -Strengthened enabling environment for increased women's participation in all spheres -Increased safety and security for women (esp victims of VAW) 	<ul style="list-style-type: none"> 5. No. of people trained on fire safety 6. % decrease in loss of lives, properties & forest 	<p>preserved and promoted</p> <ul style="list-style-type: none"> • Enhanced sustainable management and conservation of natural resources • Enhanced transparency, effectiveness and efficiency in public service delivery
		<ul style="list-style-type: none"> - Periodic rights based awareness programs to be conducted. - Research of review of significant and contextual gender gaps. -strengthen generation and use of gender disaggregated data. - Sensitization on the importance of gender equality and rights based approach. - Trainings on gender analysis - Explore incorporation of support services 	<ul style="list-style-type: none"> - No of awareness and sensitization program on gender equality and right based approach -No of women participation in public sphere -No of research on gender gaps -proportion of women and children benefiting from the support services -No of cases on VAW reported 		<p>DKRAs:</p> <ul style="list-style-type: none"> • Enhanced rural household income and food sufficiency • Improved health status of the community • Improved quality of urban life • Enhanced transparency, effectiveness and efficiency in public service delivery

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

Contributors to the LG framework from the Dzongkhags

1. Region 1 – Paro: (Thimphu, Samtse, Haa, Paro &Chukha)

S/L	Name	Dzongkhag	Designation
1	Dhodo	Thimphu	Dzongkhag Agriculture Officer
2	Karma Jamtsho	Thimphu	Dzongkhag Engineer
3	Kesang Uden	Naro/Thimphu	Gewog Administrative Officer
4	Chogyal Tenzin	Samer/Haa	Gewog Administrative Officer
5	Tempa Zangmo	Thimphu	Environment Officer
6	Sonam Choden	Chukha	Planning Officer
7	Nima Tshering	Chukha	DzFO
8	Tshewang Gyembo	Haa	Agriculture Extension
9	Inchu Doljar	Mewang/Thimphu	Gewog Administrative Officer
10	Sonam Jamtsho	Haa	Dzongkhag Engineer
11	Lobzang Dorji	Haa	Planning Officer
12	Lam Dorji	Dungtoe/Samtse	Gewog Administrative Officer
13	Desang	Dunchukha/Samtse	Gewog Administrative Officer
14	Dawa Zangmo	Kawang/Thimphu	Gewog Administrative Officer
15	Choki Wangmo	Chukha	Environment Officer
16	Damchoe	Sampheling/Chukha	Gewog Administrative Officer
17	Kinley Wangdi	Lokchina/Chukha	Gewog Administrative Officer
18	Ngawang Thinley	Dopshari/Paro	Gewog Administrative Officer
19	Phub Gyeltshen	Naja/Paro	Gewog Administrative Officer
20	Sangita Tamang	Samtse	Planning Officer
21	Gyem Tshering	Haa	Dzongkhag Agriculture Officer
22	Ngawang Dorji	Samtse	Environment Officer
23	Sonam Wangchuk	Samtse	DzFO
24	Kezang Penjor	Samtse	Dzongkhag Engineer
25	Rinzin Wangchuk	Paro	Dzongkhag Agriculture Officer
26	Pema Choden	Paro	Planning Officer
27	Akey Dorji	Paro	DzFO

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

Region 2- Tsirang: (Tsirang, Sarpang, Punakha, Gasas & Dagana)

S/L	Name	Dzongkhag	Designation
28	Passang Tshering	Dagana	Dzongkhag Agriculture Officer
29	Karma Gyeltshen	Dagana	Gewog Administrative Officer
30	Yenten Jamtsho	Dagana	Gewog Administrative Officer
31	Tandin Dorji	Dagana	Environment Officer
32	Jamyang Dorji	Dagana	Dzongkhag Engineer
33	Sangay Phuntsho	Dagana	Dzongkhag Planning Officer
34	Jochu	Gasas	Gewog Administrative Officer
35	Sonam Thinley	Gasas	Dzongkhag Planning Officer
36	Penjor Dukpa	Gasas	Dzongkhag Engineer
37	Tshering N Penjor	Gasas	Dzongkhag Agriculture Officer
38	Sonam Thinley	Gasas	Dzongkhag Forestry Officer
39	Tashi Wangchuk	Punakha	Dzongkhag Forestry Officer
40	Ugyen Tshomo Ghaley	Punakha	Dzongkhag Planning Officer
41	Rinchen penjor	Punakha	Environment Officer
42	Sangay Lhamo	Punakha	Assistant Engineer
43	Sherab Zangmo	Punakha	Gewog Administrative Officer
44	Kelzang Dema	Punakha	Gewog Administrative Officer
45	Rinchen Dorji	Sarpang	Gewog Administrative Officer
46	Mongal Singh Limbo	Sarpang	Gewog Administrative Officer
47	Karma Tempa	Sarpang	Dzongkhag Forestry Officer
48	Yeshe Rinzin	Sarpang	Junior Engineer
49	Ugyen Dorji	Sarpang	Dzongkhag Planning Officer
50	LobzangChodea	Tsirang	Gewog Administrative Officer
51	Tashi Dema	Tsirang	Gewog Administrative Officer
52	Ngawang Chophel	Tsirang	Dzongkhag Planning Officer
53	Pema Chofil	Tsirang	Dzongkhag Agriculture Officer
54	Langa Dorji	Tsirang	Environment Officer
55	Namgay Tshering	Tsirang	Dzongkhag Engineer

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

Region 3- Bumthang: (Bumthang, WangduePhodrang, Zhemgang & Trongsa)

S/L	Name	Dzongkhag	Designation
56	Gyeltshen	Wangdue	Asst. Planning Officer
57	Lhapchu	Wangdue	Dzongkhag Engineer
58	Kin Gyeltshen	Wangdue	DzFO
59	Dorji Tshering	Wangdue	Enviroment Officer
60	Tshewang Dorji	Wangdue	GAO,Kazhi
61	Tshering Dorji	Wangdue	GAO Niysho
62	Tashi Dendup	Zhemgang	Enviroment Officer
63	Phub Dorji	Zhemgang	ADAO
64	Karma Tshering Samdrup	Trongsa	Planning Officer
65	Kinley	Zhemgang	Planning Officer
66	Phurba	Trongsa	DzFO
67	Tobgay	Trongsa	Dzongkhag Engineer
68	TheringYangzom	Trongsa	Enviroment Officer
69	Tashi Dorji	Trongsa	Nubi GAO
70	Chedup Doeji	Bumthang	Planning Officer
71	Tenzin Lhendup	Bumthang	Offgt. Environment Officer
72	Leki Phuntsho	Bumthang	Ura,GAO
73	Jigme Dorji	Bumthang	Chhokhor,GAO

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

**Region 4- Mongar: (Mongar,Tashigang,Tashiyangtse, Lhuntse, Pemagatshel and Samdrup
Jongkhar)**

S/L	Name	Dzongkhag	Designation
74	Dorji	Lhuntse	Offgt. DAO
75	Kinga Dubjur	Lhuntse	Asst. Engineer
76	Sachin Limbu	Lhuntse	Environment officer
77	Tshering Dendup	Lhuntse	Planning Officer
78	Sangay Dorji	Lhuntse	Khoma,GAO
79	Norbu Chogyel	Lhuntse	Metsho,GAO
80	Rinchen Dorji	Mongar	Ngatshang,GAO
81	Sangay Penjor	Mongar	Drametse,GAO
82	Kezang Jigme	Mongar	Gongdue,GAO
83	Chimmi Wangchuk	Pemagatshel	Environment officer
84	Ugyen Dorji	Pemagatshel	Asst. DzFO
85	Tashi Tshering	Pemagatshel	Chongsing,GAO
86	Dawa Tshering	Pemagatshel	Planning Officer
87	Peldwn Norgay	S/J	Dzongkhag Engineer
88	Tashi	S/J	Planning Officer
89	Sonam Gyelpo	S/J	Environment officer
90	Pema Dechen	Tashigang	Dzongkhag Engineer
91	Pema Choden	Tashigang	Extension Officer
92	Karma Wangdi Y	Tashigang	Kanglung,GAO
93	Karma Wangdi	Tashigang	Lumang,GAO
94	Dorji Khandu	Tashigang	Environment officer
95	Tshering Dorji	Tashiyangtse	Asst DAO
96	Jigme Tshewang	Tashiyangtse	Municipal Engineer
97	Tashi Gyelpo	Tashiyangtse	AsstDzFO
98	Ugyen Wangdi	Tashiyangtse	Jamkhar,GAO
99	Choda Jamtsho	Tashiyangtse	Yallang,GAO
100	Dechen Zangmo	Tashiyangtse	Tongzhang,GAO
101	Lobzang Tshering	Pemagatshel	Jr. Engineer
102	Kezang Wangdi	Pemagatshel	Zobel,GAO
103	Chimmi Namgay	Mongar	Planning Officer
104	Tshering Dekar	Mongar	Environment officer
105	Pema Rinzin	Mongar	
106	Dr. Jigme Wangchuk	Mongar	Veterinary Officer
107	Tenzin Chodea	Mongar	Environment officer
108	Khempa	Mongar	Offgt. DAO
109	C.L Das	Mongar	Dzongkhag Engineer

**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

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**Framework to Mainstream Gender, Environment, Climate Change,
Disaster Risk Reduction and Poverty(GECDP)**

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