



**TA 8179: Mainstreaming Climate Resilience into Development Planning**

**Package C:  
Gender, Monitoring and Evaluation (M&E), and Mainstreaming at the Sub-National Levels**



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**GENDER MAINSTREAMING IN ADAPTATION PLANNING OF  
AGRICULTURE, HEALTH AND WATER RESOURCES MANAGEMENT**

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**GENDER AND CLIMATE CHANGE COMMITTEE  
MINISTRY OF WOMEN'S AFFAIRS**



A study conducted in 141 countries included with the analysis that the loss in human capital wealth due to gender inequality is estimated at \$160.2 trillion if we simply assume that women would earn as much as men. This is about twice the value of GDP globally. Said differently, human capital wealth could increase by 21.7 percent globally, and total wealth by 14.0 percent with gender equality in earnings. (Ref. Wondon et al: 2018).

Gender mainstreaming in climate change adaptation, disaster risk reduction and mitigation investments may facilitate a significant gap reduction in women's economic empowerment to reduce the income gaps.

This knowledge product 'gender mainstreaming sectoral adaptation plans' is an effort to address the gap for gender equality and reduction of economic losses.

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# **GENDER MAINSTREAMING IN ADAPTATION PLANNING FOR AGRICULTURE, HEALTH AND WATER RESOURCES MANAGEMENT**

## **ACRONYMS AND ABBREVIATIONS**

ADB	Asian Development Bank
GDP	Gross domestic product
CCA	Climate change adaptation
CCAP	Climate change action/adaptation plan
CCCA	Cambodia Climate Change Alliance
CCCSP	Cambodia Climate Change Strategic Plan
CSO	Civil society organization
ECOSOC	Economic and Social Council of the UN
FAO	Food and Agriculture Organization
GCCC	Gender and Climate Change Committee
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
IFAD	International Fund for Agriculture and Development
IPCC	Intergovernmental Panel on Climate Change
MPGCC	Master Plan for Gender and Climate Change 2018-2030
MOWA	Ministry of Women's Affairs
MAFF	Ministry of Agriculture, Forestry and Fisheries
MRC	Mekong River Commission
NAP	National Adaptation Plan
NAPA	National Adaptation Plan for Action
NCCAPPH	National Climate Change Action Plan for Public Health
NSDP	National Strategic Development Plan
PDoWA	Provincial Department of Women's Affairs
TA	Technical assistance
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WASH	Water, sanitation and hygiene

# GENDER MAINSTREAMING IN ADAPTATION PLANNING FOR AGRICULTURE, HEALTH AND WATER RESOURCES MANAGEMENT

## PURPOSE OF THIS KNOWLEDGE PRODUCT (KP)

Who is the Knowledge Product (KP) for?

1. This KP aims to assist government sectoral development practitioners particularly agriculture, health and water resources management sectors to ensure that gender mainstreaming issues are incorporated into the adaptations plans of the respective sectors to monitor and evaluate gender equality results. It demonstrates where and how gender mainstreaming concerns can be incorporated in the adaptation investment plans and how the users will be following it. While this document focuses primarily on the key three sectors, it is designed for a wider audience like line sectors of the government, civil society organizations and private sector enterprises' policy makers, planners, implementers, and evaluators.
2. The KP is intended to be used selectively according to the sector and type of adaptation investment initiative. It is not expected that every result or indicator will be relevant for all policies, strategies, programs, or projects; the selection of results and indicators will be determined by the level of the intervention, its scale, and the development cooperation modality. The KP may be used at any point in the policy, strategy, program, or project cycle of the adaptation investment plans. However, it is preferable for gender equality and women's empowerment indicators to be identified during planning and design.

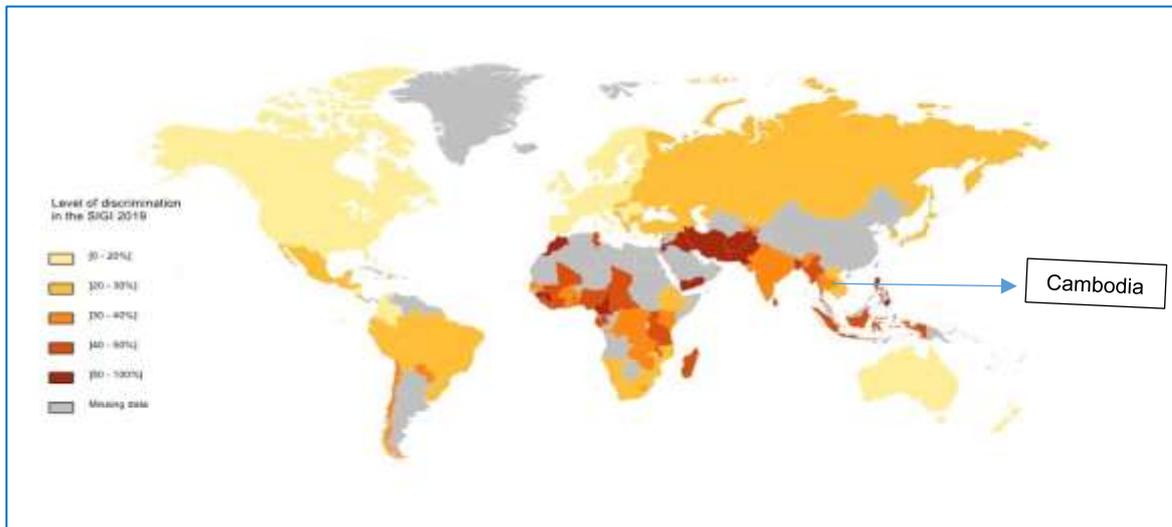
## BACKGROUND AND RATIONALE

Gender Inequality and its Economic Impacts at Global Level

3. The Centre for Economic Policy Research (2018) reports that it is widely recognized the gender discrimination becomes a costly pervasive phenomenon even though the macroeconomic estimates of its cost are rare, and seldom model-based. It is evidence that females find it more difficulty than males to access market activities, political power, or health and education inputs. "No country in the world has yet reached equality between women and men in critical areas such economic participation, education, health, and political empowerment." Gender discrimination appears in different causes and consequences, as they are part of a complex system of social, cultural and economic determinants (Ref. Hausmann, Tyson, and Zahidi (2006).
4. OECD Development Centre (June, 2016) reports that the discriminatory social institutions not only hold back achieving gender equality but also matter for economic growth, gender-based discrimination in social institutions costs up to USD12 trillion for the global economy, gradually reducing discrimination in social institutions could lead to an annual average increase in the world GDP growth rate of 0.03 to 0.6 percentage points by 2030, tackling discriminatory social institutions should be integrated into national growth and development strategies and mainstreamed in global development approaches.
5. The Social Institution on Gender Index (SIGI) works on qualitative and quantitative data on discriminatory social institutions for 180 countries. It compiles detailed profile for each country

compiles information on laws, social norms and practices related to the SIGI sub-indices. Figure-1 presents the gender discrimination status at global levels.

Figure 1: Gender discrimination at global perspectives



*Ref. SIGI, 2019*

6. In nearly every country, women and girls face systemic barriers that bar them from full and equal participation in the workforce and the formal economy more broadly. While the specific challenges confronting women vary, the fundamental imperative is the same everywhere: national governments and international actors must put the needs and priorities of women and girls at the center of everything they do. As the current head of the G7, Canada has committed to ensuring that gender equality and women’s empowerment are integrated into all of the body’s themes, activities, and initiatives. This approach echoes Canada’s Feminist International Assistance Policy, launched last year on the premise that ensuring equal rights and economic opportunities for women and girls is the best way to eradicate poverty. Reflecting this commitment, participants at the May 31-June 2 meeting of G7 finance and development ministers in Whistler, British Columbia, discussed women’s economic empowerment, including unlocking the potential of adolescent girls. Last week in Charlevoix, Québec, G7 leaders affirmed this focus. To gain access to opportunities and to the resources needed to succeed in the workforce, empowerment must occur throughout a woman’s life, from early childhood to school and the acquisition of in-demand job skills (Ref. SIGI, 2019).
7. If women are to participate more in the labor force, we first need to ensure that they have the right tools. That means guaranteeing that all women and girls have access to health care and information, proper nutrition, and safe and effective learning environments at all levels. It also means upholding sexual and reproductive rights and combating sexual and gender-based violence, including harmful practices like child, early, or forced marriage. But that is not enough to improve women’s employment opportunities and earnings. We must also take collective action to reduce the amount of time women spend in unpaid work; to ensure they have access to and control over productive assets like land, credit, insurance, and savings; and to address the restrictive social norms that relegate women to lower-paid or informal work (Ref. the World Bank Group, 2018).

8. Globally, women account for only 38 percent of human capital wealth versus 62 percent for men. In low- and lower-middle income countries, women account for a third or less of human capital wealth.
9. On a per capita basis, gender inequality in earnings could lead to losses in wealth of \$23,620 per person globally. These losses differ between regions and countries because levels of human capital wealth, and thereby losses in wealth due to gender inequality, tend to increase in absolute values with economic development. For these reasons, in absolute terms the losses are largest in OECD countries.
10. Globally, for the 141 countries included in the analysis, the loss in human capital wealth due to gender inequality is estimated at \$160.2 trillion if we simply assume that women would earn as much as men. This is about twice the value of GDP globally. Said differently, human capital wealth could increase by 21.7 percent globally, and total wealth by 14.0 percent with gender equality in earnings. (ref. Wondon et al:2018).

**Box 1: Women's empowerment**

"The concept of empowerment is related to gender equality but distinct from it. The core of empowerment lies in the ability of a woman to control her own destiny. This implies that to be empowered women must not only have equal capabilities (such as education and health) and equal access to resources and opportunities (such as land and employment), but they must also have the agency to use those rights, capabilities, resources, and opportunities to make strategic choices and decisions (such as is provided through leadership opportunities and participation in political institutions). And for them to exercise agency, they must live without fear of coercion and violence."

Source: C. Grown, G. Rao Gupta, and A. Kes. 2005. Taking Action: Achieving Gender Equality and Empowering Women. London. United Nations Millennium Project Task Force on Education and Gender Equality and Earth scan. p. 33.

## Gender Inequality and its Economic Impacts at Regional levels (ASEAN)

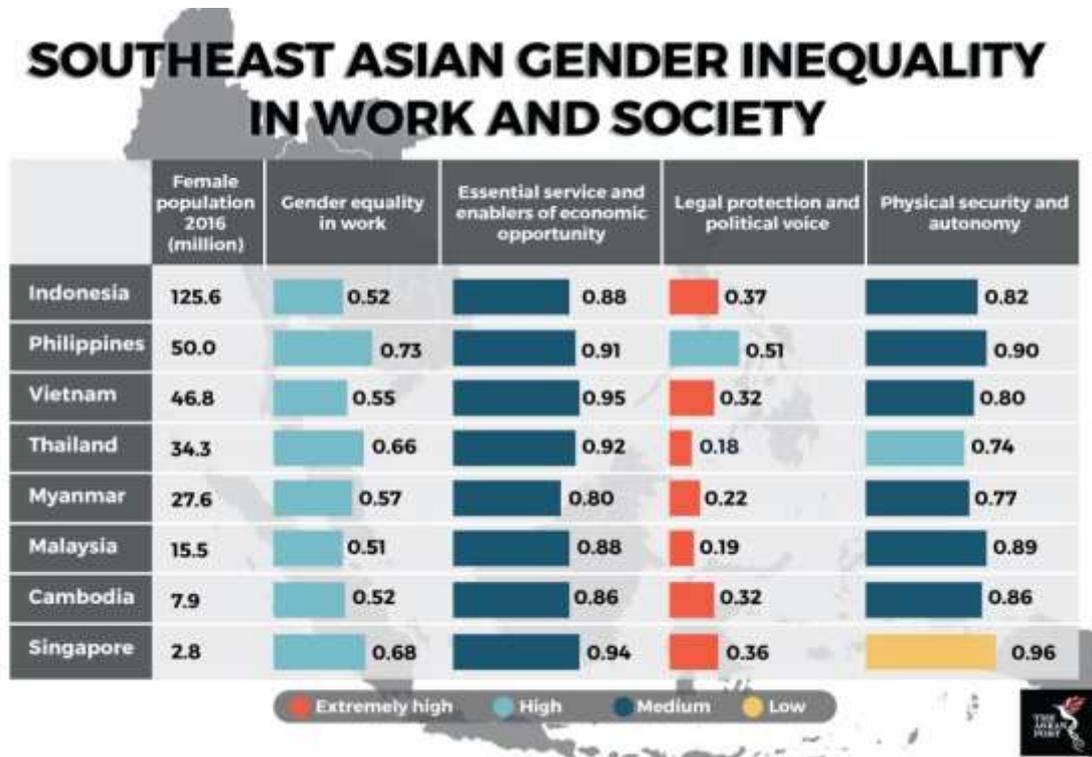
11. Southeast Asia is known as the home to some of the world's fastest expanding economies. Its combined economy grew to US\$2.6 trillion in 2016. It is the third fastest growing major Asian economy bloc after China and India. In the last few decades, the region has grown from strength to strength, transforming itself from a poverty-ridden agrarian backwater to one of the most dynamic and diverse emerging markets in the world. Despite these achievements in a region with more than 640 million people, gender inequality still prevails at the workplace and in society.

Box 2. The study by Klasen and Lamanna reveals that South Asia (SA), the Middle East and North Africa (MENA), and Sub-Saharan Africa (SSA) have large economic and education gender gaps correlating with weak economic growth. MENA and SA are reducing their education gaps and could see a demographic gift soon, but the countries have suffered more than regions near them, like East Asia, that have done a better job reducing their gender gaps. In addition, the MENA region has reduced its education gap faster than SA, leading to more economic growth. In SA, only Bangladesh worked to reduce its gender gaps and has experienced an economic boom similar to East Asia.

12. 'The Power of Parity: Advancing Women's Equality in Asia Pacific' report released in April 2018 by McKinsey Global Institute (Fig-2), the economies of Southeast Asia could boost their collective gross domestic product (GDP) by US\$370 billion a year by 2025 if the existing inequity between the genders is eliminated. The report's analysis did not include Brunei and Lao PDR. Southeast Asian women contributed 36.4 percent of the combined regional GDP.

However, this percentage failed to capture the total welfare and economic activity of women in the region, which also includes the very significant economic value that women create through unpaid care work in the home such as looking after children and the elderly, shopping, cooking, and cleaning (Ref. Ref. Source: McKinsey Global Institute, 2018).

Figure 2: gender inequality status in the ASEAN Nations



Ref. Source: McKinsey Global Institute, 2018

The report suggested further investigation on the mechanism to increase participation of women who are involved in unpaid work, including reducing the hours in, redistribution of, or marketization of unpaid work.

13. The Power of Parity further reports that the work environment, as a region, Southeast Asia

Box 3: In Vietnam, women constitute the majority of the jobless, making up over 57 percent of untrained, unemployed adults. A study by a network for migrant workers set up by Oxfam, M.net, found that for the groups of vocationally trained workers and bachelor's degree holders, the figures stand at 50 percent and 55 percent, respectively. Another study by the International Labour Organization (ILO) and Navigos Search found that of 12,300 online job advertisements, one-fifth included gender requirements, of which 70 percent preferred male candidates. Men were most often targeted for highly professional or technical jobs or jobs requiring much travelling, while women were expected to perform office and clerical jobs.

Ref. <https://theaseanpost.com/article/cost-gender-inequality>

recorded a high level of gender inequality, with the highest recorded in Malaysia and the lowest in the Philippines. However, efforts to advance gender equality in the work environment is not likely to be achieved without progress on gender equality in society. In terms of essential services and enablers of economic

opportunity, all countries recorded medium levels of gender inequality, with the highest inequality recorded in Myanmar and the lowest in Vietnam. This is almost similar to the

region's levels of gender inequality in physical security and autonomy, with the exception of Thailand which recorded a high level of inequality, and Singapore which achieved a low level of inequality. In terms of legal protection and political voice, all countries recorded extremely high levels of inequality, except for the Philippines. The highest inequality was recorded in Thailand.

## Gender Inequality and Economic Impacts at Country level (Cambodia)

14. The Cambodian offices of the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the United Nations Office of the High Commissioner for Human Rights (UN OHCHR) concur with the CEDAW Committee in recognizing the work of the Government in the progress made to date towards gender equality. In 1992

Cambodia ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). There was no Ministry of Women's Affairs in 1992 and no

**Box 4: Implementation of CEDAW and the protection of women's rights in the Kingdom of Cambodia**

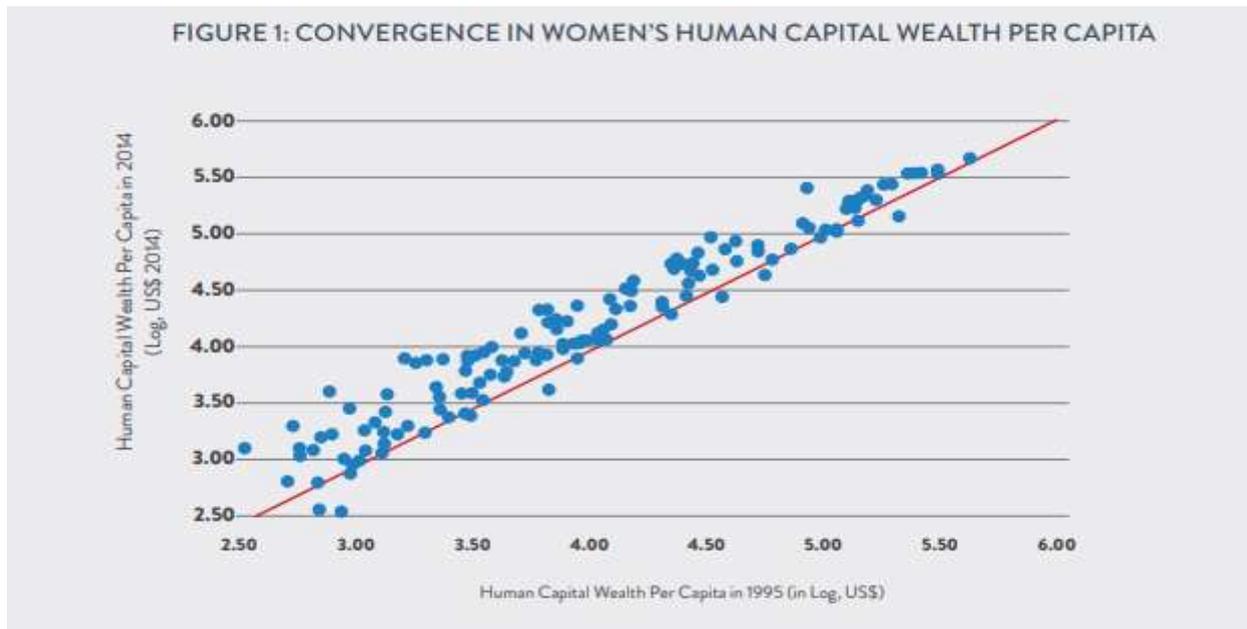
**Article 1**

For the purposes of the present Convention, the term "discrimination against women" shall mean any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field."

national policy response to women and gender issues. Since 1992, the Royal Government of Cambodia established the Ministry of Women's Affairs, identified gender equality under the fourth priority area of its latest Rectangular Strategy and the Ministry of Women's Affairs is set to produce its fourth national strategy on gender equality, Neary Rattanak V (2019-2023) as a great milestone in progress.

15. There is no doubt that ensuring that women and girls enjoy the same rights and opportunities as men and boys is the right thing to do from a moral and ethical standpoint. But it also makes economic sense – \$160 trillion worth, to be precise. A new report released by the World Bank Group, with support from the Canadian government, finds that if women had the same lifetime earnings as men, global wealth would increase by \$23,620 per person, on average, in the 141 countries studied, for a total of \$160 trillion. That is a lot of money that could be put toward, say, reducing inequality, expanding the ranks of the middle class, and mitigating the factors that drive social and political instability. Despite this clear opportunity, women still only account for 38% of their countries' human capital wealth, defined as the value of the future earnings of adult citizens. In poor and lower-middle-income countries, women account for just one-third of such wealth – or even less.
16. To facilitate the costs and economic benefit analysis of gender mainstreaming for reducing gender inequality, there are no measurable ways forward demonstrated in addressing to achieve the SDG5 or any of its indicators. Estimating benefits and costs necessitates making lots of assumptions about costs at different sectoral levels, such as how effective the gender mainstreaming happened in agriculture, health, infrastructure or water resources management fields for measuring social value, how reasonable it is to measure, combine or compare disparate life events (e.g. getting a job versus getting married) by using market income gained or cost, and whether prices derived in one community with its own set of institutions, norms and economic structure apply to outcomes in another (Kohler, 2012).

Figure 3: benefit quantification of gender equality



Countries benefit from an increase in wealth for women.

Image: World Bank, 2018

### Sex-disaggregated Capacity Baseline and Measurable Targets

17. There is a need to identify the gender equality results with the indicators needed to measure progress which are essential steps for reducing poverty, advancing gender equality, and empowering women. Gender equality and elderly people, people with disabilities, children, youth and women’s empowerment need to be pursued in their own right for a just and equal society, and have been acknowledged as important objectives for many decades, including in the Millennium Development Goals and SDGs. Moreover, there is considerable evidence presented above and available globally that advancing gender equality helps reduce poverty, increase economic growth, supports inclusive growth and other broad development outcomes, and enhances the effectiveness and sustainability of development initiatives. One of the most important lessons is that gender mainstreaming remains only in women’s participation at different levels. It does not even ensure meaningful levels of engagement, there is no guarantee of support services to encourage and inspire women, youth, children, elderly

**Box 5: Sex-disaggregated data** is a minimum standard for planning, implementing, monitoring, and evaluating all types of development initiatives. If sex-disaggregated data is not consistently collected and analyzed, the reasons for this need to be articulated and justified. Disaggregating information by sex means that we count males and females separately when gathering information on development activities and benefits. Sex-disaggregated data is important because it helps assess whether an initiative is successful at targeting and benefiting women, men, girls, and boys as planned. Indicators should specify that all data about target groups and beneficiaries will be sex-disaggregated. Information may also be disaggregated according to other key variables, depending on the type of initiative, target group, and context—such as socioeconomic group, age, ethnicity, race, religion, or location (rural or urban).

Source: J. Hunt. 2011. Introduction to Gender Sensitive Monitoring and Evaluation. Unpublished training notes.

people and people with disabilities to join actively in the initiatives. As a result, the global, regional and country levels, there should be explicit development planning and programming and consistent progress is to be made toward gender equality. Without explicit objectives, strategies, targets, and actions to ensure women's equal participation and outcomes, the needs of women and girls continue to be overlooked. Identifying clear sex-disaggregated baseline, indicators and quantifiable targets to measure gender equality results are essential to measure and improve performance (ADB and AusAID, 2013).

18. The selection and targeting of appropriate gender equality outcomes and indicators is essential to achieve gender equality. It aims to strengthen accountability for implementing global and national policy architectures and governments' commitments to gender equality and women's empowerment. Identifying gender equality outcomes, targets, and indicators requires articulation of specific changes in policy, program, or project. There is the evidences that sex-disaggregated baseline, identifying gender equality outcomes and indicators can help to quantify the practical benefits for women and progress toward changes in gender relations—particularly when such measures are part of a comprehensive gender action plan based on sound gender analysis, and when the gender equality outcomes, targets, and indicators are based on discourse between beneficiaries and governments and development partners. Policy and plan should ensure adequate financial, technical and human resources to support effective design and use of gender equality indicators, and to learn about effective strategies for achieving gender equality results (ADB and AusAID, 2013).

19. The achievement of planned results is at the heart of USAID's performance management system. In order to understand where we, as project managers, are going, we need to understand where we have been. Establishing quality baselines and setting ambitious, yet achievable, targets are essential for the successful management of foreign assistance programs.

Box 6: The achievement of results requires the joint action of many stakeholders. Manageable interest means we, as program managers, have sufficient reason to believe that the achievement of our planned results can be significantly influenced by interventions of USAID's program and staff resources. When setting targets, take into account the achievement of how other actors will affect outcomes and what it means for USAID to achieve success.

(Ref. USAID 2010: Performance Monitoring and Evaluation, Number 8)

20. The sex-disaggregated base and targets orient stakeholders to the tasks to be accomplished and motivate individuals involved in a program to do their best to show what to be achieved. Targets also help to establish clear expectations for government and development partners along with direct beneficiaries. Lastly, sex-disaggregated baseline and targets demonstrate

Box 7: In Sri Lanka, women were encouraged to join a community based fishery organization by giving them training. Women were educated in fishery management, entrepreneurial skills and leadership formation. Out of a total of 145 fishery Community Based Organizations (CBOs), 38% of the societies were strengthened by the increased and improved participation of women (ADB, 2010). How could the private sector benefit from increased equality in participation of women? Sex-disaggregated data could provide the answer.

transparency and accountability by presenting available justified information on whether and what extent the results have been achieved or not over time.

21. The baseline and targets may be both quantitative and qualitative, depending on the nature of the associated indicator. To facilitate comparison of baselines, targets, and performance data for descriptive data, and to maintain data quality, some indicators convert qualitative data into a quantitative measure. Nonetheless, baseline and target data for quantitative and qualitative indicators should be collected using the same instrument so that change can be captured and progress towards results measured accurately. Sex-disaggregated baseline and targets come up with different dimensions including gender, location, income level, occupation, administration level (e.g., national vs. local), and social groups etc. that better help to measure the performances of the initiatives.

*Table 1: Quantifying institutional capacity for baseline structure with measurable targets*

<b>Category</b>	<b>Considerations</b>	<b>Sex-disaggregated Baseline score</b>	<b>Target Score</b>
Strategy	Extent to which gender mainstreaming strategy supports and facilitates the institutional capacity strengthening efforts clearly to identify and respond to climate change challenges.	xx%	yy%
Structure	Extent to which gender mainstreaming structure supports and facilitates the institutional efforts clearly to identify and respond to climate change challenges	xx%	yy%
System	Extent to which gender mainstreaming system are able to apply, procedures and processes to identify and respond to climate change challenges	xx%	yy%
Style	Extent to which gender mainstreaming style and its leadership have adequate understanding of climate change and an appropriate approach to meeting the challenge of adaptation	xx%	yy%
Staff	Extent to which gender mainstreaming staff possess appropriate responsibilities for climate change	xx%	yy%
Skill	Extent to which gender mainstreaming staff possess adequate skills and experience for climate change adaptation	xx%	yy%
Support	Extent to which institution possesses adequate access to support, including technical support and financial support, for their climate change investments	xx%	yy%

22. The huge costs of depriving women and girls of rights and opportunities are borne not only by women and girls themselves, but also by their families, communities, and the entire economy. By investing in women and girls and ending gender inequality, we can eliminate those costs and change the fate of entire countries.

23. From a gender equality perspective, the question of price is particularly confounding because using market prices and incomes to estimate benefits and costs incorporates value into project evaluation in ways that can disadvantage women. Consider that despite the significant progress women globally have made in educational achievements, they systematically lag behind men in just about every labor market measure that exists.

Women are more likely than men to be in vulnerable employment characterized by low pay and persistent insecurity at all sectoral levels, to have less access to productive inputs, to face pervasive occupational and sectoral segregation that leads to lower pay, and, in the developing world, to have higher rates of unemployment (ILO, 2012). The result is that using additional income generated from different sectoral levels to measure the benefits of job training or lowering lifetime fertility incorporates and thus perpetuates the very gender inequality the associated program attempts to redress. Markets reflect prevailing social, political and economic

conditions. Frankly, if markets were effective at pricing the social value of women's production and gender equality, the latter would probably not be such a central development challenge.

*Box 8: A checklist for using gender equality indicators*

- *Do stakeholders understand why it is important to collect sex-disaggregated information, and to undertake social and gender analysis?*
  - *Does the capacity of partners and implementers to collect and analyze sex-disaggregated information need to be strengthened?*
  - *Who is the information for? Do key stakeholders understand how it will be used, and is it relevant to their needs?*
  - *Are the indicators easy to understand and use? Can the information be easily collected using existing local systems?*
  - *Do the indicators impose new reporting burdens on partners, or are they aligned with existing reporting obligations?*
  - *Will the information to be collected tell us whether development objectives have been achieved for both women and men, and whether there are any significant differences in the benefits for women and men, boys, and girls?*
  - *Will the indicators help to measure gender equality results—such as women's and men's participation, benefits, outcomes, and impacts?*
  - *Will the indicators help to measure changes and trends in gender relations over time, and the causes of those changes and trends?*
  - *Will both quantitative and qualitative methods be used to collect information?*
  - *Has gender and social analysis been used to help identify the indicators?*
  - *Will the indicators provide information to improve the effectiveness of strategies to address gender inequalities and advance gender equality?*
- Source: J. Hunt. 2011. Introduction to Gender Sensitive Monitoring and Evaluation. Unpublished training notes.*

24. A Macroeconomic perspective, the argument for including a macroeconomic perspective in benefit cost analyses of gender equality policy is both analytical and practical that can make realization to sectoral levels. Analytically the basic point is that macroeconomic views and approaches afford insights into lots of important dynamics that are simply inaccessible or effectively hidden with a strictly micro approach based on randomized trials. The practical argument is about engaging with the widely cited instrumental case for gender equality that is good for economic growth for government sectors, civil society and private sectors level (Ref. Goldin, C., 1990).

25. Increasing gender equality, like any policy goal, will have a range of impacts (Kohler 2012). At the microeconomic level, the action plan discusses effects like raising household income, lowering fertility or the incidence of intimate partner violence. But if these effects are substantial enough to influence gender equality, they will also have larger economic impacts, such as changing the structure of labor markets as women do more paid work, or raising the national savings rate as a consequence of lower fertility. Policies aimed at gender equality may even change the very course of development itself (Ref. Goldin, C., 1990). Income per capita is associated with lower degrees of discrimination against women, as suggested in Dollar and Gatti (1999) and Guiso, Sapienza, and Zingales (2003).

## Sex-disaggregated Key Sectoral Capacity Baseline

26. The gender capacity building dimension of institutional levels focuses on strengthening the capacity of development to design, implement, and evaluate policies and initiatives, to ensure that both men and women participate and benefit equally. This requires gender and social analysis and planning skills, including the ability to identify realistic targets, results, and indicators, and to develop, implement, and monitor gender action plans and strategies. To ensure a quantifiable progress, the institutional capacity building should come up with sex-disaggregated baseline data and set target following the institutional commitments and objectives. The capacity building should focus on the gender mainstreaming strategy, structure, system, style, staff, skill, support etc. areas (but not limited to) (Ref. MPGCC, MOWA, 2018).
- Box 9:** In Uganda, the Directorate of Water Development measured the gendered levels of participation in water and sanitation committees and collected sex-disaggregated data on staff in different positions in the department. They found that the number of male staff was far greater than the number of women staff and decided to improve the gender balance in the water sector by 30% in 5 years. To address this challenge, a gender working group was formed which included representatives from the Ministries of Gender, Labor and Social Development (Ebila, 2006).
27. Table 2 shows a way forward how to set the sex-disaggregated baseline and targets to achieve. The strategy demonstrates the clear direction and scope of the institution over the long term goal; structure shows the basic relationships of the institution to implement the climate change strategies and action plans; system deals with the formal and informal procedures that support the climate change and gender mainstreaming strategy and structure; style shows how key managers support the implementation of climate change and gender mainstreaming action plan; staff as the institutions' human resources and how they are developed, trained and motivated; skills are the capabilities and competencies for climate change and gender mainstreaming in resilience within the ministry and its departments and support is the processes that the knowledge management, data, guidelines and manuals provided to support the staff in implementing climate change and gender mainstreaming action plans.
28. Table 1 demonstrates how to use and guide the review of earlier capacity needs assessments for the key sectors at the national level in Cambodia, and has been targeted specifically towards mainstreaming of climate resilience into the key sector ministries. This Table 1 was therefore structured according to these sector ministries, and the resulting capacity strengthening approach and plan was targeted towards the needs that have been identified for each ministry.

Table 2: Sex-disaggregated baseline capacity of key sectors in Cambodia (2018)

Gender mainstreaming (GM) capacity in CCA investments (CCAI) at sectoral, sub-national and CSO groups levels (August 2018)												
	Agriculture		Health		Infrastructure		water		Sub-national		CSO groups	
	women	men	women	men	women	men	women	men	women	men	women	men
Project formulation	27%	32%	24%	28%	35%	41%	29%	36%	16%	21%	36%	42%
CC impacts for decision making	29%	35%	27%	35%	26%	36%	31%	42%	20%	29%	38%	45%
distinguish & develop projects	23%	34%	23%	34%	28%	38%	30%	42%	18%	24%	45%	55%

GM in CCAI	23%	28 %	24%	28 %	34%	39 %	24%	33 %	19%	24 %	45%	57 %
GM in Strategy	24%	28 %	25%	28 %	22%	30 %	23%	33 %	16%	22 %	38%	57 %
GM in System	25%	28 %	24%	28 %	23%	33 %	22%	32 %	16%	21 %	36%	55 %
GM in Style	22%	24 %	23%	29 %	22%	28 %	25%	29 %	18%	22 %	35%	53 %
GM in Structure	24%	35 %	27%	35 %	24%	24 %	25%	27 %	25%	32 %	36%	46 %
GM in Staff	25%	33 %	27%	33 %	29%	34 %	25%	34 %	22%	29 %	38%	33 %
GM in supports	24%	35 %	26%	35 %	25%	34 %	24%	35 %	24%	35 %	35%	49 %
GM in Skill	26%	36 %	27%	36 %	23%	37 %	25%	35 %	16%	22 %	35%	43 %
GM in M&E	27%	37 %	26%	37 %	25%	35 %	27%	38 %	26%	33 %	37%	48 %

GM – gender mainstreaming, CCAI – climate change adaptation investments

Ref. MPGCC, Cambodia 2018

29. Table 3 refers to the baseline and target set on agriculture with increased employment or opportunities of women in both the formal and informal sectors. To measure the targets, there are set indicators. The indicators (as for example) are (i) percentage change in the number of registered businesses owned solely or jointly by women (by number of employees and sector), (ii) number and percentage of micro, small, or medium-sized enterprises established or expanded by women and men; and (iii) number operational and profitable at project completion, number and percentage of women and men supported to gain formal or informal employment outside the agriculture sector etc.
30. Similarly, other sectors like water resources, infrastructure, health, sub-national and civil society groups increased fuel, water, and food security for poor women and men; increased capacity of poor women and men to adapt and respond to environmental changes.
31. A comprehensive gender responsive adaptation initiative significantly adds value to women's economic empowerment, ensures opportunity for sustainable climate friendly livelihoods, creates additional income opportunity for long term, reduces family poverty, enhances family

Box-10: Samaki community in Kaos Krala district of Battambang province experienced with the "mainstreaming sustainable livelihoods in climate change adaptation, mitigation and disaster risk reduction initiatives funded by Oxfam America and later SGP UNDP Cambodia since March 2006 to February 2007 (Oxfam America) and July 2007 to September 2009 (SGP UNDP Cambodia. Community revolving Fund formed with gender responsive participation, empowered community members with Annual Climate Adapted Farming Calendar in collaboration with PDoAFF, PDoWRM, PDoWA, PDoP etc. along with line civil society groups in the community levels. It empowered the community to assess the climate caused risks including drought risk assessment, risk reduction action plan development, cope the plan into the Commune Investment and Development Plans, ensured access to technical and financial support services for the community members. That resulted the increasing of direct beneficiaries from 60 HHs to 96, reduced their single rice dependency livelihoods to multi-livelihoods options, expanded the sources of income facilities and increasing of their capital to almost 230% in 2013. The project phased out in 2009 but the community members kept their best practices as on-going efforts for their sustainable livelihoods. Ref. Save the Earth Cambodia, 2013)

peace and harmony, empower women, children, elderly people, youth with full responsibility to drive the overall family progress to a sustainable levels. It facilitates democratic rights women or people with disability or socially disadvantaged individuals.

## GENDER MAINSTREAMING STATUS ANALYSIS

32. The institutional policy at sectoral levels from agriculture, fisheries, forestry, health and water resources have been assessed to present the extent of gender mainstreaming efforts have been undertaken and further opportunity for inclusion (gaps and needs). As a part of the assessment, the key sectoral policy architectures show that the sector ministries have been taking significant gender mainstreaming supports but it limits to mainly gender participation levels.

### Gender Mainstreaming Status at Sectoral Initiatives vs Opportunity for Improvements (Gaps)

33. The sector ministries have been undertaking possible measures to mainstream gender in their development initiatives reflected in their policy and supporting activities. Still the vulnerability to women, children, elderly people, people with disabilities etc. have been increasing. Following analysis (ref. Table 2) demonstrates the key sectors, different support activities undertaken by the respective sector and also identified the opportunity for further improvements of the gender responsive issues (gap).

Table 3: Sector based initiatives taken to address the climate caused vulnerability and identified gaps for mainstreaming gender to cope to enhance vulnerability reduction processes

Climate vulnerable sector	Climate caused vulnerability and initiatives to address: Cambodian perspectives	Gaps
<b>Agriculture</b>	<p>Climate change impacts on agriculture and perspectives in Cambodia: The agriculture sector in Cambodia is extremely vulnerable to increased temperatures, changes in rainfall patterns, extreme weather events such as cyclones, drought, and flooding, as well as sea-level rise in coastal areas.</p> <p>Climatic changes are projected to result in shorter rainy seasons and longer and drier dry seasons, with some reports that farmers are already experiencing frequent droughts and floods, reducing crop yields and decreasing food security. In rural areas, which comprise about 98 percent of the country's total land area and are home to 77 percent of the population, about 90 percent of people are engaged in agricultural activities and 80 percent rely upon subsistence crop production.</p> <p>Agriculture is very important for the Cambodians as it is not only a source of livelihood for many people, but it also is essential for food security. Rice is the predominant crop and a staple of rural diets, with average yields of 9.7 million metric tons between 2013 and 2017, production comprising over 80 percent of total cultivated land nationwide, and consumption representing approximately 68 percent of daily caloric intake in rural communities.</p> <p>Projected impacts to rice yields are uncertain, though shifts in the timing of the rainy season could have substantial adverse impact without adaptation measures. One study suggests that a failure to ensure optimal timing, cultivar, and fertilizer use in the face of shifting climatic conditions could result in as much as 9.9 percent losses in wet season yields and 7.7 percent loss in dry season yields by 2050, respectively. Because most of Cambodia's rice fields are rain-fed, with only 20 percent irrigated, the poorest farmers (typically without irrigation) are particularly vulnerable to shifts in the timing, frequency, and/or intensity of precipitation. Prolonged droughts in 2004 and 2005 affected nearly 30 percent of agricultural land in Cambodia and caused a 14 percent decrease in rice yields. Projections suggest more frequent flooding in and around the Tonle Sap as well as in the floodplain zones of the Mekong, which could increase agricultural losses already estimated at</p>	<p>The sector does not define levels of women's engagement in its climate change adaptation, mitigation and disaster risk reduction investments initiatives; it has not provided specific roles and responsibilities to make women and men accountable for their performance; it has not provided with sex-disaggregated baseline capacity, level of vulnerability caused by climate change; has not quantified the cost and economic benefits analysis of gender mainstreaming in the sectoral climate change investments etc.</p>

	<p>\$100-170 million per year. Changing climatic conditions further expose crop production to increased outbreaks in agricultural pests and diseases. For rice crops, pest cycles may speed up and phytosanitary conditions may worsen as a result of increased periods of rain and higher temperatures. Meanwhile, drought conditions could reduce plant resistance to pests such as grasshoppers, and strong winds could accelerate the spread of those pests. These increased threats may in turn result in increased need for and cost of agricultural inputs (Ref. US AID: Cambodia Risk Profile Fact Sheet March 2019).</p> <p>A recent economic analysis suggests that with a 1oC rise in temperature, annual mean net revenue falls. The study points out the main factor in agricultural productivity as being security of land tenure (Kala, Boret and Kurukulasuriya 2011, Johnston et al 2009, Peng et al 2004). Impact on rice yield is predicted to be significant. Ministry of Environment (2010) shows rice yields will decrease under both high and low emission scenarios, and will continue to decrease within a range of 20-70 percent of current production based on different seasons and scenarios. Current agricultural techniques may not be able to cope with increased salinity that is predicted for coastal areas.</p> <p>Following projected changes may have significant impacts on agriculture:</p> <ul style="list-style-type: none"> <li>• Average annual temperatures are very likely to increase by 0.8 to 1.6 °C by 2030 and 1.0 to 2.6°C by 2050.</li> <li>• A 14 to 49 percent increase is projected in the frequency of “hot days” by 2060, while hot nights are projected to increase by 24 to 68 percent over the same period.</li> <li>• The frequency of “cold” days and nights will decrease and become increasingly rare.</li> <li>• An increase in the intensity of heavy rainfall events of 1to 15 percent by 2050 is very likely. However, projected changes in average annual precipitation are uncertain by 2030, though likely positive (0 to 6 percent) by 2050.</li> <li>• Climate changes are projected to result in a potentially shorter, or shifted, rainy season by 2085, with drier conditions in April and May and wetter conditions in October and November. (Ref. USAID Cambodia, 2019).</li> </ul> <p>Initiatives taken by different institution</p> <p>To facilitate participatory and gender-sensitive analysis of climate change vulnerability and adaptive capacity in program target communities.</p> <ul style="list-style-type: none"> <li>• To promote participatory scenario development processes to analyze longer-term climate scenarios and implications for livelihoods and adaptation.</li> <li>• To undertake risk analysis and management training for individual farmers and community-based organizations.</li> <li>• To undertake actions to promote gender equality and women’s empowerment</li> </ul> <p>More, better, more resilient livelihood options</p> <ul style="list-style-type: none"> <li>• To undertake testing and demonstration of adaptation strategies, including both on-farm activities and off-farm activities.</li> <li>• To facilitate channels for farmers to access seeds that are adapted to changing temperatures and extremes in water availability.</li> <li>• To support farmers in diversifying their livelihoods, both within agriculture and to non-land-based activities.</li> <li>• To advocate, build capacity and promote technologies to manage climate variability and hazards, such as alternative cropping cycles, system of rice intensification (SRI) (MoE, MEF &amp; UNDP,</li> </ul>	<p>The similar comments are applicable for the following sectors.</p>
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	<p>2011), agro-silvopastoral systems and conservation agriculture techniques.</p> <ul style="list-style-type: none"> <li>• To develop and/or improve community-and farm-level water infrastructure (small-scale water storage, supply and irrigation) to manage seasonal fluctuations in water availability as well as extreme weather events such as droughts and floods.</li> </ul> <p>Access to information, knowledge, resources and services</p> <ul style="list-style-type: none"> <li>• To facilitate access for farmers to seasonal forecasts and early warning systems, using community-based communication methods</li> <li>• To establish linkages between local organizations and institutions generating and communicating climate information</li> <li>• To develop linkages between community-based organizations and government extension workers such as agricultural extension workers, fisheries officers and animal health officers.</li> <li>• To facilitate access to financial services that support farmers in managing seasonal cycles and crises (microfinance, micro-insurance, etc.).</li> <li>• To work with microfinance institutions to increase the range of options available for communities to manage variability and crises.</li> <li>• To support Commune, District and Provincial Councils in integrating climate change considerations into local development planning.</li> <li>• To build capacity of agricultural extension workers, fisheries officers and animal health officers on climate change impacts and appropriate adaptation strategies.</li> <li>• To work with local water management institutions to ensure that future climate projections are integrated into planning and implementation of water management plans and infrastructure</li> <li>• To strengthen capacity for district, and commune disaster management committees, in particular to establish/strengthen early warning systems.</li> <li>• To establish CSO-Government Dialogue Platform (GEF CSO Network, 2019) to create dialogue between farmers and government/civil society institutions to ensure that services are accessible and responsive to the needs and priorities of the most vulnerable people.</li> </ul>	
	<ul style="list-style-type: none"> <li>• To promote economic diversification that has been helping to eradicate extreme poverty, through economic transformation towards sustainable development.</li> <li>• To promote climate resilient technologies for appropriate adaptation measures to foster resilient infrastructure, more climate-resilient technologies, and new agricultural practices to counter the increased climate risks.</li> <li>• To explore improving access to energy in underserved areas and using low-emission technologies can address the development needs of vulnerable populations while promoting a transition to green, low-emission and climate resilient development.</li> <li>• To support climate resilient social Protection as an emphasis on transforming productive livelihoods as well protecting, and adapting to changing climate conditions rather than simply reinforcing coping mechanisms.</li> <li>• To undertake risk transfer and insurance for protecting the most vulnerable people through access to insurance and transferal of risk.</li> <li>• To promote advancing cross-sectoral climate resilient livelihoods and scaling up and risk management to advance sustainable economic development in rural areas, provide improved climate information and early warning systems, and promote the sharing of climate-smart tools, training and techniques.</li> </ul>	

	<ul style="list-style-type: none"> <li>• To foster resilience for food security to combat droughts, floods, changing rainfall patterns and other extreme weather events put vulnerable communities at risk. With improved access to climate information, new technologies, and advanced land and water management techniques, vulnerable communities are receiving the tools they need to feed their families today, tomorrow and into the future.</li> <li>• To strengthen climate information and early warning systems for climate resilient development and planning to adaptation to climate change, is supporting the development of Early Warning Systems (EWS) respond to both short-term/rapid onset climatic hazards (e.g. cyclones, floods and storms), as well as long-term/slow onset hazards (e.g. drought and long-term climate change). Ref. UNDP Cambodia 2019).</li> <li>• To using technology to cope with drought pond (ponds are 2.5m deep and measure 12m by 8m on the surface with a slope of 45 degrees) to hold up to 130 m<sup>3</sup> of water and are lined to minimize seepage and reduce water loss.</li> <li>• To use technology to cope with floods, raise bed gardens, to deal with flooding, particularly in low lying farms. The initial costs of construction are approximately USD \$140 for a 25m<sup>2</sup> plot. The gardens can also be built from different materials, including timber/wood, bricks and bamboo. However, the material used determines the longevity of the structure (brick will last the longest - at least 5 years). A mixture of soil, compost and lime is used to fill the garden providing fertile soils for crop production. A water jar (at least 1m<sup>3</sup>) is connected to a system of drip sprinkler pipes which supplies water to the crop through gravity and thus doesn't require a machine to pump the water. (Ref. SNV Cambodia, 2019).</li> <li>• To promote integrated community risks assessment, develop risk reduction action plan, cope the action plan into the Commune Development Plan (VDP) and Commune Investment Plan (CIP).</li> <li>• To promote, advocate and support (in collaboration with local agriculture authorities) climate friendly annual farming calendar for enhancing sustainable agro-based livelihoods.</li> <li>• To facilitate gender responsive community groups to serve as the proactive agents to incorporate elderly, people with disabilities, children and youth to be the integral part of the processes. (Ref. Save the Earth Cambodia, 2013)</li> </ul>	
<b>Livestock</b>	<p>Livestock perspectives in Cambodia: According to the Ministry of Agriculture, Forestry and Fisheries 2016-2017 Report, the total animal production was 40.3 million heads in 2015, but a year later it rose to 42.18 million heads – buffaloes production jumped by 41 percent, swine grew by 7.07 percent and poultry increased by 3.52 percent. On average, Cambodia's meat consumption per person per year stands at 16.13 kg, relatively low compared to neighboring countries like Malaysia, where consumption is 52.3 kg per person per year. There are different types of vulnerability to livestock linking with climate change have been experiencing in Cambodia. Increased incidence of livestock disease, largely associated with lack of water and grazing land and the long distance to water sources for livestock causes vulnerability to livestock.</p> <p>Following are some identified risks reduction efforts made by government, development partners, civil society organizations and private sector enterprises:</p> <p>Traditional smallholders face climate change risks and their way forward - Industrially farmed chicken broilers and layers incur higher heat stress.</p>	

It necessitates increasing use of utilities as temperatures rise, increasing costs of production. The cost hits sometimes beyond the means of many smaller producers. The enterprises where this might become a consideration are largely located near urban centers in Cambodia. The impacts of climate change on broader livestock systems need for traction as it impacts on livestock production.

The large bulk of livestock productions are managed in mixed crop-livestock systems so changes in cropping will affect the value, uses, and management of livestock. Further, changing cropping patterns and the quality of communal and protected grazing, browsing, and scavenging areas will affect livestock viability and performance.

Commercial units are affected by changes in the availability, quality, and price of feed ingredients. How feed sources are affected by increased temperature or short or over rainfall major impacts on the competitiveness of these businesses given feed costs typically account for around 70% of variable costs. With increasing competition from outside the region, margins will be further squeezed.

Slow-onset flooding, flash flooding and drought exacerbate ongoing production constraints and create additional risks to livestock systems. While commercial units are generally better located and able to supply feed from further afield, smallholders can be badly affected. Flooding, notably in areas such as the Tonle Sap may force producers to move stock to 'safe hills', which are a significant biosecurity hazard. Flooding, and hence the use of safe hills, often entails stock from a wide area being collected and with low vaccination rates the likelihood of disease outbreaks is high. Disease risks are further compounded by other factors, for example flooding tends to occur soon after a low-feed period in Cambodia when stock condition is relatively poor. Further flood-related pressures include change of diet, movement, and new conditions that induce stress (particularly among young animals), all contributing to heightened risk of infection.

Extreme events affect markets, both for inputs such as feed and stock and in sale of animals. Markets are affected by physical access, but often more important is an increase in stock sales to cope with the extreme event impacts. Destocking tends to reduce the selling price in the affected area through oversupply and poor-condition stock. Prices for young stock tend to increase in the recovery period as farmers look to replenish their herds and oversupply is replaced by heightened demand.

The quantity and quality of disease vector breeding sites are altered by changes in the environment, particularly water availability: for example greater climatic variability may include unseasonable rainfall in some areas, increasing stagnant water and the availability of breeding grounds for mosquitoes; and the need for greater feed preservation and storage may encourage rodent problems. While pathogens vary widely in their temperature tolerances, spatial and temporal shifts in disease patterns have been well documented in the past and can be expected to increase with predicted climate changes and associated seasonal variation. Wetter wet seasons exacerbate internal and external parasite problems: nematode infections are a common constraint to livestock production. Parasitic infestation is typically seasonal and associated with the wetter conditions.

Small- and medium-scale commercial pig and poultry production continue to grow rapidly. Beef production is polarized, dominated by low-value local produce and high-value imported products. Market concentration in beef production is unlikely in the immediately foreseeable future. For example, in Mondulkiri both bovine and chicken

	<p>production is dominated by smallholder systems but the introduction of small to medium commercial systems has begun.</p> <p>Animal disease and increasingly livestock-related human health issues (zoonoses and food quality and safety) are key livestock production issues. The high human and livestock populations, number of livestock-raising households, and nature of production contribute to emerging infectious disease risks, outbreaks, and endemic diseases. The increasing market share held by integrators, both national and international, has meant an increasing share of total production produced under contract and has led to changes in genotypes, production methods, and input use. The rate and extent of change has varied with Thailand having a longer history of integrated export-oriented production, Vietnam and Cambodia moving quickly in that direction, while change in Lao PDR is less apparent. Regulatory changes both regionally and at national levels are being driven by increasing concern over and investment in food safety and quality assurance; stability and quality of supply; and increasing domestic consumer demand for safe, high-quality produce.</p>	
<p><b>Forestry</b></p>	<p>The forests resources are vulnerable to climate change. Perception, impact and implications of climate change on forest sector. Forest degradation globally contributes around 17 percent to GHG emissions, but in Cambodia represents the main factor in the country becoming a net emitter of GHGs. Moreover, forests will also be impacted by climate change. Local perceptions of climate change clearly link recently observed climate variability with forest and land degradation. An MoE/BBC trust study in 2011 of Knowledge, Attitudes and Practices (KAP) summarizes rural people's explanations for locally observed climate change (see below). Scientific predictions of climate change for Cambodia suggest that forests will be affected by changes in temperature, precipitation and the shifts in the seasons. The Second National Communication (SNC) to the UN Framework Convention on Climate Change (UNFCCC) by MoE draft shows exposing forests to a longer dry period might reduce forest productivity and increase risk of fire. If forests are being logged, there exists a risk that it will take longer for them to regenerate. With increased risk of fire, forests are at risk of turning into shrub or unproductive lands. The implications of climate change go much further.</p> <p>Exposing forests to longer dry periods might reduce forest productivity and biodiversity. This can also lead to a typical insect growth cycles, which can further affect agriculture and forests. Temperature increases and shifts in the seasons can increase the risk of fire reducing forests to shrub or unproductive lands. The integrity of forest cover is intimately linked with maintenance of freshwater supplies, soil cover and quality, and is believed by local farmers to attract rainfall. The loss of forest may lead to more consequences such as storms, soil erosion and landslides. In that considerations, there have been several activities running in different forests areas in Cambodia. The efforts are but not limited to:</p> <ul style="list-style-type: none"> <li>• Limited national capacities, policies and regulations facilitate the widespread implementation decentralized forest resources management and, sustainable land management mainstreaming livelihood considerations.</li> <li>• Implementation of community-based sustainable forest management planning at the province, district and commune level and delivering concrete benefits to local communities through a business approach.</li> <li>• Improved income to local communities.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Improvements in the protection of globally important biodiversity areas of Cardamom Mountains by working in the border landscapes.</li> <li>• Improvement in biological and productive functioning of forests in the provinces where the project will work directly on the ground.</li> <li>• Strengthened demand and supply chain for energy efficient cook stoves.</li> <li>• Reductions in CO2 emissions due to the increased use of efficient cook stoves, improved charcoal kilns and reduction of forest fuel wood extraction by establishing woodlots.</li> <li>• To ensure biodiversity and ecosystem management mainstreaming efforts are being made to integrate into development planning and production sector activities to safeguard biodiversity and maintain ecosystem services that sustain human wellbeing.</li> <li>• To ensure the protected areas are serving to unlock the potential of protected areas, including indigenous and community conserved areas, to conserve biodiversity while contributing towards sustainable development.</li> <li>• To foster ecosystem-based adaptation and mitigation is managing and rehabilitating ecosystems for adaptation to and mitigation of climate change.</li> </ul>	
<p><b>Fisheries</b></p>	<p>The global study classified Cambodia as highly vulnerable to the effects of climate change on fisheries. These findings were based on assessments of Cambodia's dependence on fisheries, the magnitude of expected climate change in the country, and its adaptive capacity (Allison et al. 2009). This vulnerability makes it important that Cambodian fisheries receive the support necessary to adapt to and cope with climate change. Yet the current Cambodian National Adaptation Program of Action for climate change (NAPA) does not prioritize adaption planning for capture fisheries in lakes, rivers and wetlands, despite their importance to the national economy and their vulnerability to climate change (MOE 2006, TTK &amp; SEA START RC 2009).</p> <p>Fishing communities in Cambodia have coped with environmental variability for many years, developing strategies of adaptation to fluctuation. Understanding and supporting these adaptive strategies and removing barriers to adaptation are steps toward preparing fishery-dependent communities to cope with climate change.</p> <p>Fisheries are critical to human well-being in Cambodia, where fish provide up to 80% of all animal protein in the diet (Hortle2007). Capture fisheries and aquaculture contribute about10% of Cambodia's gross domestic product and are even more important in terms of local livelihoods. Fishing and related activities are the primary sources of income for about one third of the people living around Tonle Sap and a secondary source of income for half of those who live around Cambodia's great lake (Baran 2005).</p> <p>Climate change is occurring now. The average temperature in Cambodia has increased since 1960 by 0.8°C, and with it the frequency of unusually hot days and nights has increased as well (McSweeney et al. 2008). A further 0.3-0.6°C increase is expected by 2025 (MOE 2002). Alternative estimates put the expected warming at 0.7-2.7°C by the</p>	

2060s (McSweeney et al. 2008).<sup>1</sup>Temperature increases will be more severe from December to June.

Extreme weather events could further harm fish production in Cambodia by causing loss of aquaculture stock and destroying fishing and aquaculture infrastructure (Johnston et al. 2009). Changes in fishery production are likely to have the greatest impact on people who depend on fishing as their primary livelihood activity. As these people are often poorer and more marginal than those who own land and have other primary sources of income, the effects of climate change on fisheries will harm those least equipped to cope (Johnston et al. 2009)

This Strategic Planning Framework sets out the Royal Government's vision for the future of the fisheries sector in Cambodia and describes the goals that must be reached in order to implement it. Its purpose is to support the achievement of Cambodia's Millennium Development Goals, implementation of the National Strategic Development Plan, and compliance with the Law on Fisheries, to the benefit of the people of Cambodia.

The Strategic Planning Framework for Fisheries in Cambodia identified some weakness and strength as follows:

#### **Weaknesses**

- Lack of awareness of the importance of fisheries in some parts of society and government.
- Seasonal and annual variation in supply, leading to gluts, shortages and over-exploitation of some species.
- Limited governance, legal and regulatory environment in some areas, coupled with lack of demarcation and weak enforcement.
- Limited skills, standards and guidance material.
- Shortage of funding, including for investment in infrastructure.
- Shortage of resources and knowledge to support aquaculture.
- Limited quality control and disease management facilities. Lack of good research and data in many areas.
- Employment of last resort – vulnerable to general economic conditions.

#### **Threats**

Loss of breeding habitat and declining wild stocks because of: Climate change, leading to changes in water levels, flow rates and flooding patterns. Environmental degradation from pollution and increased mining sediment.

- Damming, land conversion and deforestation. Increased pressure on the resource due to economic and population growth factors.
- Increased international trade competition and more stringent import regulations.
- Uncontrolled, illegal and destructive fishing, leading to conflict.
- Disease, especially in aquaculture.
- Loss of land for fisheries due to weaknesses in land management
- Considering the weakness and threats, the Fishery Administration (FiA) developed its strategic goal as follows:

Under the strategic goal, the FiA has defined seven key goals. The seven key goals will contribute to Royal Government's vision for the future of the fisheries sector. These goals describe the situation that the Royal Government wishes to see in place by 2019. The key goals are identified below:

- The contribution of the fishery and aquaculture to national prosperity is high and sustained.

- The livelihoods of people in the sector are improving and above the national average.
- The fisheries domain and associated resources are in a healthy and resilient condition and sustainably managed.
- Fish is a plentiful, healthy and valuable source of food.
- Fishing businesses are profitable, sustainable and responsible.
- The fisheries domain is managed, developed and conserved in close cooperation with neighboring countries.
- The policy, regulatory and support environment for the sector is sufficient, appropriate and enabling.

The FiA has set its guiding principles. The fundamental principles contained within the Royal Government's vision for the sector can be used to guide the setting of principles for development. These are:

- Ensure people's food security, including quality and safety
- Improve people's livelihoods
- Enhance the nation's prosperity sustainably.

Applying these principles to the issues facing the fisheries sector means that the key areas for strategic intervention will therefore be:

- To protect and maintain the ecosystem in order to support wild capture fisheries at levels that are both sustainable and sufficient to support demand.
- To increase rice field fisheries.
- To support the growth of small, medium and large-scale freshwater aquaculture.
- To develop marine fisheries and mariculture.
- To make improvements in post-harvest processing.
- To promote fish and fisheries products in both national and international markets.
- To support livelihood diversification away from capture fisheries, especially for poor, disadvantaged and vulnerable people in order to help them out of poverty.
- To ensure that the regulatory environment for the fisheries sector is supportive and effective.
- To ensure that research and development is applied and supports an equitable development of the fisheries sector.

The strategic plan set following values for the overall fisheries strategic plan implementation.

The means for achieving the development of the fisheries sector will be based on four values which will guide all our actions:

Understanding, Protecting, Growing and Supporting.

- **Understanding:** We need to understand the fishery and the people who depend upon it if we are to maximize its contribution to national development. We strongly believe that all stakeholders in the fisheries should learn from each other. This also means that we will need effective, targeted research that will support an enhanced fact based decision platform upon which both regulatory and policy frameworks will be built.
- **Protecting:** We need to protect the species, habitats and ecosystems of the marine and freshwater environment if we are to maintain the flow of benefits from fisheries to the nation. In particular, we need to take concerted action with our neighbors and partners against the threats to the habitat that face us all.
- **Growing:** We need to grow the productivity of the fisheries sector if we are to continue to feed the increasing population of Cambodia and benefit from the increasing international market for fish. This needs to be done through the growth of both small-scale

and large-scale aquaculture, and rice field fisheries, and through better use of those resources through post-harvest and export performance.

- **Supporting:** We need to support these processes through efficient and effective service provision, by creating an enabling environment for the private sector to expand its contribution to growth, by being open and transparent in our actions, by effectively regulating that environment, by building better relations with our neighbors and by making our decisions evidence-based. This also includes addressing the need for compliance with international standards such as the UN Global Compact.

The strategic plan also set the post-harvest quality, standards, processes and procedures are core to the achievement of real improvements in nutrition, livelihoods and trade (both national and international). The chief interventions will focus on improving quality and enhancing access to markets. Key targets are:

- At least 80% of fish processors and 80% of fish produced comply with quality and safety assurance regulations and standards by the end of 2019.
- Co-operative associations are providing established and functioning channels to access finance and markets by the end of 2019
- Interventions at the community level leading to product and quality improvements and better market access are implemented on a nationwide basis by the end of 2019

The strategic plan addresses the regulation and services related issues. Many of the development interventions that are required need to be built upon a recognized basis of legislation and regulation. This covers both the need to recognize and address threats and to build upon nascent strengths. Effective applied research is required across the board to make sure that relevant information is available to support evidence-based decision making in both the regulatory and planning processes. But, most of all, the regulatory and service environment must be responsive to the needs of the people it is intended to serve. Among the targets for this area are:

- Full responsibilities and authorities are transferred to sub-national agencies in accordance with the National Program for Sub-National Democratic Development and the national Decentralization and Deconcentration reform program by the end of 2019.
- Enabling regulations for all fisheries sub-sectors in support of good governance, sub-sector development and implementation of national laws (including anti-corruption<sup>18</sup>) are in place by the end of 2019.
- A comprehensive plan to address international issues facing fisheries in Cambodia, including climate change, damming and environmental degradation, is developed by the end of 2011.
- Participatory assessments are formally used in support of all elements of the legal, regulatory, policy and planning processes and at least 70% of respondents in fishing communities and the general public have a positive response to fisheries development policies and their implementation by the end of 2019.

Where trans-boundary issues are concerned, the FiA shall ensure that it participates fully in the work of the Mekong River Commission (MRC), through membership of the Cambodian National Mekong Committee (CNMC). The FiA will bring issues that affect the fisheries sector directly to the attention of these bodies and will work closely with them to seek

resolutions, including binding international agreements where necessary and appropriate.

Based on the issues above, the FiA has come up with the Strategic Planning Framework for fisheries development and action plans. The Strategic Planning Framework aims to create a broad aspiration and direction for the future. This planning process has a number of integrated elements:

- **The Fisheries Development Action Plan.** This plan covers a three year time span from a programmatic perspective and is updated annually to cover the forthcoming three years. As such, it is therefore a rolling plan. It gives detailed direction and forms the key tool both for shaping the detailed activities of the FiA and informing Cambodia's development partners about the Royal Government's objectives for the fisheries sector over the period. This is the plan that will be used to ensure that progress against the targets of the Strategic Planning Framework remains on track towards the achievement of the Royal Government's goals for the sector.
- **The Annual Fisheries Plan.** This is a multi-part plan that covers the detailed outputs to be delivered and actions to be undertaken each year in order to work towards the overall development objectives. It contains Sub-Programme Plans for each sub-sector of the fisheries (such as aquaculture, Community Fisheries development, the fisheries domain, post-harvest and quality, resource conservation and management, etc.), and Activity Area Plans for each specific intervention
- **The Fisheries Cantonment Annual Action Plan.** Each Province in Cambodia is supported by a Cantonment of the FiA. These Cantonments work closely with local organizations and people and are key to effective service delivery. The FiA is working through the Cantonments to move immediate action planning closer to the people who are the intended beneficiaries of the overall planning process, in line with the Royal Government's D&D policy.

The strategic framework focuses on the set priorities. The Royal Government recognizes that this Strategic Planning Framework is ambitious. But action is necessary across the board if the goals are to be reached, and this will require adequate resources to be available throughout the period. Pragmatically, however, the Royal Government also recognizes that constraints may occur from time to time, especially in the light of global economic conditions. It is therefore necessary to set principles for prioritization so that these may be applied in lower-level development and action planning when and where necessary. In accordance with the CMDG and the NSDP, therefore, these priorities will be:

- Actions that are both important and urgent to meeting the needs of food and nutrition security, including actions to reduce the vulnerability of the people reliant on fisheries to external threats to the wetlands bio-ecosystem.
- Actions that are important to improving the livelihoods of poor people.
- Actions that are important to supporting longer-term economic growth.

In overall terms FiA follows the abovementioned planning cycles and strategies/policies, but in order to initiate implementation of the SPF the following areas will be given priority:

**Research and Development**

	<ul style="list-style-type: none"> <li>• Human resource development at central as well as cantonment level</li> <li>• Aquaculture production from all kinds both Inland and Marine;</li> <li>• Community fishery and rice field fisheries production;</li> <li>• Reduction of post-harvest losses and waste at small scale operators;</li> <li>• The development and implementation of Fisheries Cantonment plans;</li> <li>• Conservation and protection including:</li> </ul> <p>The mapping, demarcation and protection of flooded forest  The protection and conservation of Upper Mekong deep pools  The area of critical fisheries habitats under sustainable management  A comprehensive plan for regional cooperation to address international issues facing fisheries in Cambodia, including climate change, damming and environmental degradation, developed.</p> <p>The fisheries sector is highly vulnerable to the changes in temperature and hydrological flows that are associated with climate change. Such changes could have significant impacts on migration, breeding and spawning patterns while also adding pressure to critical fisheries habitats. The level of water in the Tonle Sap, flood plains and deep pools in the major river systems are highly critical for the breeding and local migration of fishes.</p>	
<p><b>Health</b></p>	<p>Climate change affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter. It is identified and recognized (WHO 2018) that between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year, from malnutrition, malaria, diarrhoea and heat stress. The direct damage costs to health (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), is estimated to be between USD 2-4 billion/year by 2030. Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond. Reducing emissions of greenhouse gases through better transport, food and energy-use choices can result in improved health, particularly through reduced air pollution. The death that climate change will cause an additional 250,000 deaths annually between 2030 and 2050:</p> <ul style="list-style-type: none"> <li>• 38,000 are due to heat exposure in the elderly</li> <li>• 48,000 due to diarrhea</li> <li>• 60,000 due to malaria</li> <li>• 95,000 due to childhood malnutrition.</li> <li>• 9,000 due to others</li> </ul> <p>In addition to that, Cambodia has been facing health risks caused by malaria, dengue and vector borne diseases. Those diseases increases in certain season of the year linking with climatic pattern. Following are some key issues to consider:</p> <p><b>Measuring the health effects</b>  <b>Who is at risk?</b>  All Cambodians are at risks affected by climate change, but some are more vulnerable than others. People living in rural areas and other coastal regions, and mountainous are particularly vulnerable. Children – in particular, children living in poor remote areas are among the most vulnerable to the resulting health risks and will be exposed longer to the health consequences. The health effects are expected to be more severe for elderly people and people with infirmities or pre-existing medical conditions.</p>	

Areas with weak health infrastructure – mostly in malaria and dengue prone provinces – will be the least able to cope without assistance to prepare and respond.

Health exposures affected by climate change increase numbers of warm days and nights; increase in frequency and intensity of heat waves and increased fire risk in low rainfall conditions that cause heat-related mortality; increased incidence of heat exhaustion and heat stroke, particularly for outdoor laborers, athletes, elderly; exacerbated circulatory, cardio-vascular, respiratory, and kidney diseases; increased premature mortality related to ozone, and air pollution produced by fires, particularly during heat waves. Such exposure impacts greater risk of injury, disease, and death due to more intense heat waves and fires.

Higher temperatures and humidity, changing and increasingly variable precipitation, higher sea surface and freshwater temperatures that accelerates microbial growth, survival, persistence, transmission, virulence of pathogens; shifting geographic and seasonal distributions of e.g. cholera, schistosomiasis, and harmful blooms; lack of water for hygiene; flood damage to water and sanitation infrastructure, and contamination of water sources through overflow that trigger to increased risks of food- and water-borne diseases.

#### **What is the impact of climate change on health?**

Although global warming may bring some localized benefits, such as fewer winter deaths in temperate climates and increased food production in certain areas, the overall health effects of a changing climate are likely to be overwhelmingly negative. Climate change affects social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter.

#### **Extreme heat and health**

- Extreme high air temperatures contribute directly to deaths from cardiovascular and respiratory disease, particularly among elderly people. In the heat wave of summer 2003 in Europe for example, more than 70,000 excess deaths were recorded.
- High temperatures raise the levels of ozone and other pollutants in the air that exacerbate cardiovascular and respiratory disease.
- Pollen and other aeroallergen levels are higher in extreme heat. These can trigger asthma, which affects around 300 million people. Ongoing temperature increases are expected to increase this burden.

#### **Natural disasters and variable rainfall patterns and health**

Globally, the number of reported weather-related natural disasters has more than tripled since the 1960s. Every year, these disasters result in over 60,000 deaths, mainly in developing countries.

- Rising sea levels and increasingly extreme weather events destroy homes, medical facilities and other essential services. More than half of the world's population lives within 60 km of the sea. People may be forced to move, which in turn heightens the risk of a range of health effects, from mental disorders to communicable diseases.
- Increasingly variable rainfall patterns are likely to affect the supply of fresh water. A lack of safe water can compromise hygiene and increase the risk of diarrhoea disease, which kills over 500,000 children aged under 5 years, every year. In extreme cases, water scarcity leads to drought and famine. By the late 21st century, climate change is likely to increase the frequency and intensity of drought at regional and global scale.
- Floods are also increasing in frequency and intensity, and the frequency and intensity of extreme precipitation is expected to

continue to increase throughout the current century. Floods contaminate freshwater supplies, heighten the risk of water-borne diseases, and create breeding grounds for disease-carrying insects such as mosquitoes. They also cause drownings and physical injuries, damage homes and disrupt the supply of medical and health services.

- Rising temperatures and variable precipitation are likely to decrease the production of staple foods in many of the poorest regions. This increase the prevalence of malnutrition and undernutrition, which currently cause 3.1 million deaths every year.

#### **Patterns of infection and health**

- Climatic conditions strongly affect water-borne diseases and diseases transmitted through insects, snails or other cold blooded animals.
- Changes in climate are likely to lengthen the transmission seasons of important vector-borne diseases and to alter their geographic range. For example, climate change is projected to widen significantly the area of China where the snail-borne disease schistosomiasis occurs.
- Malaria is strongly influenced by climate. Transmitted by *Anopheles* mosquitoes, malaria kills over 400,000 people every year – mainly African children under 5 years old.
- The *Aedes* mosquito vector of dengue is also highly sensitive to climate conditions, and studies suggest that climate change is likely to continue to increase exposure to dengue. Dengue caused health risks increased in Cambodia highly in 2019.

#### **Increased Risk on health**

- Climate change affects the transmission, frequency, and severity of communicable diseases through different mechanisms depending on the nature of the disease.
- Changes in temperature increases the risk of acquiring food borne diseases since food is stored, transported, handled, and prepared under warm ambient conditions.
- Ambient temperature, humidity, and availability of water for breeding determine the distribution, reproduction rate, biting behavior, and survival of vectors. The amount and temperature of rainfall influences the transport and transmission of infectious agents, as well as their growth and survival.
- Frequent flooding may increase the risk of pathogen transmission from rodents, causing diseases such as leptospirosis and tularemia.
- Climate change directly affects the transmission of mosquito-borne diseases, including malaria, dengue, and viral encephalitis by shifting the vector's geographic range and increasing reproductive and biting rates and by shortening the pathogen incubation period.
- Increases in sea surface temperatures and sea level can lead to increased incidence of water-borne infectious and toxin-related illnesses, such as cholera and shellfish poisoning
- The response of the Royal Government of Cambodia and its key partners like WHO to address the health risks caused by climate change

Many policies and individual choices have the potential to reduce greenhouse gas emissions and produce major health co-benefits. For example, cleaner energy systems, and promoting the safe use of public transportation and active movement – such as cycling or walking as alternatives to using private vehicles – could reduce carbon emissions, and cut the burden of household air pollution, which causes some 4.3 million deaths per year, and ambient air pollution, which causes about 3 million deaths every year. The WHO work plan endorsed by most of the governments including the RGC includes:

	<ul style="list-style-type: none"> <li>• <b>Partnerships:</b> to coordinate with ministry of health to ensure that health is properly represented in the climate change agenda.</li> <li>• <b>Awareness raising:</b> to provide and disseminate information on the threats that climate change presents to human health, and opportunities to promote health while cutting carbon emissions.</li> <li>• <b>Science and evidence:</b> to coordinate reviews of the scientific evidence on the links between climate change and health, and develop a global research agenda.</li> <li>• <b>Support for implementation of the public health response to climate change:</b> to assist ministry of health as the key counterpart to build capacity to reduce health vulnerability to climate change, and promote health while reducing carbon emissions.</li> </ul> <p>Further recommendations were made to see the health as the main and essential concern in the climate debate</p> <ul style="list-style-type: none"> <li>• To estimate the range, timing, and magnitude of future health impacts induced by climate change, disease incidence data are needed to serve as baseline epidemiologic data.</li> <li>• To emphasis on interdisciplinary and holistic approach among governments, societies, and individuals coupled with changes in behavior and practices in order to reduce the impact of climate change and ensure sustainability.</li> <li>• To focus on efficient implementation of adaptation strategies and its integration into the national health systems to mitigate the health effects of the current climate variability.</li> <li>• To strengthen surveillance systems for climate-sensitive infectious diseases including better use of early warning information to anticipate onset, duration, and intensity of epidemics</li> </ul>	
<b>Water Resources</b>	<p><b>Water and Climate Change perspectives of Cambodia</b></p> <p>The Kingdom of Cambodia is considered one of the most water-abundant countries in the region. Rivers and streams, lakes, aquifers and marine water are important sources for national economic development in many sectors, such as agriculture, manufacturing and small-scale industries, hydropower, navigation, tourism, environmental protection and daily life. Cambodia's economy is highly dependent on water. The importance of water for food production, rural livelihoods and economic development is recognized in the Government's Rectangular Strategy (RS) on Growth, Employment, Equity and Efficiency (Phase 2, 2008), the National Strategic Development Plan (NSDP) Update (2009-2013) and the Strategy for Agriculture and Water Resources (SAW 2009-2013).</p> <p>Cambodia has experienced an increase in average temperature of 0.8° C since 1960, a rate of about 0.18° C per decade that has been impacting water sector highly. The rate of increase is faster in the dry seasons, at 0.20-0.23° C per decade, and slower in the wet seasons, at a rate of 0.13-0.16°C per decade. The duration of hot days and nights has become more prolonged since the 1960s with the average number of hot days per year between 1960 and 2003, rising by 46, an additional 12.6 percent of days. It is forecasted that the average temperature of Cambodia will increase by 0.7 to 2.70C by 2060, and 1.4 to 4.30C by 2090. The forecasts also show that the number of hot days will increase by 14-49 percent by 2060, and 20-68 percent by 2090. Days considered hot in Cambodia are projected to increase more quickly (rising by 29-96</p>	

percent) in the summer by 2090. In Cambodia, there are two types of water resources annually, there are approximately 17,600 million cubic meters of aquifer groundwater; and 75,000 million cubic meters of surface water from run off. Water has a very important role in agriculture, industry, household use, navigation (waterway traffic), tourism and hydropower. The largest amount of the water used each year is estimated to be around 750 million cubic meters (10 percent of the country's total available water), of which 95 percent (710 million cubic meters) is used for irrigation in agricultural production.

However, it has been accepted that Climate Change (CC) will increase water management challenges; less rainfall is anticipated during the dry season and more during the wet season, with more extreme weather events and potentially worse seasonal water shortages and floods. Challenges are more threatening to a developing country like Cambodia, where meteorological systems are not yet able to forecast extreme weather, like flash floods and unpredicted drought, which have often happened in Cambodia.

**Goal for water resources management to relating to climate change strategic plan** is to fulfil all climate change adaptation activities in water resources management and development for sustainable water resource use.

#### **Climate Change Impact on water resources**

The impacts of climate change is an unprecedented and increasing global threat to life, livelihoods and life-supporting systems. Cambodia is expected to experience higher and more intense rainfall. The effects are likely to include more severe water scarcity and more frequent floods, resulting in crop failures and food shortages. Accelerated loss of biodiversity will negatively affect ecosystems. Coastal communities and eco-systems are likely to be affected by rises in sea levels, and higher temperatures and humidity will create conditions for increased incidence of malaria and dengue fever. The poor and marginalized, particularly women and children, will be worst affected.

**Impacts on water resources sector:** problems of increased flood and drought, changes in water supply and water quality, and increased competition for water. The irregular seasonal times of wet and dry months caused by climate change, especially during the last few decades, impacts on water resources management and development efforts. At the same time, there is increased demand for water from emerging sectors, including industry, livestock, domestic use, and especially agriculture; coupled with seasons changing due to climate change, this creates many more social problems. With global warming, Cambodia's temperature has increased making it difficult to prevent loss of water from evaporation. Ground water requires recharging annually from rain water. Due to climate change impacts on the amount of rain water needed to recharge ground water, the recharge rate is seriously reduced, leading to Cambodian farmers having insufficient ground water for farming. It is worth noting that ground water shares 3.1% of the total 4.5% of current irrigation water, while surface water takes the rest (MOWRAM, 2008).

**Impacts on reservoir:** Many reservoirs are gradually getting shallower because of sedimentation, which leads to reduced capacity for water storage

**Impacts on irrigation systems and hydraulic infrastructure:** Irrigation systems and hydraulic infrastructure have not yet been modernized, or taken climate change into consideration in almost all areas of the country. Floods and droughts impact on irrigation systems

and hydraulic infrastructure. Most importantly, floods cause tremendous negative impacts on irrigation systems located in low land areas.

**Impacts on Dam/weir:** Frequent floods destroy dams; most of them are old and the impacts of climate change on them have not been considered.

**Impacts on Flood Protection Dike (FPD):** Most dikes have been destroyed by floods, as during each flood, water overflows on these Flood Protection Dikes. The potential impacts of climate change were not taken into account during the construction of the FPDs. Moreover, these FPDs are made from soil.

**Impacts on River Bank and Coastal Areas:** the erosion of beaches/banks caused by floods and/or high speed waves, brought on by the impacts of unpredictable climate change, leads to negative impacts on rural livelihoods, especially on farmers who are completely dependent on limited land areas

#### **Institutional arrangements in water resources management and development**

- **Mandate of the Ministry of Water Resources and Meteorology**
- Define policies relating to strategic development of water resources
- Research and investigate water resources
- Prepare plans for water resources development and conservation
- Manage direct and indirect water resource use, and mitigate water-related disasters
- Gather and manage hydro-meteorological data and information
- Provide technical advice
- Administer international collaboration, including within the Mekong River basin
- **Mandate of the Cambodia National Mekong Committee**
- Advise the Cambodian representative to MRC on all matters relating to activities within the Mekong River basin that could affect Cambodian interests
- Review proposals prepared by RGC agencies in light of the Mekong agreement
- Liaise between MRC and RGC agencies

#### **Climate Change Strategy for water resources**

Several challenges for adaptive capacity, and responses to climate change, are summarized as follows:

- Awareness and knowledge on climate change related to water resources management and development must be mainstreamed into the development aspects of all water-related sectors at local, provincial and national levels, through TV spots, radio and media campaigns;
- Staff capacity building on water resources/climate change through long-term studies, short-course training and exchange study tours in and out of the country and the region;
- Establishment of a data management system for collecting and sharing data and information on water resources/related climate change issues, and adaptation/ mitigation capacity of related stakeholders;
- Establishment and/or improvement of networks for meteorology and hydrology to manage and control the impacts of, for example, temperature, rainfall, flood, drought and weather;

- Mobilization of secured financial resources from government agencies and development partners for programs/projects, research and development on water resources/climate change adaptation or mitigation;
- Strengthening the capacity of local farmers, especially FWUC members, on the selection of lower-water crop varieties, and the planning of a lower-water crop system for climate change adaptation;
- Development of long-term water resources integrated planning, to provide the best chance of minimizing the negative effects of sea-level rises;
- Strengthening the cooperation and coordination mechanism among different sector agencies at local, national, regional and international levels, applying IWRM aspects to respond to climate change adaptation and/or mitigation;
- Improve and introduce technologies in water work development to respond to the negative impacts of climate change.

#### **Climate Change Roadmap and Implementation Plan for water resources**

Aligning with the government's National Strategic Development Plan (2009-2013), MOWRAM set its strategic roadmap for water resources climate change related management and development plan as follow: Capacity building for staff and farmers/public on climate change adaptation/mitigation in regard to water resource development and management.

- Mobilize technology and financial resources for water resources and meteorology development in responding to climate change impacts.
- Data management in regard to water resources and meteorology for timely climate change responses.
- Develop integrated long-term water resources and meteorology countrywide plans for climate change adaptation and mitigation.
- Establish national policy and legislation in responding to water resources and meteorology management.
- Strengthen inter-ministerial coordination in the framework of climate change adaptation and mitigation.
- Gender mainstreaming in water resources management and development is one of the most important targets of MOWRAM. A gender balance in water resources and meteorological management is firmly implemented as:
- Improve gender balance in water resources management through capacity building;
- Create opportunities for women in socio-economic and political participation;
- Mainstream gender balance and support at both national and sub-national levels;
- Engage women in capacity building through on-the-job training in offices and abroad;
- Ensure that water resources-related services benefit women, especially in the FWUC.

#### **Water Resources Climate Change Adaptation Strategy**

Based on previous excellent achievement, such as improvement of the irrigation system, rehabilitation of pumping stations and water pumps, water supply and sanitation, and the establishment of FWUCs, the water resources climate change adaptation strategy should be included in future plans. As the Master Plan of Water Resources Development in Cambodia has been developed with very detailed and specific management plans for water schemes (MOWRAM, 2008), our water-climate change adaptation strategy should focus on main adaptive strategies and activities as follows:

- Awareness and knowledge on climate change related to water resources management and development must be mainstreamed to all water-related sectors' development aspects at local, provincial and national levels through TV spots, radio and media campaigns.
- Staff capacity building on water resources/climate change through long-term studies, short-course trainings and exchange study tours in and out of the country and the region.
- Establishment of a data management system for collecting and sharing data and information on water resources-related climate change issues and adaptation/mitigation capacity to related stakeholders.
- Establishment and/or improvement of networks for meteorology and hydrology to manage and control, for example, the impacts of temperature, rainfall, flood, drought and weather.
- Mobilization of secured financial resources for programs/ projects, research and development on water resources-climate change adaptation or mitigation, from both government agencies and development partners.

Strengthen the capacity of local farmers, especially FWUC members, on the selection of less-water crop varieties, and the planning of a less-water crop system for climate change adaptation.

#### **Water Resources Climate Change Mitigation Strategy**

Water ecosystems, such as wetland and marine water, are considered areas for carbon sequestration and carbon stock. When water areas, such as wetlands, change for other development purposes, for example, agriculture activities, carbon stock areas will be lost. In this regard, the climate change mitigation strategy in water resources management should be to reduce the change of land use as much as possible. As the law on water resources management states, the MOWRAM strategy in climate change mitigation should be to uphold the enforcement of the law as much as possible. At the same time, all water resources management regulations must be strongly implemented. Water resources management and meteorology in regard to climate change mitigation, which can be related to main mitigation strategies and activities, are as follows:

- Develop long-term water resource integrated planning, providing the best chance of minimizing the negative effects of sea-level rises.
- Strengthen cooperation and coordination mechanisms among different sector agencies at local, national, regional and international levels, applying IWRM aspects to the climate change adaptation and/or mitigation response.
- Introduce technologies in water work development and rehabilitation in order to respond to the negative impacts of climate change.
- Responding to the challenges caused by climate change on water, water resources and water facilities; government institutions, development partners and civil society organizations have been addressing several activities. The respective government institutions particularly the MOWRAM in Cambodia has come up with vigorous initiatives. To support the water resources for long term, MOWRAM has its long term and short term water resources

management related policy, program and projects. The relevant initiatives taken by different ministry or agencies are central to the certain policy and objective architectures. The objectives are as follows:

#### **Objective for water resources**

With the global changing climate, and climate change mitigation and adaptation, the objectives of the CCSP for water resources are:

- Protect, manage and use water resources in effective, equitable and sustainable manners, protecting them from the negative impacts of climate change;
- Along with climate change adaptation and mitigation schemes, regulate, modify and resource service fees for all water resource development activities;
- Maximize sustainable water resources contributions to poverty reduction, enhanced livelihoods and equitable economic growth;
- Adapt to climate change and mitigate its effects on water resource-based livelihoods;
- Apply Integrated Water Resources Management (IWRM) that allows for holistic planning across sectors, jurisdictions and local government borders for climate change adaptation and mitigation;
- Create stronger community participation, such as FWUC, in water resource management and development, to address impacts or obtain benefits from climate-change induced opportunities;
- Raise awareness and capacity of institutions, and quality of officials in climate change adaptation and mitigation, to enable sustainable development and management of water resources;
- Ensure environmental protection and conservation of water resources;
- Apply modern sustainable management models adaptive to climate change context;
- Partner with the private sector to develop sustainable financial systems.

There are several initiatives taken by UN and other international agencies:

- The European Commission's Humanitarian Aid Program provides funds to various NGOs to implement health programs and to provide access to safe water and sanitation for whole villages in the most remote rural areas;
- The United Nations Development Programme provides assistance in the fields of governance reforms, political processes, and private sector development (ADB 2008b).
- UNDP promotes integrated, ecosystem-based, climate resilient management of the world's rivers, lakes and oceans through improved governance, smarter resource management and continued environmental stewardship.
- Sustainable Management of Oceans in a Changing Climate assists in applying integrated, ecosystem-based, climate resilient approaches to sustaining ecosystem services.
- Protection of Transboundary Surface and Ground waters shared water systems are under threat from pollution, inefficient water use, habitat loss and climate change and can become the source of local and regional conflicts. UNDP-GEF's Shared Waters programme assists groups of countries sharing such waterbodies to identify priorities and agree upon regional and national governance reforms to promote integrated, ecosystem-based, climate resilient approaches to shared water resources management.

## Gender Mainstreaming in SPCR Investment Projects vs Opportunity for Improvements (Gaps)

34. The SPCR investments are good examples of gender responsive investment initiatives. There are 51.47% are direct women beneficiaries of the seven investment projects in Cambodia. The analysis shows that there further opportunities to improve relating gender mainstreaming. The Table -1 identified and highlighted the key issues relating gender in the projects. But the projects have not quantified the levels vulnerability, capacity baseline and targets of women, children, elderly people, people with disabilities etc. The Table -1 demonstrates the levels of supports made for gender mainstreaming and also identified the opportunity for further improvements (gap).

*Table 4: SPCR investment projects' initiatives to address the climate caused vulnerability and identified gaps for mainstreaming gender to cope to enhance vulnerability reduction processes (highlighted issues addressed by the SPCR Investment projects)*

The Rural Roads Improvement Project II		
Project Output	Proposed Activities and Targets	Gaps and needs analysis
Output 1: Rural Road Improvements	Civil works subcontractors will prioritize the use of local unskilled labor where possible	The SPCR investment projects have conducted Gender Action Plan for each of the project. Further, following are the key opportunity for further improvements of the investment projects: 1. Sex-disaggregated baseline capacity for each SPCR investment projects implementing agency and key /direct beneficiaries. 2. Sex-disaggregated vulnerability baseline to demonstrate how women, children, elderly people, people with disabilities, youth etc. have been coping with the risks caused by climate change 3. Study to quantify the cost of gender mainstreaming in climate caused vulnerability reduction for the direct beneficiaries and 4. Economic
	Contractors will <b>hire women for at least 20% of the required unskilled labor</b> days through enhanced awareness using the MRD <i>Ready for Roads</i> tools and outreach materials	
	<b>Unskilled men and women workers will receive equal pay for equal work.</b>	
	Contractors will <b>not hire child labor.</b>	
	Contractors will ensure strict implementation of the safeguard measures during civil works and at the camp sites,	
	including wearing personal protection equipment, hard hats, gloves, safety boots, etc.	
	Road shoulders will have a sealed bituminous surface enabling carts with wheels to reduce the burden on women and girls who haul water in rural areas.	
	Green planting will include work programs that involve community women in planting and maintaining roadside plants, and at least <b>70% of the workers will be women.</b>	
Output 2: Rural Road Asset Management	<b>Capacity of the local contracting industry will be built,</b> including gender and labor-based approaches to routine maintenance	
	A <b>sex-disaggregated registry of local unskilled labor</b> will be available for contractors, and PDRDs will be able to track the use of local labor.	
	A road maintenance action plan for MRD and PDRDs will support sustainable road maintenance regime, with works delegated to rural communities through small community contracts.	
	Training on road maintenance will be provided to local women and men.	
	At least <b>20% of road maintenance workers will be women.</b>	
Output 3: Road Safety and Community Awareness Program	All project roads will have road safety signs and safe speed reduction measures especially on busy sections (i.e., in front of hospitals, clinics, schools, markets, etc.) to ensure the safety of the local residents and especially women, children, disabled, and elderly persons.	
	A community road safety program will involve community members as facilitators, of whom at <b>least 30% will be mothers</b> who lead daily road safety activities at schools.	

	An HIV/AIDS and Human Trafficking prevention program will mitigate potential negative impacts during and after construction. The program will target communities, construction workers, schools, and other stakeholders. 40% of residents (50% women) and all contractor personnel will participate in the HHTPP. All socio-economic baseline data will be sex-disaggregated.	costs and benefits quantification of gender mainstreaming in climate change adaptation investments
Output 4: Project Management Support	Capacity building will be provided to the SEO, contractors, and PDRDs. Recruit 3 additional staff for the SEO (at least 1 woman). Recruit 1 international social development specialist and 2 national gender specialist consultants. All PMU staff (currently 7 men, 5 women but likely to increase to 14 men, 8 women) will participate in training on	
Output 5: Connectivity Improvements for Mekong River Island	Island road improvements using concrete will be labor-based At least 40% of the unskilled work days created will be for women.	
<b>Greater Mekong Sub-region Flood and Drought Risk Management and Mitigation Project (RRP REG 40190)</b>		
Project Output	Proposed Activities and Targets	
Output-1 Enhanced regional data, information and knowledge base for the management of floods and droughts	Actively identify and recruit qualified women staff Ensure at least 2 women are trained on forecasting models and climate change Gender and community vulnerability issues will be assessed and addressed study on trans-boundary flood management.	
Output-2 Upgraded Water Management Infrastructure	Ensure at least 40% of participants of technical training (flood and drought resilience farming, animal health, water and sanitation, wetland and water conservation, trafficking, domestic violence, agricultural production technique) and any other related training identified by stakeholders are women Provide equal opportunity and equal pay for equal work to both females and males for labour construction Ensure at least 30% of unskilled workers are women through condition of bid documents	
Output-3 Enhanced capacity for community based disaster risk management	Ensure at least 40% of participants in all public consultations for the development of safer village and commune plans are women Schedule of CBDRM training for community should be conducted to fit the schedules of both men and women in the community schedule to ensure effective participation of both Ensure CBDRM training modules are gender sensitive and address the needs of women Ensure at least 30% of members of the farmer water user committees are women Ensure at least 40% of women in project communes participate in the formulation, implementation and training on CBDRM Ensure at least 30% of CBDRM group members are women Gender sensitive awareness material for CBDRM prepared (Gender sensitive materials for CBRM will be tested with communities ensuring they, especially women clearly understand.)	
Output-4	Ensure qualified women are encouraged to apply for position in the project	

Effective project implementation	Strengthen capacity building of Existing Gender Focal Point at PDWRAM on gender issues in flood and drought, on implementation and monitoring
	Conduct a consultation workshop on the project GAP to introduce and get feedback, on the gender actions with all project consultants, all government counterparts as well as project management team at national and provincial levels.
	Adjust GAP as required based on further gender analysis during implementation to ensure effective gender mainstreaming actions are implemented
	Provide capacity building on gender issues in flood and drought, how to mainstream gender in CBDRM to all consultants, government counterparts, and management levels
	Conduct regular meeting with gender focal points and GFP, and monitoring on the implementation of the project GAP by project gender consultant.
	Provide capacity building on monitoring, gender mainstreaming in CBDRM, gender issues in flood and drought to the gender counterparts by CBDRM/Gender Specialist
	Ensure adequate funds available to implement GAP
	Data disaggregated by sex and ethnic origin shall be collected in all communities covered by the Project and analyzed to verify effective and equitable implementation of the GAP and Project activities
<b>Greater Mekong Sub-region Biodiversity Conservation Corridors (RRP REG 40253)</b>	
Output 1: Institutional and community strengthening for biodiversity conservation management	30% participation of women during consultations; training in participatory land use planning, commune/village investment planning, GIS-based mapping, and functional literacy; capacity building in biodiversity corridor management, O&M, small enterprise development, assessment, and in working groups/committees to be established by the Project.
	Gender sensitive training/IEC materials will be produced in local languages, (where applicable) to be prepared in close consultation with beneficiaries specifically, on land rights, credit, and access to resources and opportunities provided by the Project, linking up with on-going government and development partner programs on health/sanitation and HIV/AIDS education, and climate change adaptation.
	At least 50% of female heads of households receive forestland and land use certificates (LUC) collectively and/or individually where applicable, for livelihood purposes and productivity enhancement; where applicable, ensuring both husbands and wives signature on land use certificates.
Output 2: Biodiversity corridors restoration, ecosystem services protection & sustainable management by local resource managers	Forest restoration activities (enrichment planning, NTFP planting, agro forestry) include at least 30% of women's labor input participation on cash basis
	National gender specialist to oversee preparation of community disaster risk and response plan, and conduct gender-responsive workshops ensuring access to information by women on mapping household vulnerability and livelihood options
Output 3: Livelihood improvement and small scale infrastructure	Documented evidence of consultation with local women and women's groups (including women from IP/ethnic groups) prior to subproject approval.
	At least 30% of Village/Commune Development Fund (V/CDF) investments targeted at livelihood activities (micro-

support in target villages and communes/clusters	credit borrowings) prepared and submitted by community womenfolk;
	At least 30% of extension training directed at women producers (animal production, agriculture productivity)
	At least 30% of V/CDF Management Board members are women.
	Preparation of gender responsive designs for water storage/water harvesting systems to combat drought and water stress
	Equal pay for men and women for work of equal type.
Output 4 Project management and support services	Training on Village/Commune Development Funds is gender responsive and gender sensitive
	Gender mainstreaming training for Project Management Units across levels at Project start.
	At least 20% of staff is women at each level (senior management, technical and administrative / support staff).
	Project Implementing Unit responsible for overseeing GAP implementation and reporting must include progress against the GAP in annual / semi-annual progress reports to ADB
	Participation of national institutions addressing concerns on women and IPs/ethnic groups across Project implementation units, especially in monitoring and grievance redress (Grievance redress mechanism disaggregated feedback and response by sex)
	Both female and male staff given equal opportunity to participate in non-gender related training and capacity development programs.
	A national social development/gender consultant recruited to (i) build capacity of Project management units across levels, Project staff and facilitators in gender responsive design and analysis; (ii) preparation of gender sensitive indicators; (iii) preparation of checklists for evaluation of gender responsiveness of proposed subprojects; and (iv) coordination of relevant consultancies as appropriate. Sex-disaggregated indicators
	Sex-disaggregated indicators established for Project performance M&E system; monitoring will be on-going to ensure activities are effectively carried out and targets reached; progress reports to include gender-related achievements and constraints.
	Mid-term review Mission to assess gender related achievements and constraints to GAP implementation and propose, if required, adjustments for better Project performance.
	<b>Climate-Resilient Rice Commercialization Sector Development Program (RRP CAM 44321)</b>
Output 1 A conducive legal and regulatory environment established to facilitate climate resilient rice commercialization	Ensure gender analyses and quantitative and qualitative data inform the development of all policies.
	Ensure inclusion of gender expertise in each technical working group for policy development to address the needs of women farmers.
	Ministry of Land Management, Urban Planning and Construction (MLMUPC) and Council for Land Policy (CLP) will issue the Land Policy "White Paper", including a chapter on Land and Gender Policy, integrating gender issues in land administration, management and distribution. Gender issues will be subsequently mainstreamed into the Agricultural Land Policy and the Law on Management and Use of Agricultural Land.

	<p>The Guideline for Establishing Agricultural Land-use Zones will incorporate measures for involving women in planning and decision making.</p> <p>All above laws and legal documents will be adequately disseminated amongst male and female farmers.</p>
<b>Output 2</b> Agricultural land use zoning improved	<p>Ensure the participation of women and women heads of households, in the collection of data and information relating to land-use zoning through use of women farmer focal group discussion meetings. In particular, 90 groups of farmers consulted (with <b>at least 40% female representation</b>) during the preparation of commune land use plans by 2015.</p>
<b>Output 3</b> Climate-resilient rice value chain infrastructure developed	<p>Women will comprise 50% of the community membership of construction subcommittees.</p> <p>Separate women farmers' meetings will be held to discuss women's needs related to location, alignment and access to irrigation infrastructure.</p> <p>Final designs on infrastructure investments will be signed off by construction subcommittees and the commune councils before submission to the government for approval. Further changes to the design must again be approved by the construction sub-committee.</p> <p>In labor-based civil works, <b>40% of unskilled laborers</b> will be women. Women will receive equal pay for equal work. Child labor will not be employed. These conditions are to be included in all construction contracts.</p> <p>Employment opportunities targeted at men and women will be communicated to communities.</p> <p>Target of <b>at least 30% employment</b> of women as unskilled laborers in rice drying and warehousing facilities.</p> <p>Target <b>50% women's employment</b> as administrative staff in rice drying and storage facilities.</p> <p>Target <b>50% women employed</b> in seed production facilities as unskilled and semiskilled laborers, e.g. seed and seed-bed preparation, weeding and seed grading and sorting, packaging, etc.</p> <p>Occupational safety measures and training provided to all workers.</p> <p>Farmer's Water User Committees (FWUCs) will accept membership registrations from husband <b>and wife - 50% target</b> for each.</p> <p>Target <b>at least 30%</b> women in management positions in FWUCs. Women will be provided training on leadership and management and will be remunerated for their roles.</p> <p>FWUC advisory committee will be established to monitor FWUC activities will <b>comprise 50% women.</b></p> <p>Affected members dissatisfied with FWUC resolutions of disputes, have the right to appeal to the FWUC advisory committee.</p> <p>Water provision where feasible, will include both irrigation and non-irrigation water needs of households</p>
<b>Output 4</b> Enhanced rice value chain support services for quality improvement	<p>Target at least <b>30% women in</b> management positions in farmer cooperatives.</p> <p>Women will be provided training on leadership and management.</p> <p>Farmers' cooperatives will accept membership registrations from husband and wife. Membership targets are 50% for male and female.</p> <p>Women will comprise 50% of participants in all project supported training in extension and water management.</p> <p>Agricultural extension training materials and revision of "technology implementation procedures" will include specific training needs identified by women farmers on enhancing</p>

	<p>productivity, diversification of produce (including knowledge related to crops other than rice which require less water supply to increase crop returns for women farmers on marginal land), animal husbandry and safety procedures and new income generating activities.</p> <p>Some <b>50% of farmers</b> in pilot on-farm trials and demonstrations will be women.</p> <p>Extension training schedules will ensure that location and timing of delivery are convenient for women.</p> <p>Training materials will be designed to meet the needs of female and male farmers, including illiterate farmers.</p> <p>Some <b>25% of agricultural</b> extension workers trained shall be women (proportionate to actual numbers of female extension workers).</p> <p>Mass media extension materials to be gender sensitive and designed to motivate smallholder women farmers to access certified seed, new production technologies, including land leveling, drying and storage facilities, pilot insurance scheme and potential new markets.</p> <p>Address lack of access to credit by women and poor farmers through (i) enhancing knowledge on requirements of microfinance institutions (MFIs) and banks; and (ii) innovative financial products to ease “traditional” collateral requirements.</p>	
<p><b>Greater Mekong Sub-region Southern Economic Corridor Towns Development Project (RRP CAM 43319-033)</b></p>		
<p><b>Output 1: Strategic Local Economic Development Plan adopted and implemented</b> 1.1 GAP Component 1 - Institutional Strengthening for Gender and Development Funded under capacity development and training</p>	<p>Gender issues reflected and mainstreamed in planning documents including socioeconomic development plans and master plans;</p>	
	<p>PIS consultant's gender specialists will collect sex-disaggregated data on EA/IAs staffing and technical designation as baseline and monitoring of gender targets for overall staff and management positions to refine the gender awareness training inputs;</p>	
	<p>Provide gender awareness and sensitization training for 30 EA/IA staff (each province); gender awareness training for managers and staff to increase sensitivity to different needs of women and men.</p>	
<p><b>Output 2: Priority urban infrastructure investments implemented</b></p>		
<p>2.1 GAP Component 2 – Empowerment for Women in Urban Community Development and Skills Training Funded under capacity development and training</p>	<p>Market assessment survey undertaken indicating current demand and economic growth areas in towns.</p>	
	<p>Training for women to better position their entry in the growing employment demand areas arising from project interventions, targeting <b>at least 500 women</b> per town, for example, construction skills training targeting women</p>	
	<p>A target of <b>90% women</b> for employing existing informal waste pickers in the MRFs funded under the project, including skills upgrade training. This is based on PPTA field data showing up to 95% of informal waste pickers are currently women.</p>	
	<p>Construction phase employment, construction workers will be <b>30% female</b>; contractor records to be gender disaggregated for monitoring purposes</p>	
<p>2.2 GAP component 3 – HIV awareness and prevention Funded</p>	<p>Awareness training provided by external HIV organizations and/or NGOs subcontracted by contractors during workforce mobilization for laborers and community surrounding construction locales</p>	

by construction companies		
2.3 GAP component 4 – sanitation, health and hygiene program Funded under capacity development and training	Training 2 health and sanitation promoters in each town through TOT program	
	Establish and train 2 MOWA staff as facilitators for IEC completion in each town	
	Target girls as well as boys in school awareness campaigns	
<b>Output 3: Institutional capacities strengthened</b>		
3.1 GAP component 6 – institutional strengthening for gender and development cost included in project output 1	Ensure that 30% of the overall staff positions and <b>30% of the management positions</b> in the project management units and project support units to be female	
<b>Integrated Urban Environmental Management in the Tonle Sap Basin Project (RRP CAM 42285)</b>		
<b>Output 1:</b> Kampong Chhnang Urban Environmental Improvements	Meaningfully consultation with women on detailed designs to ensure their needs and preferences are incorporated, and to include woman and child safety measures (e.g., embankment railing, solar lamp posts, emergency help buttons, and awareness on personal night safety).	
	Incorporate menstrual hygiene management features in communities for improved solid waste management (e.g., bins in separate public toilet stalls).	
	Equal pay for men and women for work of equal type.	
	Safe working conditions for men and women construction workers (e.g., separate toilet facilities for men and women).	
	Households irrespective of income, ethnicity or sex of household head receives equal compensation and payment for any land acquisition or resettlement losses.	
	PIU and NGO to work closely with PDOWA and WCCCs on ensuring women's participation in project activities in Kampong Chhnang.	
<b>Output 2:</b> Pursat Urban Environmental Improvements	Meaningfully consultation with women on detailed designs to ensure their needs and preferences are incorporated, and to include woman and child safety measures (e.g., sidewalks and drainage covers)	
	Incorporate menstrual hygiene management features in communities for improved solid waste management (e.g., bins in public toilet stalls).	
	<b>Equal pay for men and women</b> for work of equal type.	
	Safe working conditions for men and women construction workers (e.g., separate toilet facilities for men and women).	
	Households irrespective of income, ethnicity or sex of household head receives equal compensation and payment for any land acquisition or resettlement losses.	
	PIU and NGO to work closely with PDOWA and WCCCs on ensuring women's participation in project activities in Pursat	
<b>Output 3:</b> <b>Community Mobilization</b>	Sanitation grants to IDPoor 1 and 2, including female-headed households if categorized as IDPoor 1 or IDPoor 2.	

<b>and Environmental Improvements (CMEI)</b>	Meaningfully consultations with women in Kampong Chhnang and Pursat on priority small scale infrastructure improvements (e.g., gender-specific requirements for public infrastructure, such as separate latrines for women with trash bins, if appropriate).
	At least 40% of participants in CMEI activities and training are women
	Hygiene IEC campaigns covers topics that are important for women (e.g., at least 30% of hygiene campaigns focus on menstrual hygiene and solid waste management).
	Capacity development and IEC materials will be gender-sensitive
<b>Output 4: Strengthened sector coordination and operations</b>	Women's sanitation issues are incorporated in updated building code applications for six provincial towns around Tonle Sap (e.g., space in public bathrooms and separate toilets).
	Women's climate change needs and issues are incorporated in the proposed climate change adaption regulations for urban environmental improvements.
	At least 1 sector coordination meeting, chaired by MPWT, will include a discussion related to women's needs in integrated urban environmental management over project implementation
	Tonle Sap Urban Areas Development Framework and individual urban development strategies for Kampong Chhnang and Pursat are explained to women's groups
	Semi-autonomous urban service units in Kampong Chhnang and Pursat municipality are established and become operational (at least 20% of staff in each unit are women).
<b>Output 5: Strengthened Capacity for Project Implementation, and Operations and Maintenance</b>	At least 1 member of the Project Steering Committee is a woman
	At least 30% of PMU and 30% of staff in both PIUs are women (2014 Baseline: PMU=1 woman; PIUs have not been established).
	Project management and implementation consultants include an international social development /resettlement specialist (6 person-months) and a national gender specialist (6 person-months).
	Gender sensitivity and mainstreaming training is administered to all project staff (PSC, PMU, PIUs, and PCC).
	A resettlement/social development officer is appointed in the PMU
	The NGO appoints at least 30% women as part of their team for each town in Kampong Chhnang and Pursat.
	A government community coordinator is appointed in Pursat PIU and two government community coordinators are in Kampong Chhnang PIU
	A representative from the PDOWA is appointed to the provincial coordination committee in Pursat and Kampong Chhnang

	Project performance monitoring system includes sex-disaggregated data.	
	The annual project performance monitoring and evaluation reports will include progress against these indicators.	
	Progress reports (e.g., quarterly, safeguards, annual project performance monitoring and evaluation, and PPCR reports) include information on gender activities. The GAP monitoring table is updated and attached to the project progress report (twice a year)	
	GAP performance included in mid-term and final project reviews	
	At least 20% of technical training participants are qualified women.	

### ANALYSIS: GENDER MANSTREAMING IN ADAPTATION PLANNING

35. The quantifiable gaps and needs unfold the opportunity for reducing the gender gaps enhancing gender mainstreaming at all levels of the adaptation planning. Women account for only 38 percent of human capital wealth versus 62 percent for men is huge unlikeness. This gaps in the low and lower-middle income countries are even higher that leads to losses in wealth of \$23,620 per person globally. The gaps in earnings by women versus men (gender inequality) is estimated at \$160.2 trillion in 141 countries i.e. human capital wealth could increase by 21.7 percent globally, and total wealth by 14.0 percent with gender equality in earnings. It is about twice the value of GDP globally.
36. In ASEAN region, the economies could boost their collective gross domestic product (GDP) by US\$370 billion a year by 2025 if the existing inequity between the genders is eliminated while the report did not include Brunei and Lao PDR. Southeast Asian women contributed 36.4 percent of the combined regional GDP. But this percentage failed to capture the total welfare and economic activity of women in the region. The gender parity in Philippines and Viet Nam comparatively lower than those of other countries in the region.
37. After the MDG, the efforts of the localization of the SDGs in Cambodia creates an improved optimism for enhancing gender parity. Among the 9 targets and 14 indicators of global SDG 5, the Cambodian government has accepted 7 targets and 12 indicators into the CSDG framework. The Socio-Economic Policy Agenda (Rectangular Strategy IV) of the government, human resource development of the first rectangular is given the highest priority. It includes mainstreaming of gender equity in policy framework and national development plan to lessen the gender gap in different sectoral levels along with widening women entrepreneurship initiative, reducing domestic violence and sexual abuse against women and children and uplifting social morality.
38. The Royal Government of Cambodia (RGC) set the targets of assessment and implemented strategies the CSDG 5. There are six specific targets those include ending all forms of discrimination against all women and girls everywhere; eliminating all forms of violence against women and children everywhere, including trafficking and sexual and other types of exploitation; eliminating all harmful practices, such as child, early and forced marriage and female genital mutilation; instilling the value of unpaid care and domestic work and promotion of shared responsibility within the household; ensuring women's full and efficient participation in economic and politics, notably ratio of seats held by women in the legislative institutions

(indicator 5.3.1), female civil servants holding high position in public sectors (indicator 5.3.2) and women in Commune or Sangkat council (indicator 5.3.3); and ensuring universal access to sexual and reproductive health and reproductive rights.

39. The current efforts identified the root causes (gender discriminations and inequalities etc.) of huge economic losses at global, regional and country levels. It also initiated several mechanisms (SDG 5 and otherwise) to reduce the gaps. However, the overall efforts limit within qualitative spaces. It did not prioritize the sectoral gender gaps, the opportunities for which sector specify its prioritized areas, sex-disaggregated economic analysis, baseline and targets under given timeframe etc. as a result, the challenge remain in addressing the huge economic losses at global, regional and country levels.

40. Further, the entry points for reducing gender disparity, gender responsive empowerment

following the baseline and targets to facilitate that women, men, children, elderly people and people with disabilities can contribute significantly from their respective positions. The gender equality at country levels should include in results or outcomes and indicators to monitor and report. At country and sector levels, the outcomes and indicators should be

#### Box 11: What gender equality indicators should measure?

Gender equality indicators should measure the following:

- differences in participation, benefits, outcomes, and impacts for women, men, boys, and girls;
- changes in gender relations (positive or negative)—that is, changes toward equality, or changes toward inequality between men and women, and between girls and boys; and
- how these changes impact on the achievement of development objectives, particularly economic growth, poverty reduction, and sustainable development.

Source: J. Hunt. 2011. Introduction to Gender Sensitive Monitoring and Evaluation. Unpublished training notes

included in regional, country, or sector strategies and performance frameworks, or in national policies. Results and indicators at this level should be aligned, wherever possible, with existing national commitments and reporting obligations of partner countries on gender equality. Gender equality at program and project level should be used in design, monitoring, and evaluation frameworks and to describe the deliverables expected from programs and projects (Ref. ADB and AusAID, 2013).

41. Therefore, the gender equality indicators at sectoral levels should provide defined roles and responsibilities and identify the differences, benefits, outcomes and impacts to monitor and make individual accountable relating with the sex-disaggregated baseline. The initiatives should examine the levels of women's engagement, define the additional costs of gender mainstreaming, how much it will return if gender issues are mainstreamed etc. in the agriculture, health and water resources management and development initiatives.

## RECOMMENDATIONS

### Recommendation for Sectoral Policy Architecture Levels

1.1 The sectors should review and update its policy architecture to accommodate gender concerns in its policy, planning, program and projects, budgeting, monitoring & evaluation and outcome evaluation levels.

### Recommendation for Program and Project Levels

2.1 There should have at least one component or subcomponent (based on the nature of the investment project) to conduct (i) sex-disaggregated baseline capacity for gender mainstreaming and economic activities (ii) public and institutional awareness and capacity

building on specific areas to quantify/measure the progress made by the initiatives (iii) outcome monitoring and evaluation.

### Recommendation for Direct Beneficiaries Levels

3.1 The project should undertake economic analysis of gender mainstreaming in the initiative to demonstrate the overall economic returns of gender mainstreaming made. As for example: if there is an additional \$100 investment made for gender mainstreaming activities, how much it returns along with the other social, environmental etc. benefits.

## CONCLUSION

42. The economic analysis of gender mainstreaming in sectoral adaptation investment plans comprising sex-disaggregated baseline may be considered as one the most effective ways to quantify the economic progress and benefits. Therefore, the adaptations policy, plan, and project should be designed accommodating the gender responsiveness, baseline and economic analysis as a common component at all levels. Otherwise, policy analysts are not getting much more to justify and possibly warrantless decision rules. We conclude with an expectation that gender responsive adaptation plans considers the sex-disaggregated baseline and economic analysis of gender mainstreaming in the key sectoral adaptation investments.

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## APPENDIX 1

### Key Definitions

#### **Women's Empowerment**

“The concept of empowerment is related to gender equality but distinct from it. The core of empowerment lies in the ability of a woman to control her own destiny. This implies that to be empowered women must not only have equal capabilities (such as education and health) and equal access to resources and opportunities (such as land and employment), but they must also have the agency to use those rights, capabilities, resources, and opportunities to make strategic choices and decisions (such as is provided through leadership opportunities and participation in political institutions). And for them to exercise agency, they must live without fear of coercion and violence.”

#### **Voice and Rights**

This dimension focuses on women's decision making and ability to assert their rights in public and private life, including households, markets, and formal and informal institutions such as community-based and civil society organizations, government agencies, representative bodies, and peace processes. It includes women's participation and leadership in organizations used to implement development activities, such as village committees, water and school committees, local councils, and other consultative and decision making structures. Actions to reduce discrimination and protect women from violence and coercion, and reforms to enshrine the principles of CEDAW in legislation and customary justice systems are essential. For women to participate equally in decision making and leadership and enjoy their rights, efforts are needed to change the attitudes and behavior of male family members and leaders. Realistic targets for women's participation and leadership need to be identified with local stakeholders. Women's capacity to engage in organizations may need to be strengthened. Women's collective action to claim rights requires knowledge of human rights and the law, the self-confidence to act, and active women's organizations.

#### **Gender Capacity Building**

This dimension focuses on strengthening the capacity of development actors to design, implement, and evaluate policies and initiatives, to ensure that both men and women participate and benefit equally. This requires gender and social analysis and planning skills, including the ability to identify realistic targets, results, and indicators, and to develop, implement, and monitor gender action plans and strategies. Efforts are needed to strengthen the capacity of implementers, government agencies, national women's machineries, and civil society organizations including women's organizations. Supporting women's organizations to articulate women's experiences and priorities, advocate for gender equality at various levels, and hold duty bearers to account can be an effective strategy for achieving sustainable changes in gender relations.

#### **Economic Empowerment**

This dimension focuses on reducing inequalities in access to and control over productive resources, services, and assets, such as land, other property, employment, income, information, financial services, and other economic opportunities. It is essential to analyze the constraints that prevent women from accessing resources and benefiting equally from development programs and projects. Comparing rates of participation, access, and control by women and men is necessary to assess whether development initiatives are effective at reducing inequalities.

#### **Human Capital**

This dimension focuses on the fundamental building blocks for achieving gender equality and empowering women and girls. Enhancing human capital requires equitable access to and outcomes from health and education services. Access to information, services, training, and opportunities in other sectors is also critical. In order to achieve equitable human capital outcomes, it is essential to identify gender gaps; analyze how gender power relations affect access to services, opportunities, and outcomes; and design activities to meet the different needs of women, men, girls, and boys. Gender-based stereotypes, discrimination, and deficiencies in service quality need to be addressed to enhance human capital.

## Appendix 2

### Sample Evaluation Questions on Gender Equality

#### Human Capital

- (1) Has there been an increase in gender responsive participation and access<sup>1</sup> to agriculture, health and water resources' education, information, training, and other services? How does this compare to men's or boys' access to these services? Did the program address women's greatest needs for human capital? Provide inputs and outcomes demonstrate by comparison matrix.

#### Economic Empowerment

- (2) Has there been an increase in gender responsive access to or control over productive resources, services, or assets, including resources provided by the program based on the given roles & responsibilities? How does this compare to men's access to these resources, services, and assets? (Consider agriculture, health and water resources related employment, income, information, financial services, and other economic opportunities.) Did the program address the key barriers to women's economic empowerment and build on their strengths?

#### Voice and Rights

- (3) Have gender responsive participation and women been empowered to claim their rights in public and private spheres? Have women participated equally with men in the program, including in decision making and leadership? Has the program challenged or changed attitudes on women's and girls' rights (including attitudes on violence against women), strengthened women's knowledge of their rights, or fostered a greater understanding of women's rights among men and boys?

#### Gender Capacity Building

- (4) Is sex-disaggregated data regularly collected and analyzed? Have gender and social analysis skills been strengthened among key stakeholders, including their capacity to develop, implement, and monitor gender strategies? Is there a greater understanding of gender issues in the sector, and the most effective strategies to address women's needs and priorities, as well as those of men?

#### Lessons Learned about Constraints, Strategies, and Sustainability from each sector

- (5) What factors and strategies helped to foster positive changes toward gender equality? What constrained the achievement of equal participation, benefits, and outcomes for women and girls?
- (6) Were there some program components where men or boys benefited much more than women or girls, and what contributed to this?
- (7) Were there any unintended positive or negative changes in gender relations? What factors and strategies contributed to these changes?
- (8) Are positive changes in gender relations likely to be sustained? What factors will contribute to this, and what is likely to undermine the sustainability of positive changes?
- (9) How did any changes in gender results affect the achievement of the overall program goal and outcomes? Have positive changes toward gender equality helped to achieve outcomes, effectiveness, efficiency, or sustainability of the program?
- (10) What changes need to be made to enhance progress toward gender equality (in this program, or in other similar programs)?

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<sup>1</sup> Gender responsive access refers to women, men, boys, girls, elderly people and people with disabilities'