Technology Fact Sheet for Adaptation

Reducing other stresses on species and ecosystems [i]

1. SECTOR: *To be written by sector expert*	Biodiversity
TECHNOLOGY CHARACTERISTICS	
2.1 Technology name:	Reducing other stresses on species and ecosystems
2.2 Introduction: *Low/high, Brief introduction to the technology*	Current stresses on biodiversity include habitat fragmentation and destruction, over-exploitation, poaching, illegal clearing etc. This technology aims to reduce or remove other, non-climate stressors. This will give species the maximum flexibility to evolve responses to climate change[1]. The synergy between "normal stresses" such as habitat fragmentation and altered climate – poses a new challenge to biodiversity[2], with one of the main challenges climate change has on biodiversity is the synergies with other concurrent stresses from human activities[3]. Reduction in the current stresses on species and ecosystems will also allow biodiversity be more resilient and recover from impacts of climate change. This is not a new technology, and reducing such threats are vital for the survival of biodiversity in general. It becomes more important when considering climate change, as it will exacerbate biodiversity loss. As this includes a range of stresses to be managed, the technology can be considered to be low to medium and will not need any new inputs as knowledge and strategies exist.

[1]Mawdsley, J.R., O'Malley, R., Ojima, D.S., 2009. A review of climate-change adaptation strategies for wildlife management and biodiversity conservation. Conservation Biology 23, 1080–1089.

[2] Hannah, L., Lovejoy, T. and Schneider, H. 2005. Chapter 1 – Biodiversity and Climate Change in Context. In: Lovejoy T, Hannah L, eds. 2005. In Climate Change and Biodiversity. New Haven, CT: Yale Univ. Press

[3]Lovejoy, T. E. 2005.Chapter 19 - Conservation with a Changing Climate. In: Lovejoy T, Hannah L, eds. 2005. In Climate Change and Biodiversity. New Haven, CT: Yale Univ. Press

	Reference in existing policies, strategies and action plans: The Biodiversity Conservation - Framework for Action has identified many current stresses on biodiversity conservation and has many recommendations. These include managing direct threats to species, rehabilitate critical habitats etc[4]. According the National Action Plan for Haritha Lanka Strategy 9.4 states to 'Monitor protected areas continuously to ensure that uses are sustainable, especially pollution and disturbance caused by vehicles and excessive visitors in fragile ecosystems'[5]. The Climate Change Adaptation Strategy[6] for Sri Lanka has identified to 'Focus on minimizing current stresses on ecosystems' - (G i).
2.3 Technology characteristics/highlights: *Few bullet points, ie. Low/high cost, advance technology; low technology*	This technology is not something new, but concentrates on current conservation methods to tackle existing issues. Improving current management, enforcement, investment and monitoring will be its main characteristics. It would also be useful to conduct research on the response of endemic species to perturbation and stress. This can be considered to be low to medium level of technology.
2.4 Institutional and organizational requirements: *How much additional capacity building and knowledge transfer is required for the adaptation option to be implemented.*	This is an existing technology and thus there will not be much additional capacity building or knowledge transfer necessary. However it would be useful for some capacity building and knowledge transfer on innovative and new methods of controlling existing threats to biodiversity, in a changing climate, with minimum use of resources. If management, enforcement, monitoring are to be increased, number of staff in the relevant departments will need to be increased.
3. OPERATIONS AND MAINTENANCE	
3.1 Endorsement by experts:	For details of endorsement by local experts and relevant agencies see section on *'Reference in existing policies, strategies and action plans'* in Section 2.1. This technology is essential to control biodiversity loss at present, and

[4]Ministry of Environment and Natural Resources. 2007. Biodiversity Conservation in Sri Lanka: A Framework for Action – Addendum.

[5] National Council for Sustainable Development . 2009. National Action Plan for Haritha Lanka Programme

[6]Ministry of Environment. 2010. National Climate Change Adaptation Strategy for Sri Lanka 2011 to 2016.

	these stresses are recognized as some of the biggest challenges both globally and in the country. Many experts globally have endorsed this mechanism, many appearing in international peer reviewed journals[7].
3.2 Adequacy for current climate: *Are there negative consequences of the adaptation option in the current climate? Some adaptation may be targeted at the future climate but may have costs and consequences under the current climate.*	As mentioned previously, reducing current stressed on biodiversity will benefit conservation even at present. Thus it will be beneficial and completely suitable in the current climate.
3.3 Size of beneficiaries group: *Technology that provides small benefits to large number of people will be favored over those that provide larger benefits, but to fewer people.*	The beneficiary group will be large, as reducing stresses on biodiversity will ensure that ecosystem services are minimally impacted and will provide food, watershed services, control erosion, regulate disease etc. A well conserved protected area or environment will attract more tourism and visitation, benefiting local livelihoods.
4. COSTS	
4.1 Cost to implement adaptation options: *Cost measures*	The costs for this can be considered to be low to medium, and will entail increasing the current conservation budget of the relevant Departments to increase current efforts. It is estimated that this activity will cost Rs. 80 million annually. This is based on the assumption that a budget increase of 4% of current conservation budgets will be necessary for this activity (based on total Forest Department and Wildlife Department annual budgets). It is estimated that 25% of this will be borne by the public sector. This activity will need to be carried out continuously, and will have to be an annual budget. Cost will be for identifying main stresses, prioritizing issues and areas, enforcement, determine necessary conservation activities,

[7]Mawdsley, et al. 2009. Op. Cit.

	implementation and monitoring.
4.2 Additional costs to implement adaptation option, compared to "business as usual"	Additional conservation of biodiversity would require more investment and thus a higher cost However maximizing and effectively using current resources currently available will help reduce the cost of additional conservation efforts.
5. DEVELOPMENT IMPACTS, INDIRECT BENEFITS	
5.1 Economic benefits: **Employment** - *Jobs* **Investment** - *Capital requirements*	**Employment:** • Increasing conservation activities and monitoring will require manpower and will create jobs. • Local communities will also benefit from community conservation and ecosystem related job opportunities. **Investment:** • Investment will be necessary to increase manpower and capital such as monitoring equipment, vehicles etc.
5.2 Social benefits: **Income** – *Income generation and distribution* **Education** – *Time available for education* **Health** – *Number of people with different diseases*	**Income:** • Increased conservation activities and monitoring would require more personnel and thus there will be creating of job opportunities. • Possible income from community conservation, payment for ecosystem services, REDD etc. • Enhanced conservation could increase ecotourism potential, and jobs associated with it. • Improved ecosystem services could provide income through the sustainable collection of NTFP, microclimate and pest control benefiting agriculture etc. **Education:** • An opportunity for students to learn about current threats to biodiversity in the country. • University students can contribute to research activities that deal with current threats. **Health:** • Good environmental conditions contribute to well-being and health. • Controlling threats such as pollution will have a direct health benefit.

	• Environmental services will ensure freshwater provision, control of microclimate and disease, which contribute to health.
5.3 Environmental benefits: *Reductions in GHG emissions, local pollutants, ecosystem degradation etc.*	• This technology will maintain viability and resilience of biodiversity, and better adapted to impacts of climate change. • Enhanced ecosystem services such as carbon sequestration and other environmental services.
6. LOCAL CONTEXT	
6.1 Opportunities and barriers: *Barriers too implementation and issues such as the need to adjust other policies*	**Opportunities:** • This is not a new technology and will not require many changes to current conservation plans. • No changes institutional or legal changes will be required for this activity. • It will help resolve some of the main issues threatening biodiversity at present as well as in the future. **Barriers:** • There are limited resources available to address the broad range of stressors[8]. • There is potential for a loss of focus and much diffuse action across a broad range of stressors[9]. • Increasing conservation budgets and its funding will be a constraint. • Main threats to controlling biodiversity loss such as habitat conversion, illegal activities will require political support and the involvement of other institutions who may not understand its importance.
6.2 Status: *Status of technology in the country*	Activities necessary to address current pressures on biodiversity has already been identified in the Biodiversity Conservation - Framework for Action, and thus well-recognized and accepted in Sri Lanka.
6.3 Timeframe: *Specify timeframe for implementation*	Minimizing current threats will need to be an on going process and will be in the form of annual Programs which will need to be continued.
6.4 Acceptability to local stakeholders: *Whether the technology will be attractive to*	It is likely that most local stakeholders will favorminimizing loss of biodiversity as it would affect local environmental conditions and ecosystem services.

[8]Mawdsley, et al. 2009. Op. Cit.

[9]Mawdsley, et al. 2009. Op. Cit.

stakeholders	It is also attractive as there could be job opportunities and income from various conservation initiatives and ecotourism. Increased conservation would mean the restriction of certain legal and illegal activities, which may be opposed by a small group that benefit from such activities.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Sir Lanka. You can access the complete report from the TNA project website http://tech-action.org/**