Appendix 1: Budget by project components and UNEP budget lines

1. Overall budget

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
1000	**PROJECT PERSONNEL COMPONENT**													
1100	**Project Personnel**													
1102	Project Management								$115,433	$115,433	$39,247	$38,093	$38,093	$115,433
1103	Various technical and strategic support staff		$18,802		$85,463	$89,348	$74,586	$17,614		$285,813	$97,176	$94,318	$94,318	$285,813
1199	**Sub-total**	**$-**	**$18,802**	**$-**	**$85,463**	**$89,348**	**$74,586**	**$17,614**	**$115,433**	**$401,246**	**$136,423**	**$132,411**	**$132,411**	**$401,246**
1200	**Consultants**													
1201	International consultants: Global				$50,916	$13,578	$30,550	$27,155		$122,198	$40,325	$41,547	$40,325	$122,198
1204	International Technical Support: Georgia	$112,800								$112,800	$37,224	$38,352	$37,224	$112,800
1205	International Technical Support: Madagascar		$122,198							$122,198	$40,325	$41,547	$40,325	$122,198
1299	**Sub-total**	**$112,800**	**$122,198**	**$-**	**$50,916**	**$13,578**	**$30,550**	**$27,155**	**$-**	**$357,196**	**$117,875**	**$121,447**	**$117,875**	**$357,196**
1300	**Administrative support**													
1301	Administrative support													
1399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
1600	**Travel on official business (above staff)**													
1601	International travel			$6,069	$28,323	$12,409	$16,185	$20,231	$10,810	$94,026	$31,029	$31,969	$31,029	$94,026
1602	Domestic travel to demonstration sites			-	-	-	-	-	-	$-	$-	$-	$-	$-
1699	**Sub-total**	**$-**	**$-**	**$6,069**	**$28,323**	**$12,409**	**$16,185**	**$20,231**	**$10,810**	**$94,026**	**$31,029**	**$31,969**	**$31,029**	**$94,026**
1999	**Component Total**	**$112,800**	**$141,000**	**$6,069**	**$164,702**	**$115,334**	**$121,321**	**$65,000**	**$126,242**	**$852,468**	**$285,327**	**$285,827**	**$281,314**	**$852,468**
2000	**SUB-CONTRACT COMPONENT**													
2200	**Sub-contracts (MOUs/LAs for supporting organizations)**													
2201	Sub-grant: Georgia	$1,498,420							$56,214	$1,554,634	$513,029	$528,575	$513,029	$1,554,634
2202	Sub-grant: Madagascar		$1,873,025						$71,947	$1,944,972	$641,841	$661,290	$641,841	$1,944,972
2203	Website & app development contracts	-		$86,885	$75,298	-	$143,679	-	-	$305,862	$100,935	$103,993	$100,935	$305,862
2299	**Sub-total**	**$1,498,420**	**$1,873,025**	**$86,885**	**$75,298**	**$-**	**$143,679**	**$-**	**$128,161**	**$3,805,468**	**$1,255,804**	**$1,293,859**	**$1,255,804**	**$3,805,468**
2299	**Component Total**		**$1,873,025**		**$75,298**	**$-**	**$143,679**	**$-**	**$128,161**	**$3,805,468**				

Appendix 2: Co-financing by source and UNEP budget lines

UNEP BUDGET LINE		CASH			IN-KIND						
		GEF Trust Fund	Co-Financing WRI	TOTAL CASH	Co-financing						TOTAL IN-KIND
					Georgia	Madagascar	GIZ	UNEP	ESRI	Transparent World	
1000	**PROJECT PERSONNEL COMPONENT**										
1100	**Project Personnel**										
1101	Project Manager / Int'l data & GIS expert (Overall and global)	$163,601		$163,601							$-
1102	Technical specialist: Partnerships / private sector	$130,000		$130,000							$-
1106	Technical GFW staff		$1,813,752	$1,813,752							$-
1107	Government in-kind Staff contribution				$1,000,000	$1,150,000					$2,150,000
1108	In-kind Staff Contribution								$1,000,000		$1,000,000
1199	**Sub-total**	**$293,601**	**$1,813,752**	**$2,107,353**	**$1,000,000**	**$1,150,000**	**$-**	**$-**	**$1,000,000**	**$-**	**$3,150,000**
1200	**Consultants**										
1201	International consultants: Global	$180,000		$180,000							$-
1202	National consultants: Georgia	$-		$-							$-
1203	National consultants: Madagascar	$-		$-		$100,000					$100,000
1204	International Technical Support: Georgia	$112,800		$112,800							$-
1205	International Technical Support: Madagascar	$141,000		$141,000							$-
1206	International Data Management: Georgia						$200,000				$200,000
1299	**Sub-total**	**$433,800**	**$-**	**$433,800**	**$-**	**$100,000**	**$200,000**	**$-**	**$-**	**$-**	**$300,000**
1300	**Administrative support**										
1301	Administrative Staff		$500,000	$500,000	$50,000	$50,000					$100,000
1399	**Sub-total**	**$-**	**$500,000**	**$500,000**	**$50,000**	**$50,000**	**$-**	**$-**	**$-**	**$-**	**$100,000**
1600	**Travel on official business (above staff)**										
1601	International travel	$116,192		$116,192							$-
1602	Domestic travel to demonstration sites	$10,000	-	$10,000	$50,000	$50,000				-	$100,000
1699	**Sub-total**	**$126,192**	**$-**	**$126,192**	**$50,000**	**$50,000**	**$-**	**$-**	**$-**	**$-**	$100,000
1999	**Component Total**	**$853,593**	**$2,313,752**	**$3,167,345**	**$1,100,000**	**$1,350,000**	**$200,000**	**$-**	**$1,000,000**	**$-**	**$3,650,000**
2000	**SUB-CONTRACT COMPONENT**										
2200	**Sub-contracts (MOUs/LAs for supporting organizations)**										
2201	Sub-grant: Georgia	$1,577,284		$1,577,284							$-
2202	Sub-grant: Madagascar	$1,971,605	-	$1,971,605	-					-	$-
2203	Website & app development contracts	$255,454	-	$255,454	-				$3,994,000	-	$3,994,000
2204	Sub-grants: GFW partners		$3,686,248	$3,686,248							$-
2205	Sub-grant: Data Management - Georgia						$300,000				$300,000
2299	**Sub-total**	**$3,804,343**	**$3,686,248**	**$7,490,591**	**$-**	**$-**	**$300,000**	**$-**	**$3,994,000**	**$-**	**$4,294,000**
2299	**Component Total**	**$3,804,343**	**$3,686,248**	**$7,490,591**	**$-**	**$-**	**$300,000**	**$-**	**$3,994,000**	**$-**	**$4,294,000**

UNEP BUDGET LINE		CASH			IN-KIND						
		GEF Trust Fund	Co-Financing WRI	TOTAL CASH	Co-financing Georgia	Madagascar	GIZ	UNEP	ESRI	Transparent World	TOTAL IN-KIND
3000	**TRAINING COMPONENT**										
3200	**Group Training**										
3201	Capacity building and outreach: global	$133,000		$133,000					$2,000,000	$1,000,000	$3,000,000
3299	**Sub-total**	**$133,000**	**$-**	**$133,000**	**$-**	**$-**	**$-**	**$-**	**$2,000,000**	**$1,000,000**	**$3,000,000**
3300	**Meetings/Conferences**										
3301	Project Steering Committee meetings: Georgia	$30,000	-	$30,000	$50,000			$100,000			$150,000
3302	Project Steering Committee meetings: Madagascar	$30,000	-	$30,000		$50,000		$100,000			$150,000
3303	Regional and global meetings and conferences	$213,126	-	$213,126				$100,000			$100,000
3399	**Sub-total**	**$273,126**	**$-**	**$273,126**	**$50,000**	**$50,000**	**$-**	**$300,000**	**$-**	**$-**	**$400,000**
3999	**Component Total**	**$406,126**	**$-**	**$406,126**	**$50,000**	**$50,000**	**$-**	**$300,000**	**$2,000,000**	**$1,000,000**	**$3,400,000**
4000	**EQUIPMENT AND PREMISES COMPONENT**										
4100	**Expendable equipment**										
4101	Office supplies	-	-	$-	-					-	$-
4199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4200	**Non-expendable equipment**										
4201	GIS Software								$2,500,000		$2,500,000
4202	Computers			$-							$-
4299	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$2,500,000**	**$-**	**$2,500,000**
4300	**Premises**										
4301	Office Maintenance, Service & Supplies	-	-		-					-	$-
4399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4999	**Component Total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$2,500,000**	**$-**	**$2,500,000**
5000	**MISCELLANEOUS COMPONENT**										
5100	**Operation and maintenance of equipment**										
5101	Repair and maintenance	-	-	$-	-					-	$-
5199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5200	**Reporting costs**										
5201	Technical reports: Georgia	$-		$-							$-
5202	Technical reports; Madagascar	$-		$-							$-
5203	Technical reports: Global	$90,000		$90,000							$-
5204	Training manuals and toolkits: Global	$84,000		$84,000							$-
5399	**Sub-total**	**$174,000**	**$-**	**$174,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5500	**Evaluation**										
5501	MTR/MTE	$40,000		$40,000							$-
5502	Terminal Evaluation	$40,000		$40,000							$-
5503	Audit Report	$24,403	-	$24,403	-					-	$-

		CASH			IN-KIND						
			Co-Financing		Co-financing						TOTAL IN-KIND
UNEP BUDGET LINE		GEF Trust Fund	WRI	TOTAL CASH	Georgia	Madagascar	GIZ	UNEP	ESRI	Transparent World	
5599	**Sub-total**	**$104,403**	**$-**	**$104,403**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5600	**Miscellaneous / Other**	-	-	-	-					-	-
5601	Satellite Imagery									$6,100,000	$6,100,000
5603	Direct Forest Management: Georgia				$850,000						$850,000
5604	Direct Forest Management: Madagascar					$1,100,000					$1,100,000
5699	**Sub-total**	**$-**	**$-**	**$-**	**$850,000**	**$1,100,000**	**$-**	**$-**	**$-**	**$6,100,000**	**$8,050,000**
5999	**Component Total**	**$278,403**	**$-**	**$278,403**	**$850,000**	**$1,100,000**	**$-**	**$-**	**$-**	**$6,100,000**	**$8,050,000**
TOTAL COSTS		**$5,342,465**	**$6,000,000**	**$11,342,465**	**$2,000,000**	**$2,500,000**	**$500,000**	**$300,000**	**$9,494,000**	**$7,100,000**	**$21,894,000**

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
		$1,498,420		$86,885							$1,255,804	$1,293,859	$1,255,804	$3,805,468
3000	TRAINING COMPONENT													
3200	Group Training													
3201	Capacity building and outreach: global			-	-	$73,000	$60,000	-	-	$133,000	$43,890	$45,220	$43,890	$133,000
3299	Sub-total	$-	$-	$-	$-	$73,000	$60,000	$-	$-	$133,000	$43,890	$45,220	$43,890	$133,000
3300	Meetings/Conferences													
3301	Project Steering Committee meetings: Georgia							$30,000		$30,000	$9,900	$10,200	$9,900	$30,000
3302	Project Steering Committee meetings: Madagascar	-		-	-	-	-	$30,000	-	$30,000	$9,900	$10,200	$9,900	$30,000
3303	Regional and global meetings and conferences				$145,222	$50,000	$17,904			$213,126	$70,332	$72,463	$70,332	$213,126
3399	Sub-total	$-	$-	$-	$145,222	$50,000	$17,904	$60,000	$-	$273,126	$90,132	$92,863	$90,132	$273,126
3999	Component Total	$-	$-	$-	$145,222	$123,000	$77,904	$60,000	$-	$406,126	$134,022	$138,083	$134,022	$406,126
4000	EQUIPMENT AND PREMISES COMPONENT													
4100	Expendable equipment													
4101	Office supplies	-	-	-	-	-	-	-	-	$-	-	-	-	$-
4199	Sub-total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
4200	Non-expendable equipment													
4201	Laptops & portable devices for GFW uploading: Georgia									$-				
4202	Laptops& portable devices for GFW uploading: Madagascar									$-	$-	$-	$-	$-
4299	Sub-total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
4300	Premises													
4301	Rent	-	-	-	-	-	-	-	-	$-	-	-	-	$-
4399	Sub-total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
4999	Component Total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
5000	MISCELLANEOUS COMPONENT													
5100	Operation and maintenance of equipment													
5101	Repair and maintenance	-	-	-	-	-	-	-	-	$-				$-
5199	Sub-total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
5200	Reporting costs													
5201	Technical reports: Georgia									$-	$-	$-	$-	$-
5202	Technical reports; Madagascar									$-	$-	$-	$-	$-
5203	Technical reports: Global				$65,000			$25,000		$90,000	$29,700	$30,600	$29,700	$90,000
5204	Training manuals and toolkits: Global				$50,000	$15,000	$19,000			$84,000	$27,720	$28,560	$27,720	$84,000
5299	Sub-total	$-	$-	$-	$115,000	$15,000	$19,000	$25,000	$-	$174,000	$57,420	$59,160	$57,420	$174,000

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
5300	**Sundry**													
5301	Communication									$-	$-	$-	$-	$-
5302	Postage	-	-	-	-	-	-	-	-	$-	$-	$-	$-	$-
5399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5500	**Evaluation**													
5501	MTR/MTE							$40,000		**$40,000**	$13,200	$13,600	$13,200	$40,000
5502	Terminal Evaluation							$40,000		**$40,000**	$13,200	$13,600	$13,200	$40,000
5503	Audit Report	-	-	-	-	-	-	$24,403	-	**$24,403**	$8,053	$8,297	$8,053	$24,403
5599	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$104,403**	**$-**	**$104,403**	**$34,453**	**$35,497**	**$34,453**	**$104,403**
5999	**Component Total**	**$-**	**$-**	**$-**	**$115,000**	**$15,000**	**$19,000**	**$129,403**	**$-**	**$278,403**	**$91,873**	**$94,657**	**$91,873**	**$278,403**
TOTAL COSTS		**$1,611,220**	**$2,014,025**	**$92,954**	**$500,222**	**$253,334**	**$361,904**	**$254,403**	**$254,403**	**$5,342,465**	**$1,765,949**	**$1,813,502**	**$1,763,013**	**$5,342,465**

2. Georgia sub-grant budget

	UNEP BUDGET LINE/OBJECT OF EXPENDITURE	Component 1 Application and Enhancement of GFW			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
1000	**PROJECT PERSONNEL COMPONENT**													
1100	**Project Personnel**													
1101	National project manager / Senior data expert: Georgia	$100,000							$18,864	$118,864	$40,414	$39,225	$39,225	$118,864
1102	Demonstration component expert (Georgia: Adjara)	$60,000								$60,000		$30,000	$30,000	$60,000
1199	**Sub-total**	**$160,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$18,864**	**$178,864**	**$40,414**	**$69,225**	**$69,225**	**$178,864**
1200	**Consultants**													
1202	National consultants: Georgia	$100,000								$100,000	$33,000	$34,000	$33,000	$100,000
1299	**Sub-total**	**$100,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$100,000**	**$33,000**	**$34,000**	**$33,000**	**$100,000**
1300	**Administrative support**													
1301	Administrative & financial assistant: Georgia								$60,000	$60,000	$19,800	$20,400	$19,800	$60,000
1399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$60,000**	**$60,000**	**$19,800**	**$20,400**	**$19,800**	**$60,000**
1600	**Travel on official business (above staff)**													
1601	International travel	$20,000								$20,000	$6,600	$6,800	$6,600	$20,000
1602	Domestic travel to demonstration sites	$7,220		-	-	-	-	-		$7,220	$2,383	$2,455	$2,383	$7,220
1699	**Sub-total**	**$27,220**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$27,220**	**$8,983**	**$9,255**	**$8,983**	**$27,220**
1999	**Component Total**	**$287,220**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$78,864**	**$366,084**	**$102,196**	**$132,880**	**$131,008**	**$366,084**
2000	**SUB-CONTRACT COMPONENT**													
2200	**Sub-contracts (MOUs/LAs for supporting organizations)**													
2201	Use cases: Georgia	$536,200								$536,200	$176,946	$182,308	$176,946	$536,200
2203	Nationally validated data sets: Georgia	$265,000								$265,000	$87,450	$90,100	$87,450	$265,000
2205	Demonstration site: Georgia	$75,000		-	-	-	-	-	-	$75,000	$24,750	$25,500	$24,750	$75,000
2299	**Sub-total**	**$876,200**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$876,200**	**$289,146**	**$297,908**	**$289,146**	**$876,200**
2299	**Component Total**	**$876,200**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$876,200**	**$289,146**	**$297,908**	**$289,146**	**$876,200**
3000	**TRAINING COMPONENT**													
3200	**Group Training**													

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
3201	Capacity building and outreach: Georgia	$200,000								$200,000	$66,000	$68,000	$66,000	$200,000
3299	**Sub-total**	**$200,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$200,000**	**$66,000**	**$68,000**	**$66,000**	**$200,000**
3300	**Meetings/Conferences**													
3301	Inception meeting: Georgia	$15,000								$15,000	$4,950	$5,100	$4,950	$15,000
3303	Technical meetings and workshops: Georgia	$35,000								$35,000	$11,550	$11,900	$11,550	$35,000
3305	Project Steering Committee meetings: Georgia	$25,000								$25,000	$8,250	$8,500	$8,250	$25,000
3399	**Sub-total**	**$75,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$75,000**	**$24,750**	**$25,500**	**$24,750**	**$75,000**
3999	**Component Total**	**$275,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$275,000**	**$90,750**	**$93,500**	**$90,750**	**$275,000**
4000	**EQUIPMENT AND PREMISES COMPONENT**													
4100	**Expendable equipment**													
4101	Office supplies	-	-	-	-	-	-	-	-	$-	-	-	-	$-
4199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4200	**Non-expendable equipment**													
4201	Laptops & portable devices for GFW uploading: Georgia	$25,000								$25,000				
4299	**Sub-total**	**$25,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$25,000**	**$-**	**$-**	**$-**	**$-**
4300	**Premises**													
4301	Rent	-	-	-	-	-	-	-	-	$-	-	-	-	$-
4399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4999	**Component Total**	**$25,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$25,000**	**$-**	**$-**	**$-**	**$-**
5000	**MISCELLANEOUS COMPONENT**													
5100	**Operation and maintenance of equipment**													
5101	Repair and maintenance	-	-	-	-	-	-	-	-	$-				$-
5199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5200	**Reporting costs**													
5201	Technical reports: Georgia	$15,000								$15,000	$4,950	$5,100	$4,950	$15,000
5204	Training manuals and toolkits: Georgia	$20,000								$20,000	$6,600	$6,800	$6,600	$20,000
5299	**Sub-total**	**$35,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$35,000**	**$11,550**	**$11,900**	**$11,550**	**$35,000**
5300	**Sundry**													
5301	Communication									$-	$-	$-	$-	$-
5302	Postage	-	-	-	-	-	-	-	-	$-	$-	$-	$-	$-
5399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5500	**Evaluation**													
5501	MTR/MTE									**$-**	$-	$-	$-	$-

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
5502	Terminal Evaluation									$-	$-	$-	$-	$-
5503	Audit Report	-	-	-	-	-	-		-	$-	$-	$-	$-	$-
5599	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5999	**Component Total**	**$35,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$35,000**	**$11,550**	**$11,900**	**$11,550**	**$35,000**
TOTAL COSTS		**$1,498,420**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$78,864**	**$1,577,284**	**$493,642**	**$536,188**	**$522,454**	**$1,552,284**

3. Madagascar sub-grant budget

	UNEP BUDGET LINE/OBJECT OF EXPENDITURE	Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
1000	**PROJECT PERSONNEL COMPONENT**													
1100	**Project Personnel**													
1101	National project manager / Senior data expert: Madagascar		$100,000						$28,580	$128,580	$43,717	$42,431	$42,431	$128,580
1102	Demonstration component expert (Madagascar)	-	$60,000	-	-	-	-	-	-	$60,000		$30,000	$30,000	$60,000
1199	**Sub-total**	**$-**	**$160,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$28,580**	**$188,580**	**$43,717**	**$72,431**	**$72,431**	**$188,580**
1200	**Consultants**													
1201	International consultants: Madagascar									$-	$-	$-	$-	$-
1202	National consultants: Madagascar	-	$120,000	-	-	-	-		-	$120,000	$39,600	$40,800	$39,600	$120,000
1299	**Sub-total**	**$-**	**$120,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$120,000**	**$39,600**	**$40,800**	**$39,600**	**$120,000**
1300	**Administrative support**													
1302	Administrative & financial assistant: Madagascar								$70,000	$70,000	$23,100	$23,800	$23,100	$70,000
1399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$70,000**	**$70,000**	**$23,100**	**$23,800**	**$23,100**	**$70,000**
1600	**Travel on official business (above staff)**													
1601	International travel		$20,000							$20,000	$6,600	$6,800	$6,600	$20,000
1602	Domestic travel to demonstration sites		$7,025	-	-	-	-	-		$7,025	$2,318	$2,389	$2,318	$7,025
1699	**Sub-total**	**$-**	**$27,025**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$27,025**	**$8,918**	**$9,189**	**$8,918**	**$27,025**
1999	**Component Total**	**$-**	**$307,025**	**$-**	**$-**	**$-**	**$-**	**$-**	**$98,580**	**$405,605**	**$115,335**	**$146,220**	**$144,050**	**$405,605**
2000	**SUB-CONTRACT COMPONENT**													
2200	**Sub-contracts (MOUs/LAs for supporting organizations)**													
2201	Use cases: Madagascar		$786,000							$786,000	$259,380	$267,240	$259,380	$786,000
2202	Nationally validated data sets: Madagascar	-	$325,000	-	-	-	-	-	-	$325,000	$107,250	$110,500	$107,250	$325,000
2203	Demonstration site: Madagascar	-	$110,000	-	-	-	-	-	-	$110,000	$36,300	$37,400	$36,300	$110,000
2299	**Sub-total**	**$-**	**$1,221,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,221,000**	**$402,930**	**$415,140**	**$402,930**	**$1,221,000**
2299	**Component Total**	**$-**	**$1,221,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$1,221,000**	**$402,930**	**$415,140**	**$402,930**	**$1,221,000**
3000	**TRAINING COMPONENT**													

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
3200	**Group Training**													
3201	Capacity building and outreach: Madagascar		$210,000							$210,000	$69,300	$71,400	$69,300	$210,000
3299	**Sub-total**	**$-**	**$210,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$210,000**	**$69,300**	**$71,400**	**$69,300**	**$210,000**
3300	**Meetings/Conferences**													
3301	Inception meeting: Madagascar		$15,000							$15,000	$4,950	$5,100	$4,950	$15,000
3302	Technical meetings and workshops: Madagascar		$30,000							$30,000	$9,900	$10,200	$9,900	$30,000
3303	Project Steering Committee meetings: Madagascar		$25,000							$25,000	$8,250	$8,500	$8,250	$25,000
3399	**Sub-total**	**$-**	**$70,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$70,000**	**$23,100**	**$23,800**	**$23,100**	**$70,000**
3999	**Component Total**	**$-**	**$280,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$280,000**	**$92,400**	**$95,200**	**$92,400**	**$280,000**
4000	**EQUIPMENT AND PREMISES COMPONENT**													
4100	**Expendable equipment**													
4101	Office supplies									$-				$-
4199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4200	**Non-expendable equipment**													
4202	Laptops& portable devices for GFW uploading: Madagascar		$30,000							$30,000	$9,900	$10,200	$9,900	$30,000
4299	**Sub-total**	**$-**	**$30,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$30,000**	**$9,900**	**$10,200**	**$9,900**	**$30,000**
4300	**Premises**													
4301	Rent									$-				$-
4399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
4999	**Component Total**	**$-**	**$30,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$30,000**	**$9,900**	**$10,200**	**$9,900**	**$30,000**
5000	**MISCELLANEOUS COMPONENT**													
5100	**Operation and maintenance of equipment**													
5101	Repair and maintenance									$-				$-
5199	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5200	**Reporting costs**													
5201	Technical reports; Madagascar		$15,000							$15,000	$4,950	$5,100	$4,950	$15,000
5202	Training manuals and toolkits: Madagascar		$20,000							$20,000	$6,600	$6,800	$6,600	$20,000
5299	**Sub-total**	**$-**	**$35,000**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$35,000**	**$11,550**	**$11,900**	**$11,550**	**$35,000**
5300	**Sundry**													
5301	Communication									$-	$-	$-	$-	$-
5302	Postage									$-	$-	$-	$-	$-
5399	**Sub-total**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**
5500	**Evaluation**													

UNEP BUDGET LINE/OBJECT OF EXPENDITURE		Component 1 Application and Enhancement of GFW 2.0			Component 2 System Uptake and Replication (Global)	Component 3 Strengthening GFW 2.0 Partnerships (Global)	Component 4 Private Sector Application of GFW (Global)	Component 5 Monitoring and Evaluation (All)	Component 6 Project Management (All)	TOTAL	Year 1	Year 2	Year 3	TOTAL
		Georgia	Madagascar	Global										
5501	MTR/MTE									$-	$-	$-	$-	$-
5502	Terminal Evaluation									$-	$-	$-	$-	$-
5503	Audit Report	-	-	-	-	-	-		-	$-	$-	$-	$-	$-
5599	Sub-total	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
5999	Component Total	$-	$35,000	$-	$-	$-	$-	$-	$-	$35,000	$11,550	$11,900	$11,550	$35,000
TOTAL COSTS		$-	$1,873,025	$-	$-	$-	$-	$-	$98,580	$1,971,605	$632,115	$678,660	$660,830	$1,971,605

Appendix 3: Incremental cost analysis

The incremental costs and benefits of the proposed project are summarized in the following incremental cost matrix. The incremental cost of the project, USD$28,742,465 is required to achieve the project's global environmental benefits. Of this amount USD$5,342,465 (representing 19% of the total) is being requested from GEF. The remaining amount of USD$23,400,000 (81%) of the total cost will come from the Governments of Georgia and Madagascar and other national and international donors. The figure includes both in-kind and cash contributions.

Baseline Scenario (Business As Usual)	**GEF Incremental Contribution** (what the GEF project will contribute)	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment)
Component 1. Application and enhancement of GFW in pilot countries GFW Alert System is set-up on a global scale operating different systems: cover change alerts with a resolution of 500 m every monthly in the humid tropics; annual worldwide data operating on 30 m resolution. The resources to enhance the alerts to 250 m and also operating outside the tropics, and to enhance precision in pilot countries, are not yet available	Accuracy and precision of change alerts and annual data of GFW is significantly enhanced in project pilot countries supported by ground truthing and crowdsourcing, and incorporating high resolution datasets specific for these countries. GFW is fully applied in the pilot countries, national professional capacity is developed, and staff is trained on the use of GFW or local developed website that is operational also for off-line use in key agencies. Gathering and reaching consensus on key local datasets for integration into the system, and through this process also identifying and filling critical data gaps. Uniting local land cover and land use data with GFW's global monitoring data will add additional context and help local actors tell a more complete story with the data, which can be used to inform policy decisions and actions. Wide range of stakeholders informed and engaged in the use of GFW as a management and awareness raising tool, from public, private, academic and CSO sectors in the pilot countries.	More precise and accurate land cover and cover change alerts and information operational on a global scale, and applied in selected pilot countries, supporting: (a) improved management of existing forest areas and conservation of biodiversity, (b) reforestation/afforestation programs, and (c) providing the information base for PES schemes (Payment for Ecosystem Services).
Component 2. System uptake and replication GFW suite of tools and platform is set-up on a global scale, however further refinement including development of new tools and applications should be informed by needs and experiences at the country level. Country engagement with GFW is currently limited (Indonesia and Congo Basin).	Experience of enhanced GFW application in pilot countries is well documented and widely disseminated at national and global level, using a wide range of communication tools and involving the broadest range of stakeholders to support rapid uptake and broad use of GFW. Uptake nationally is strong and sustained through concerted communications efforts and direct engagement of many local users with the GFW partners. Improved understanding of country needs from pilot experiences will inform further development of the GFW platform (data, functionality, usability, apps), which will improve the overall local relevance of the platform and encourage further uptake and replication. Additional tailoring and feature development of the GFW global platform based on country needs and experiences will enhance relevance and uptake.	Lessons learned and experience gained in pilot countries support the more rapid and increased utilization of the GFW in other countries and globally, and by a wide range of stakeholders - as a new user-friendly and cost-effective forest information system to support forest conservation. Rates of forest loss and degradation are measurably reduced (*ref. table in section A.1.5, and more accurate estimates of greenhouse gas mitigation impacts to be developed during full project proposal preparation in detailed consultation with national experts and stakeholders*).
Component 3. Strengthening and sustaining the GFW partnership GFW was launched in	The GEF incremental contribution will support the timely development and upgrading of GFW partnership to the level of an internationally-accepted, financially self-sufficient, and trusted tool that support	The GFW partnership is strengthened, long-term financial sustainability is secured, and GFW is increasingly regarded as a transparent and credible monitoring

Baseline Scenario (Business As Usual)	**GEF Incremental Contribution** (what the GEF project will contribute)	**Key Outcomes expected with the Alternative Scenario** (BAU+GEF Increment)
February 2014. However there is a risk that the partnership is not sufficiently integrated and sustained.	enhanced management of forest resources, as well as facilitate reporting to various conventions, bi/multi-lateral partnerships and private sector frameworks such as forest certification, PES schemes, REDD+ MRV, etc.	and management tool in support of forest conservation and sustainable use for at least 10 years to come.
Component 4. Private Sector application to reduce deforestation in supply chains GFW has initiated engagement with private sector companies in the palm oil sector, however it requires additional resources to translate the tools and systems developed for palm oil to additional commodities, thereby increasing relevance to more countries	The GEF increment will specifically support engagement and joint work with private sector, complementing and benefiting from global partnerships. This will generate pilot examples and lessons that will be documented and applied on a global scale, through the GFW partnership.	The national and global impact on forest conservation is significantly enhanced through the adoption of the GFW system as a supply chain management tool by the private sector, and through greater transparency for all of those supply chains and their impacts.

Appendix 4: Results Framework

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
Project objective: Empower decision-makers in government, the private sector, and civil society with technology and information necessary to reduce deforestation and land degradation, combat illegal activities, and conserve biodiversity in pilot countries and on a global scale.	Deforestation rates in target countries.	Georgia: FAO rate (2000-2010): 3000 ha/yr. Hansen rate (accessed via GFW) (2001-2012): 710 ha/yr gross tree cover loss Madagascar: FAO rate (2000-2010): 57,000 ha/yr. Hansen rate (accessed via GFW) (2001-2012): 110,697 ha/yr gross tree cover loss	712,283 t CO2e	1,424,565 CO2e	GFW platform	WRI work might not contribute to forest change immediately or within the life of the program.
	Spatial & temporal coverage (data resolution and frequency) of tree cover loss and gain data	30 meter resolution with annual updates for the entire world. 500 meter resolution with monthly updates for humid tropical forest biomes.	30 meter "as it happens" system 250 meter / monthly for pan-tropics	10 meter / weekly updates for the world. <10 meter resolution on as needed basis for identified priority areas	GFW platform	Risk: Availability and prohibitive cost of satellite imagery Assumption: Technology will continue to advance and become more accessible and affordable
	Number of unique visitors of GFW platform	456,062	800,000	1,100,000	GFW platform	
Component 1: Application and enhancement of GFW globally and in pilot countries						
Outcomes Outcome 1.1: GFW is upgraded and applied on a global scale and	*Global*					
	New / enhanced GFW data sets and global alerts	3 land cover change alert system of various spatial and temporal resolutions, all relying on medium-resolution imagery	Addition of Terra-i system Upgrade of FORMA system to 250 meters As-it-happens Landsat system from UMD Ensemble algorithm combining existing systems	Multi-sensor, multi-input algorithms, integrating high resolution satellite imagery among other data streams.	GFW website, data layers description	
	GFW features and functionality: Crowd-sourcing and related	Minimal crowd-sourcing functionality Limited analytical tools	Mobile app enabling people on the ground to access and submit data	At least 3 unique crowdsourcing applications	GFW Platform, website analytics, user surveys	Identification of incentives to encourage wide participation in

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
in two pilot countries, Madagascar and Georgia, supporting: (a) improved management of existing forest areas and conservation of biodiversity, (b) reforestation/ afforestation programmes, (c) improved control of deforestation on the ground and monitoring / protection of carbon stocks and (d) providing the information base for PES schemes (Payment for Ecosystem Services).	Web 2.0 features		to GFW Tailored analytical tools through specialized apps for commodities, biodiversity, and climate	At least 8 specialized apps for conducting customized analysis		and contribution to the GFW platform.
	Number of datasets integrated within GFW website	61	91	106	GFW platform	Lack of transparency and data disclosure by governments and companies
	Pilot countries					
	Widespread and easy availability of nationally validated data sets of highly relevant to sustainable forest management	GFW has made historic and near-real time information on forest cover change widely and easily accessible, but at a resolution that is not sufficient to track deforestation in certain forest types or degradation	Use of higher resolution data has been demonstrated in pilot countries and integrated within national forest geo-portals	Pilot countries decide on protocols and systems for acquisition and use of higher resolution satellite data for forest management		
		Country-specific datasets are scattered and mostly unavailable	Identification of existing relevant data sets and progress towards making them available	Forest geo-portals make available national data sets in conjunction with and connected to GFW global system		
	Forest and land use management practices across multiple land use types	Information about forest cover and associated change is poorly utilized in areas such as protected areas management, fire control	Entry points for use of GFW data have been identified for multiple management processes	Routine use of GFW data within multiple management processes	Project reports	
	Awareness and capacity levels	Limited awareness of GFW system	Increasing awareness and use in management	Widespread awareness and use in management	Project reports	

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
Output 1.1.1 Improved global- and regional-level data on GFW platform Output 1.1.2 Improved features and functionality on GFW global platform to support analysis, decision-making and action Output 1.1.3 Nationally validated data sets, including refined forest cover / change data and additional locally generated data layers, are available within pilot country sections of GFW Output 1.1.4 Enhanced management practices through national and field-level application ('use cases') of data and information generated and made available through national GFW views Output 1.1.5 Targeted awareness, capacity building and outreach effort focusing on governmental and non-governmental stakeholders in the pilot countries to support timely and wide-ranging system uptake						

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
Outcome 1.2: Government and non-government agencies in pilot countries adopt GFW as a critical information tool for collaborating on landscape-level, multi-sectoral initiatives	Integration of forest biodiversity, carbon and land degradation considerations within landscape-level planning and management	Little or no experience integrating biodiversity, carbon and land degradation considerations into land use planning, zoning and/or management at any level (landscape or otherwise)	One large-scale landscape (> 1 million ha) in each pilot country has begun to integrate GFW as a tool for inter-sectoral co-operation and planning	One large-scale landscape (> 1 million ha) in each pilot country has completed a planning exercise using GFW as a tool for inter-sectoral co-operation and planning	Project reports	
Output 1.2.1 GFW demonstrated as a tool for integrating multiple biodiversity, carbon and land degradation considerations in support of landscape-level planning and management.						
Component 2: System uptake and replication						
Outcome 2.1: National-level users in multiple countries have enhanced opportunity to visualize and utilize country-specific data	National-level enrichment of GFW platform	Limited ability to access and view national-level data	GFW platform has been partly enhanced to optimize national-level uses	Full range of enhancements optimize national-level uses	GFW platform	
Output 2.1.1 Enhanced online GFW system to visualise and enable interpretation of country-relevant data.						
Outcome 2.2 Lessons learned and experience gained in target countries support the enhancement of the GFW platform to increase its relevance and utilization at scale	Level of uptake / use in target countries	Awareness of and use of GFW in target countries is extremely limited 617 unique visitors from Madagascar, 635 from Georgia	100% increase in access to GFW site from target countries 5 analytic cases produced in each country	200% increase in access to GFW site from target countries 10 analytic cases produced in each country	GFW platform use statistics	

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
by a range of stakeholders						
Output 2.2.1 Enhanced GFW uptake in target and other countries Output 2.2.2 Country-level and thematic analyses and sharing of lessons learned through implementation of use cases and other country-level co-operation Output 2.2.3 Policy and programme guidance based on GFW lessons learned						
Component 3: Strengthening and sustaining the GFW partnership						
Outcome 3.1 The GFW partnership is strengthened, long-term financial sustainability is secured, and GFW is increasingly regarded as a transparent and credible monitoring and management tool in support of forest conservation and sustainable use	Breadth of GFW membership	High percentage of western donors, companies	Increasingly broad membership	Membership of the GFW is broad, diverse, and effective for achieving GFW's objectives.	Partners' meeting reports	
	Sustainable financing of GFW	No plan	Plan is under discussion, with several underlying studies implemented	Plan is adopted by majority of GFW Partners	Partners' meeting report	
Output 3.1.1 Country-, regional- and global-level user networks established and strengthened Output 3.1.2 Sustainable financing plan for the						

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
GFW system developed in collaboration with public and private sector as well as CSOs Output 3.1.3 External and independent review and oversight mechanism established to guarantee highest degree of transparency and technical credibility						
Component 4: Private sector application to reduce deforestation in key commodity sector supply chains						
Outcome 4.1: National and global-level impacts of GFW on forest conservation are significantly enhanced through the adoption of the suite of tools/platforms as a supply chain management tool by the private sector	Number of GFW-Commodities endorsements or recommendations made by target commodity sector leverage points (e.g. TFA2020, CGF, RSPO)	0	5	10	Project reports	*Assumption*: Private sector will view GFW Commodities as an unbiased source of information and do not attempt to undermine its validity as such
	Number of private sector entities that have used GEF to improve their capacity to eliminate deforestation from their commodity supply chains	0	15	25	Project reports and associated surveys	
	Number of corporate standards, strategies, plans, or regulations addressing deforestation or compliance with sustainability commitments officially proposed, adopted, or implemented as a result of GFW	0	3	6	Project reports and associated surveys	

Project Strategy	Indicators	Baseline	Mid Term Targets	End of Project Targets	Sources of Verification	Risk and Assumptions
	assistance					
Output 4.1.1 Partnerships with selected private sector companies active in target commodity sectors in target countries and/or globally, to assess user needs and requirements and jointly explore the development of GFW-specific decision-support tools tailored to private sector operations, management systems, and covering various steps in commodity supply chains Output 4.1.2. An expanded and improved GFW Commodities application or suite of applications, providing enhanced datasets and management tools for companies trading in goods and services linked to deforestation Output 4.1.3 Broad, rapid uptake of GFW Commodities applications through partnership networks and specific promotion efforts.						

Appendix 5: Workplan and timetable

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
COMPONENT 1 – APPLICATION AND ENHANCEMENT OF GFW GLOBALLY AND IN PILOT COUNTRIES												
Outcome 1.1 - GFW is upgraded and applied on a global scale and in two pilot countries, Madagascar and Georgia, supporting: (a) improved management of existing forest areas and conservation of biodiversity, (b) reforestation/ afforestation programmes, (c) improved control of deforestation on the ground and monitoring / protection of carbon stocks and (d) providing the information base for PES schemes (Payment for Ecosystem Services).												
Output 1.1.1 – Improved global- and regional-level data on GFW platform												
Activity 1.1.1.1 Terra-i pan-tropical expansion of land cover change alerts system (originally developed for Latin America), with first version ready in 2015												
Activity 1.1.1.2 Increased resolution of FORMA alerts from 500 to 250 m for pan tropics												
Activity 1.1.1.3 Annual (2013-2016) updates of global tree cover change from UMD												
Activity 1.1.1.4 Thirty meter Landsat alert system from UMD												
Activity 1.1.1.5 Targeted use of high resolution satellite imagery (sub 10 m) based on hotspot identification supported by medium-resolution systems												
Activity 1.1.1.6 Addition of new global data sets, e.g. plantations, carbon												
Output 1.1.2 - Improved features and functionality on GFW global platform to support analysis, decision-making and action												
Activity 1.1.2.1 Improvement and/or addition of new analytical tools allowing users to interpret data on-the-fly to support decision-making												
Activity 1.1.2.2 Enhancement of user interface to make data more discoverable, understandable, and immediately relevant for multiple audiences												
Activity 1.1.2.3 New tools for crowdsourcing and user participation, including submission of ground-based information												
Activity 1.1.2.4 Optimization of the website and related apps for mobile phones												
Activity 1.1.2.5 New options for offline access to GFW data and analytical tools												
Output 1.1.3 - Nationally validated data sets, including refined forest cover / change data and additional locally generated data layers, are available within pilot country sections of GFW and on national forest geoportals												
Activity 1.1.3.1 Use validation and ground-truthing methods to ensure accuracy of GFW reporting of tree cover loss												
Activity 1.1.3.2 Integrate (obtain, review, validate, digitize if necessary, format and upload) additional pilot country data sets												
Activity 1.1.3.3 Select and acquire higher resolution data												

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 1.1.3.4 Combined GFW global and national data sets constitute pilot country forest geoportals												
Output 1.1.4 - Enhanced management practices through national and field-level application ('use cases') of data and information generated and made available through national GFW views												
Activity 1.1.4.1 Establishment of use case implementation groups for identified cases												
Activity 1.1.4.2 Groups finalize use case details, including budgets; national-level steering committees approve												
Activity 1.1.4.3 Use cases are implemented												
Activity 1.1.4.4 Use case lessons are captured and shared nationally and internationally												
Activity 1.1.4.5 Additional use cases are solicited, approved and implemented												
Output 1.1.5 - Targeted awareness, capacity building and outreach effort focusing on governmental and non-governmental stakeholders in the pilot countries to support timely and wide-ranging system uptake												
Activity 1.1.5.1 National and local-level workshops will introduce key stakeholders to GFW and further assess analytical needs												
Activity 1.1.5.2 Implement targeted program of institutional and human capacity building												
Activity 1.1.5.3 Collaboration with universities, schools, NGOs, donors and media will serve to increase knowledge about forests and to support national-level efforts to generate and publish value-added, GFW-based analyses												
Outcome 1.2 - Government and non-government agencies in pilot countries adopt GFW as a critical information tool for collaborating on ladscape-level, multi-sectoral initiatives												
Output 1.2.1 - GFW demonstrated as a tool for integrating multiple biodiversity, carbon and land degradation considerations in support of landscape-level planning and management												
Activity 1.2.1.1 Detailed correlation of complete set of use cases to demonstration areas, together with associated capacity building needs												
Activity 1.2.1.2 Establish inter-sectoral committees												
Activity 1.2.1.3 Identify higher resolution data needs and acquire data sets												
Activity 1.2.1.4 Implement capacity building measures												
Activity 1.2.1.5 Use case implementation												
Activity 1.2.1.6 Apply emerging findings within landscape-level planning exercise												
COMPONENT 2 – SYSTEM UPTAKE AND REPLICATION												
Outcome 2.1 National-level users in multiple countries have enhanced opportunity to visualize and utilize country-specific data												
Output 2.1.1 Enhanced online GFW system to visualise and enable interpretation of country-relevant data												

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 2.1.1.1 Improved interfaces to access and view national data sets, e.g. land cover, land use, forest type												
Activity 2.1.1.2 Upgraded country pages developed in collaboration with FAO and coinciding with the launch of the Global Forest Resources Assessment 2015												
Activity 2.1.1.3 Ongoing user surveys and feedback analyzed to inform interface improvements and web development priorities												
Activity 2.1.1.4 Structured user testing of new features and functionalities to enable development												
Activity 2.1.1.5 Improved web-based translation systems, user manuals in multiple languages and additional language-related options												
Activity 2.1.1.6 Tailored GFW apps developed to address monitoring needs related to key international policy commitments, e.g. monitoring national progress towards CBD Aichi targets, setting reference levels for REDD+, etc.												
Activity 2.1.1.7 Online training materials, such as sample analyses, examples and webinars												
Outcome 2.2 Lessons learned and experience gained in target countries support the enhancement of the GFW platform to increase its relevance and utilization at scale by a range of stakeholders												
Output 2.2.1 – Enhanced GFW uptake in target and other countries												
Activity 2.1.2.1 In-country efforts, including workshops and support to documentation in local newspapers, etc												
Activitiy 2.1.2.2 Support country participation in sub-regional, regional- and thematic-level workshops												
Output 2.2.2 - Country-level and thematic analyses of lessons learned through implementation of use cases and other country-level												
Activity 2.2.2.1 Analyse GFW uptake within not only GEF pilot countries (Georgia and Madagascar) but also within other countries where GFW uptake is being targeted (see 2.2.1 above).												
Activity 2.2.2.2 Thematic, multi-country analyses assess and attempt to quantify the specific management contexts (protected areas management, community forest management, etc.) within which GFW is having impacts, as well as techniques for using GFW effectively to identify and address drivers of deforestation and forest degradation, strengthen governance, etc.												
Activity 2.2.2.3 Success stories, as well as persisting barriers, are identified and shared at regional and thematic workshops, training courses and online.												
Activity 2.2.2.4 Lessons learned feed back iteratively into further enhancements to GFW, including tool development to address cross-cutting challenges, bottlenecks, and barriers to uptake												
Output 2.2.3 Policy and programme guidance based on GFW lessons learned												
Activity 2.2.3.1 Develop guidelines for national governments related to the use of remote sensing and associated data and information for enhanced forest and land use management, as well as the utility of apps aiming to support countires in monitoring international commitments related to CBD Aichi targets, REDD+, etc.												
Activity 2.2.3.2 Produce policy papers based onresults of 2.2.3.1												

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 2.2.3.3 Disseminate findings to governments, CBD, UNFCCC, UNCCD, CSOs and the private sector												
COMPONENT 3 – STRENGTHENING AND SUSTAINING THE GFW PARTNERSHIP												
Outcome 3.1 The GFW partnership is strengthened, long-term financial sustainability is secured, and GFW is increasingly regarded as a transparent and credible monitoring and management tool in support of forest conservation and sustainable use												
Output 3.1.1 - Country-, regional- and global-level user networks established and strengthened												
Activity 3.1.1.1 Support to national- and local-level networks engaging governmental, academic, indigenous people's, women's and civil society representatives to stimulate and enhance the use of GFW for improved forest management												
Activity 3.1.1.2 Ensuring partner country level representation in the Partnership												
Activity 3.1.1.3 Development and maintenance of a user contact database												
Activity 3.1.1.4 Creation of an online discussion forum, uer profiles and other social networking tools to enable communication, lesson sharing, and collaboration across national, regional and global user networks												
Activity 3.1.1.5 Recruitment of new GFW Partners												
Activity 3.1.1.6 Creation of MOUs and partnership agreements as necessary												
Activity 3.1.1.7 Regular communications to the GFW Partnership (e.g. via email newsletters, the GFW Partner website, bilateral discussions), including updates on key activities and outcomes and soliciting input on key challenges												
Activity 3.1.1.8 Annual in-person meetings of the GFW Partners and Advisors, potentially including global and regional gatherings												
Output 3.1.2 - Sustainable financing plan for the GFW system developed in collaboration with public and private sector as well as CSOs												
Activity 3.1.2.1 Assessment of cost-saving benefits of GFW for key user groups, enabled through low-cost access to data and tools and increased efficiency of operations												
Activity 3.1.2.2 Assessment of opportunities to minimize costs associated with data and platform maintenance												
Activity 3.1.2.3 Recruitment of additional private sector partners, especially from technology sectors, to provide in-kind contributions to reduce costs (e.g. free cloud computing services from Google)												
Activity 3.1.2.4 Ongoing monitoring, evaluation, and documentation of outcomes and success stories to share with existing and prospective funders and stakeholders												
Activity 3.1.2.5 Enhancement of the GFW API and other open source tools (see Output 1.1.2) to allow GFW partners and users to build on the core platform to generate new apps and tools to address their own needs, thereby spreading development costs among a broader network of users												
Output 3.1.3 - External and independent review and oversight mechanism established to guarantee highest degree of transparency and technical credibility												

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 3.1.3.1 Establish global technical advisory committee to ensure operational transparency and effective management, especially in regards to the latest remote sensing information, algorithms and needed computing power and long-term sustainability of the initiative												
Activity 3.1.3.2 Technical committees (subsets of the GFW Advisory Group) will address specific technical challenges related to data and will be involved in the development of articles to scientific journals documenting methodologies for key GFW datasets.												
Activity 3.1.3.3 Put forward open and regularly updated communications regarding known uncertainty levels and limitations related to specific data available via the GFW website.												
Activity 3.1.3.4 Workshops to convene data scientists and relevant stakeholders to address questions and concerns about specific datasets and associated methodologies												
COMPONENT 4 – PRIVATE SECTOR APPLICATION TO REDUCE DEFORESTATION IN SUPPLY CHAINS												
Outcome 4.1 National and global-level impacts of GFW on forest conservation are significantly enhanced through the adoption of the suite of tools/platforms as a supply chain management tool by the private sector												
Output 4.1.1 Partnership established with selected private sector companies active in pilot countries and/or globally, to assess user needs and requirements, and jointly explore the development of GFW Specific Decision-Support tools tailored to PS operations, management systems, and covering various steps in range of commodity supply chains												
Activity 4.1.1.1 Develop formal partnership agreements with select companies demonstrating high commitment to reducing impacts on forests and playing a major role in specific commodity supply chains.												
Activity 4.1.1.2 Work closely with partner companies to identify and prioritize goals, data and analytical needs, and critical data gaps for monitoring and reporting on supply chain sustainability												
Activity 4.1.1.3 Develop data-sharing partnerships to enable presentation of the highest quality and most comprehensive information available about commodity production and supply chain systems												
Output 4.1.2. Specific management tools for investors and private companies trading in forest ecosystem services and goods are developed												
Activity 4.1.2.1 Develop tools for supply chain companies												
Activity 4.1.2.2 Develop tools for commodity standards systems												
Activity 4.1.2.3 Develop tools that enable people and companies to contribute data and stories from the ground												
Activity 4.1.2.4 Develop tools that help NGOs and other stakeholders to lobby governments, growers, traders, certification schemes, and other supply chain actors												
Output 4.1.3 GFW tools for private sector widely promoted within private sector's relevant conventions and specific communication channels, supporting rapid global uptake												
Activity 4.1.3.1 Use GFW's emerging global partnerships to accelerate uptake by local subsidiaries, joint-venture partners, and												

ACTIVITY	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
suppliers of agricultural products linked with deforestation and forest degradation												
Activity 4.1.3.2 Participate in relevant multi-stakeholder and international fora to help build consensus around, and commitment to, a vision for sustainable commodities production												
Activity 4.1.3.3 Engage with target country governments and other stakeholders, using GFW Commodities as a fulcrum around which to focus relevant policy discussions												

Appendix 6: Key deliverables and benchmarks

Outputs	Country / Global	Deliverables	Benchmarks
1.1.1 Improved global- and regional-level data on GFW platform	Global	• Terra-I pan-tropical expansion of their forest cover change alerts system (originally developed for Amazon); first version ready in 2015 • Improved resolution of FORMA Alerts from 500 to 250 m for pan tropics • Annual updates of global tree cover change from UMD (2013-2016) • Thirty meter Landsat alert system by UMD • Targeted use of high resolution imagery based on hotspot identification • Addition of new global data sets, e.g. carbon, plantations	• New data sets are available on GFW website and being used
1.1.2 Improved features and functionality on GFW global platform to support analysis, decision-making and action	Global	• Improved / new analytical tools • Improved user interface to make data more discoverable, understandable, and immediately relevant for multiple audiences • New tools for crowdsourcing and user participation, including submission of ground-based information	• New features in use on the GFW website
1.1.3 Nationally validated data sets, including refined forest cover / change data and additional locally generated data layers, are available within national views of global GFW site and on national forest geoportals	Georgia	• Validated national-level data sets • Filling of critical data gaps, including acquisition of 5 m. resolution satellite data for entire forest area of Georgia (3.5 million ha) for two time steps to validate forest cover change data • National forest geo-portal, incorporating datasets / layers considered important by national stakeholders	• Forest geo-portal is up and running
	Madagascar	• Validated national data sets • Filling of critical data gaps, including acquisition of high-resolution satellite data for northwest region of Madagascar (x million ha) for two time steps to validate forest cover change data • National forest geo-portal, incorporating datasets / layers considered important by national stakeholders	• Forest geo-portal is up and running

Outputs	Country / Global	Deliverables	Benchmarks
1.1.4 Enhanced management practices through national and field-level application ('use cases') of data and information generated and made available through national GFW views	Georgia	• Implementation of use cases in, *inter alia*, the following areas: management of production forests, forest fire alert systems, forest assessment and inventories, protected areas management, forest carbon stock analysis and strategy, reforestation	• Final use case reports, including quantified impact assessments
	Madagascar	• Implementation of use cases in, inter alia, the following areas: protected areas management, community forest management, REDD+, mangrove management, mining, EIA, watershed management, production forest management	• Final use case reports, including quantified impact assessments
1.1.5 Targeted awareness, capacity building and outreach effort focusing on governmental and non-governmental stakeholders in the pilot countries to support timely and wide-ranging system uptake	Georgia	• National and local-level workshops introduce stakeholders to GFW and assess analytic needs • Build institutional and human capacities to use GFW to enhance forest management, reduce deforestation and conserve biodiversity and carbon stocks • Outreach, awareness raising and participation (including involving local people from existing governmental and NGO networks) through upload features/crowd-sourcing, media roundtables and landscape-level initiatives • Collaboration with universities, NGOs, donors and media to increase knowledge and develop GFW-based analyses	• GFW-based analyses
	Madagascar	• National and local-level workshops introduce stakeholders to GFW and assess analytic needs • Build institutional and human capacities to use GFW to enhance forest management, reduce deforestation and conserve biodiversity and carbon stocks • Outreach, awareness raising and participation (including involving local people from existing governmental and NGO networks) through upload features/crowd-sourcing, media roundtables and landscape-level initiatives • Collaboration with universities, NGOs, donors and media to increase knowledge and develop GFW-based analyses	• GFW-based analyses

Outputs	Country / Global	Deliverables	Benchmarks
1.2.1 GFW demonstrated as a tool for integrating multiple biodiversity, carbon and land degradation considerations in support of landscape-level planning and management	Georgia	• Specific landscape-level enhancements to GFW useful for implementation of the demonstration are identified and developed • GFW analyses from multiple use case areas (production forest management, fire alerts, forest assessment, PA management, carbon and reforestation) are used to develop integrated landscape-level forest and land use management strategy in Adjara Autonomous region	• NA
	Madagascar	• Specific GFW-based analyses—including those based on higher resolution data, as needed—prepared concerning pilot landscape (North-West) Analyses are used to ensure mainstreaming of biodiversity and carbon considerations into land use planning within the target landscape	• NA
2.1.1 Enhanced online GFW system to visualise and enable interpretation of country-relevant data	Global	• Collaborate with local experts, researchers, and universities analyzing forest cover change within local contexts to better understand impacts of forest policies	• NA
2.2.1 – Enhanced GFW uptake in target and other countries	Global	• National and local civil society participation encouraged through hub-and-spoke collaboration and South-to-South cooperation increased through regional and thematic symposia	• NA
2.2.2 - Country-level and thematic analyses of lessons learned through implementation of use cases and other country-level	Global	• Collect lessons learned from use cases in GEF pilot countries and countries where GFW is actively engaged; lessons learned will include success stories and how GFW platform should incorporate national-level data	• NA
3.1.1 - Country-, regional- and global-level user networks established and strengthened	Global	• In-country networks developed involving nonprofit organizations and governments	• NA
3.1.2 Sustainable financing plan for the GFW system developed in collaboration with public and private sectors, as well as civil society	Global	• Studies demonstrate cost effectiveness of GFW-based effort including for monitoring and targeting enforcement • Examine new approaches to cost effective maintenance of the system • Encourage country- and private sector financing of national and thematic system components	• Completed financing plan

Appendix 7: Costed M&E plan

The monitoring and evaluation process is expected to be a key component of each outcome area, within the project, based on a three-year implementation plan. Monitoring and Evaluation (M&E) will be conducted utilising the results-based management approach. The Results Framework provides performance and impact indicators for project implementation along with corresponding means of verification. M&E will be an on-going process and is based on the following strategic directions:

- An effective coordinating mechanism with roles and responsibilities clearly defined and under the aegis of World Resources Institute (WRI), which has lead responsibility for overall project execution.
- The monitoring and evaluation process is participatory, consultative and aimed at ensuring delivery of project outputs and achievement of associated defined targets. Evaluation will be based on the status of implementation, through identification of gaps, and the measurement of impacts and level of success in the application of best practices.

UNEP will be responsible for managing the mid-term review/evaluation and the terminal evaluation. The Project Manager and partners will participate actively in the process.
The project will be reviewed or evaluated at mid-term. The purpose of the Mid-Term Review (MTR) or Mid-Term Evaluation (MTE) is to provide an independent assessment of project performance at mid-term, to analyze whether the project is on track, what problems and challenges the project is encountering, and which corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. In addition, it will verify information gathered through the GEF tracking tools.
The project Steering Committee will participate in the MTR or MTE and develop a management response to the evaluation recommendations along with an implementation plan. It is the responsibility of the UNEP Task Manager to monitor whether the agreed recommendations are being implemented. An MTR is managed by the UNEP Task Manager. An MTE is managed by the Evaluation Office (EO) of UNEP. The EO will determine whether an MTE is required or an MTR is sufficient.

An independent terminal evaluation (TE) will take place at the end of project implementation. The EO will be responsible for the TE and liaise with the UNEP Task Manager throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes:

i. to provide evidence of results to meet accountability requirements, and
ii. to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP and executing partners.

While a TE should review use of project funds against budget, it would be the role of a financial audit to assess probity (i.e. correctness, integrity etc.) of expenditure and transactions.

The TE report will be sent to project stakeholders for comments. Formal comments on the report will be shared by the EO in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the EO when the report is finalised. The evaluation report will be publically disclosed and will be followed by a recommendation compliance process.

The direct costs of reviews and evaluations will be charged against the project evaluation budget.

The M&E plan includes an inception workshop and report, project implementation reviews, quarterly and annual review reports, and mid-term and final evaluations. The following sections outline the principal components of the M&E plan and M&E activities. The M&E plan for the project will be presented and finalized in an Inception report following a collective fine-tuning of indicators, means of verification, and the full definition of implementation arrangements related to executing partners and project staff.

The indicative Monitoring and Evaluation Work Plan is provided in Table 1 below.

Table 1: Indicative Monitoring and Evaluation Work Plan

Type of M&E Activity	Responsible Parties	Time Frame	Costing
Project Inception Workshop and Report	• National Project Director • Project Coordinator/PCU • UNEP	Within first two months of Project start up	Total: $30,000
Measurement of Means of Verification of Project results (outcome indicators and GEF tracking tools, including baseline data)	• Project Steering Committee / National Project Director will oversee the hiring of specific studies and institutions/ agencies, and delegate responsibilities to relevant executing partners and /or Project Technical Committee members • National Project Director • Project Coordinator • PIU	Start, mid and end of Project (during evaluation cycle); and annually.	Total: $25,000
Measurement of Means of Verification for Project Progress (progress and performance indicators)	• Oversight by National Project Director • Project Coordinator • PSC and IPTC	Annually prior to ARR/PIR and as defined in annual work plans	Total: $20,000
Annual Risk Review (ARR) and Project Implementation Report (PIR)	• Project Director • Project Coordinator • PSC/	Annually	None
Periodic Status/Progress Reports to UNEP	• National Project Director • Project Coordinator •	Semi-annual/Quarterly	None
Project Steering Committee (PSC) meetings	• National Project Director • Project Coordinator • PSC members • UNEP (annually)	Annually	Total: $45,000
Reports of PSC meetings	• National Project Director • Project Coordinator	Semi-annually	None
MTR/MTE’	• National Project Director • PSC • UNEP Task Manager • National and External Consultants	At the mid-point of Project implementation	Total: $40,000
Terminal Evaluation	• UNEP Evaluation Office • National Project Director • PSC • UNEP Task Manager • External Consultants (i.e. evaluation team)	At least 3 months before the end of Project implementation	Total: $40,000
Audits	• Government Accounting Department • National Project Director • Project Executing Agency	Annually	Total: $10,000
Project Final Report	• National Project Director • Project Coordinator • PSC	Within 2 months of Project completion	None
Co-Financing Report	• National Project Director • Project Coordinator • PSC	Within 1 month of PIR reporting period	None
Field Visits	• National Project Director	As appropriate	Total: $20,000

Type of M&E Activity	Responsible Parties	Time Frame	Costing
	• Project Coordinator • PSC • Representatives of Executing partners • UNEP		
Publications of Lessons Learned and other Project Documents	• National Project Director • Project Coordinator • Project Executing Agency	Annually, part of semi-annual reports and Project Final Report	Total: $20,000
Total M&E Plan Cost			**$250,000**

The key indicators according to which M&E will take place are presented in the results framework (Annex 4).

A Project Inception Workshop (IW) will be held within the first three (3) months of start-up with the PCU, Project Steering Committee (PSC), UNEP, WRI, country-level executing partners and other implementation partners, and co-financing partners, as appropriate. A fundamental objective of this IW will be to help the project implementation partners to renew and elaborate commitment to the project goal and objectives, as well as to finalize preparation of the first annual work plan on the basis of the results framework. This will include reviewing the results framework (indicators, means of verification, and assumptions), adding additional detail as needed, and on the basis of this exercise, drafting the Annual Work Plan (AWP) with more precise and measurable performance indicators, and in a manner consistent with the expected Project outcomes. The workshop will also be used to define specific targets that are aligned to BD, SFM, and SLM Tracking Tools and for the first-year implementation progress indicators, together with their means of verification.

Day-to-day monitoring of implementation progress will be the responsibility of the National Project Coordinator based on the project's AWP and its indicators. The National Project Coordinator will inform the UNEP-GEF and the Lead Executing Partner of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion. The National Project Coordinator will fine-tune the progress and performance/impact indicators of the Project in consultation with the IPTC, as well as develop specific targets for the first-year implementation progress indicators together with their means of verification. These will be used to assess whether implementation is proceeding at the intended rate and in the right direction and will form part of the AWP. Targets and indicators for subsequent years will be defined annually as part of the internal evaluation and planning processes undertaken by the PCU.

Periodic monitoring of implementation progress will be undertaken by the PSC through quarterly meetings of the PSC, IPTC, Lead Implementation Agency and the PIU, or more frequently as deemed necessary. This will allow parties to take stock of and to troubleshoot any problems pertaining to the Project in a timely fashion to ensure the timely implementation of activities. The PIU under the guidance of the PSC, and in conjunction with other members of the IPTC, will, as appropriate, conduct yearly field visits to assess the impact of implementation on the ground, particularly with regard to the tangible interventions. Field Visit Reports will be prepared by PIU, and circulated no less than one month after the visit(s).

Annual monitoring will occur through the PSC Reviews. The Project will be subject to reviews by the PSC at least once every year. The first such meeting will be held within the first twelve (12) months of the start of full implementation. The National Project Coordinator will prepare an Annual Project Report (APR) and submit it to PSC at least two weeks prior to the review, for the review and comments of the PSC/IPTC.

The Terminal Review will be held in the last month before the Project National Project Coordinator is responsible for preparing the Terminal Report and submitting it to the PSC. It shall be prepared in draft at least two months in advance of the PSC Review meeting. The terminal review will consider the implementation of the Project as a whole, paying particular attention to whether the Project had achieved its stated goals and objectives and contributed to the broader objectives of the Forestry Department and

wider national development objectives. It will act as a vehicle through which lessons learned and any actions that are still necessary can be captured for further replication at the community, national and regional level, particularly in relation to sustainability of the outcomes from Project interventions.

The National Project Coordinator in conjunction with the executing partners will be responsible for the preparation and submission of the following reports that will form part of the monitoring process. An Inception Report (IR), which will be prepared immediately following the launching of the Project. It will include a detailed First Year/AWP divided in quarterly timeframes detailing the activities and progress indicators that will guide implementation during the first year of the project. An Annual Project report (APR) will be prepared on an annual basis prior to the PSC Review, to reflect progress achieved in meeting the AWP.

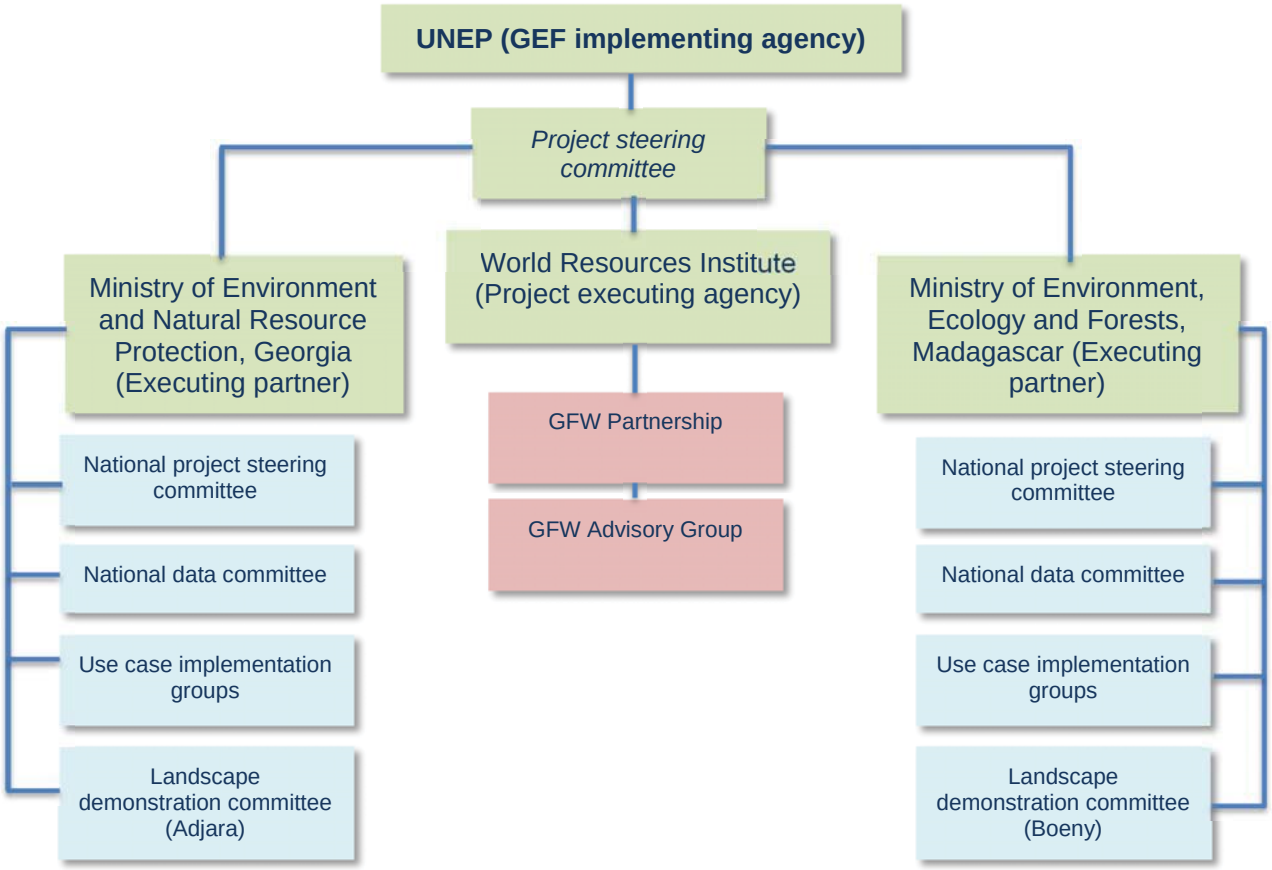
A Periodic Implementation Review (PIR) Report emanating from the process of Project implementation review is the main vehicle for extracting lessons learned. The PIR can be prepared any time during the year and ideally prior to the PSC review. Quarterly Progress Reports outlining main updates in project progress will be provided to the PSC by the National Project Coordinator. Progress made shall be monitored based on the Enhanced Results Based Management Platform and the risk log will be regularly updated based on the initial risk analysis included in the Inception Report.

The Results Framework is provided at Appendix 4. The mid-term targets for these indicators will be established and confirmed during the Inception Workshop.

Appendix 8: Summary of reporting requirements and responsibilities

Reporting Requirements	Due Date	Format appended to legal instrument as	Responsibility of
Procurement plan (goods and services)	2 weeks before project inception meeting		Project Manager Project Coordinator
Inception Report	1 month after project inception meeting		Project Manager Project Coordinator
Expenditure report accompanied by explanatory notes	Quarterly on or before 30 April, 31 July, 31 October, 31 January		Project Manager Project Coordinator
Cash advance request and details of anticipated disbursements	Quarterly or when required		Project Manager Project Coordinator
Progress report	Half-yearly on or before 31 January		Project Manager Project Coordinator
Audited report for expenditures for year ending 31 December	Yearly on or before 30 June		Project Executing Agency (WRI)
Inventory of non-expendable equipment	Yearly on or before 31 January		Project Manager and Project Coordinator
Co-financing report	Yearly on or before 31 July		Project Manager and Project Coordinator
Project Implementation Review (PIR) report	Yearly on or before 31 August		Project Manager and Project Coordinator, UNEP-GEF Task Manager (TM)
Minutes of Steering Committee meetings	Yearly (or as relevant)		Project Manager Project Coordinator
Final Report	3 months after project completion date		Project Coordinator
Final inventory of non-expendable equipment			Project Coordinator
Equipment transfer letter			Project Manager and Project Coordinator
Final expenditure statement	4 months after project completion date		Project Manager Project Coordinator
MTR/MTE	Midway through project		UNEP Task Manager UNEP Evaluation Office
Final audited report for expenditures of project	6 months after project completion date		Project Executing Agency (WRI)
Independent Terminal Evaluation Report	6 months after project completion date		UNEP Evaluation Office

Appendix 9: Decision-making flowchart and organogram



Appendix 10: Terms of Reference

1. PROJECT MANAGER (PM)

The Executing Agency in collaboration with the Implementing Agency will appoint a suitably qualified person to provide primary support for the implementation of the UNEP/GEF supported project "Global Forest Watch (GFW)." The appointee will be based at the Headquarters of the executing agency, World Resources Institute, in Washington, D.C.

Functions
The Project Manager will:

- Provide technical support and administrative leadership to national project teams in Georgia and Madagascar;
- In consultation with national partners, prepare national work plan and annual updates, including national budget allocations;
- Facilitate development and signing of the Letters of Agreement (LoA) with appropriate national partners to undertake activities specified in the work plan;
- Work in collaboration with different project partners from relevant national institutions for the implementation of national project components;
- Ensure efficient and effective communication between and amongst activities at national and global levels;
- Maintain close communication with national project teams, particularly national co-ordinators;
- Participate in the Management Committee Meetings where the work plan and budget of national project components will be agreed by project partners;
- Serve as Executive Secretary and provide support to Project Management Committee in coordinating policy related project implementation at national level;
- Prepare project status reports for the Project Management Committee and ensure that project is executed in accordance with relevant UNEP/GEF and in-country requirements;
- Monitor the financial and budgetary status of the global and national components of the project;
- Be responsible for approving and endorsing all financial documentation of the national components of the project;
- Ensure the delivery of in-kind and in-cash contributions for implementation of project components;
- Assist consultants in their work on project the implementation of project activities;
- Approve terms of reference and conduct hiring procedures for national consultants;
- Oversee public relations for the project;
- Maintain good communication with the other relevant projects as well as with project stakeholders;
- Work to ensure political and policy level buy-in.

Outputs
- Project Management Arrangements are in place and fully functional;
- At least four PMC meetings held each year;
- Scheduled project activities completed successfully;
- Project component implementation well-coordinated;
- Project implementation maximizes synergies with other relevant projects in the country;
- Annual Operational Work plan and budget prepared by and PMU and submitted to PMC for approval on a timely basis;

- Quarterly and annual technical and financial reports prepared and submitted to PMC within stipulated deadlines;
- Transfers of GEF funds from WRI to sub-contractors efficiently accomplished;
- Project objectives successfully met;
- UNEP/GEF norms for monitoring and evaluation of project performance, output delivery and impact applied;
- Nationally contracted consultants and national project staff supervised;
- Effective public relations;

Relationships
The Project Manager will:
- Be accountable to the Executing Agency (WRI) for the achievement of project objectives, results, and all fundamental aspects of project execution;
- Maintain regular communication with the Project Management Committee (PMC);
- Maintain regular communication with the UNEP GEF Task Manager;
- Supervise the work of the Project Coordinator;

Qualifications
- Advanced university degree (Ph.D. or Master's) in ecology, environmental sciences, climate change studies and evidence of training in the field of Natural Resource Management (NRM);
- Minimum of five years' experience in administration/management of national/international projects;
- Proven experience in project management and administrative management;
- Proven experience in facilitating meetings or discussions;
- Experience with GEF policies and procedures including logframe and similar project planning tools;
- Willingness and ability to travel frequently within country and to partner countries;
- Ability to work with senior government officials, research institutes, non-governmental organizations (NGOs), and local communities, etc.;
- Proven ability to manage budgets;
- Fluency in written and spoken English and strong communication skills.

2. TERMS OF REFERENCE OF NATIONAL EXPERTS / TEAM LEADERS

The National Executing Agency in collaboration with UNEP will appoint a suitably qualified candidate to fill the post of National Project Coordinator of the Project.

Functions
The Project Coordinator (PC) will:
- Provide technical and administrative leadership to the project team and act as the national representative of the project at regional and international levels;
- Observe agreed project management procedures in order to facilitate project implementation and ensure delivery of high quality outcomes;
- In consultation with local partners, prepare national work plans and annual updates including national budget allocations;
- Facilitate communications and linkages at local and national levels as well as with the Project Manager;
- Participate in PMC meetings and provide support as required;
- Organize national meetings, draft the agenda, and record decisions of national meetings;

- Coordinate work among Project Management Unit (PMU) staff and the national teams;
- Supervise the management of the project budget in accordance with the agreed work plan and approved disbursal of project funds, taking into account the decisions of project committees;
- Assist the Project Manager in developing monitoring and evaluation reports:
- Participate in the public relations activities for the project in the country;
- Maintain good communication with project partners and others in the country;
- Coordinate country provision of committed in-kind and in-cash contributions for the project.
- Coordinate the national scientific and technical team;
- Coordinate and contribute to the preparation and publication of national scientific and technical outputs from the Project;

Outputs

1. Project management units fully functional;
2. 12 Project Management Unit meetings held each year;
3. At least 4 Technical Advisory Committee meetings held each year;
4. Scheduled project activities completed successfully;
5. Project activities well-coordinated with other relevant projects at national level;
6. Project implementation well-coordinated with PMU;
7. Annual operational plan including budget prepared and submitted on time to the Executing Agency;
8. Quarterly and bi-annual technical (Progress Reports, Project Implementation Reports) and financial reports (GEF fund and Co-financing) prepared and submitted to the Executing Agency completely and timely;
9. National, local and site level workshops and other monitoring meetings as needed convened;
10. Assist UNEP GEF Senior Project Management Officer and the independent evaluator (to be appointed by UNEP in the Mid-Term Review and Final Evaluation of the project;
11. Project objectives successfully met;
12. Effective public relations and public awareness at country level;

Relationships

The Project Coordinator (PC) will:

- Be accountable at national level for the achievement of project objectives, results, and all fundamental aspects of project execution;
- Report to the Project Management Unit(PMU) and Project Management Committee (PMC)
- Be accountable to the Project Manager for the achievement of project objectives, results and all technical aspects of national component execution;
- Maintain regular communication with the local and national project partners that may be interested in furthering the project outcomes;
- Maintain regular communication with project site offices and the PM;
- Supervise the work of the national Technical project support staff;
- Supervise the work of the national consultants and project partners.

Qualifications

Advanced university degree in an Environmental field and evidence of training in Natural Resource Management. The candidate must demonstrate a familiarity with the circumstances related to NRM in SIDS;

- A good understanding of environmental and natural resource issues in Antigua and Barbuda the social circumstance that surround the same.
- A working knowledge of the Antigua and Barbuda National Environmental Management Strategy

- A good knowledge of the United Nations Convention on Biological Diversity and the United Nations Convention to Combat Desertification
- Minimum of 5 years' experience in administration/management of international projects;
- Experience in project management and administrative management;
- Experience in facilitating meetings or discussions;
- Experience with working with regional and international partners
- Willingness and ability to travel frequently within and outside the country
- Ability to work with senior government officials, research institutes, non-governmental organizations (NGOs), and local communities.
- Fluency in written and spoken English and strong communication skills.

3. TERMS OF REFERENCE FOR ADMINISTRATIVE ASSISTANT (PA)

The Executing Agency in consultation with the PC will appoint a suitably qualified person to provide support to the execution of the national aspects of the UNEP implemented, GEF supported project.

This will include:

Functions
The Project Assistant will undertake the following duties:

- Provide support to the PM and PC in the financial and administrative management of the project;
- Act as secretary to the PMU
- Assist in project administration by assembling and preparing necessary documentation; helping to prepare letters of agreement for research and consultancy services; monitor budgets and liaise with accounting staff about payments and financial reports; interact with external agencies on non-technical and administrative matters;
- Assist in recording and monitoring project expenditures and funds availability in close consultation with the PM;
- Assist PM and PC in preparing quarterly financial reports and reimbursement claims for submission to the Executing Agency;
- Undertake office fixed assets inventory and its reporting to the Executing Agency;
- Format reports, proceedings and other relevant documents;
- Assist PM and PC in organizing and conducting PSC Meetings and National Workshops;
- Assist Project Coordinator in communication with national partners and local authorities by phone, fax and other correspondence;
- Update project website;
- Assist PM assembling necessary information to prepare reports;

Outputs
- Project activities are implemented successfully;
- Annual operational plan including budget prepared and submitted in timely manner;
- Quarterly and annual technical and financial reports prepared and submitted in timely manner;
- UNEP/GEF norms for monitoring and evaluation of project performance, output delivery and impact applied;

- PMU functions effectively;
- Project website is developed and maintained.

Relationships
The National Administrative Assistant will:
- Report directly to the PM and PC;
- Maintain regular communication with the PMU, PM and PC;
- Be accountable to the PM and PC for the functioning of the PMU;
- Provide administrative assistance to the PMU.
- Will act as the focal point in information gathering/dissemination from/to national partners.

Qualifications
- Minimum of two years of professional experience relevant in international or government organizations;
- Proven ability to manage budgets;
- Experience in word processing and other relevant office applications software packages;
- Fluency in written and spoken English.

4. TERMS OF REFERENCE OF NATIONAL PROJECT STEERING COMMITTEE (PSC)

Project Steering Committees (PSCs) will be established in Georgia and Madagascar to provide general oversight and guidance to the project's national components, facilitate inter-agency coordination and monitor national-level activities. Each PSC will be comprised of individuals representing key sectors and institutions and will ensure the project fits within local, national, and international needs. They will include representatives of the NGO community and civil society.

The PSC will hold its meetings at least one time per year and its primary activities are to:

Provide general oversight and guidance to the project;
- Facilitate interagency coordination;
- Review and approve the annual work plans and annual technical reports;
- Review budget and co-financing status;
- Supervise the evaluation, monitoring and reporting aspects of the national component;
- Review and advise on implementation of national project component, as defined in the project logframe and work plan, through the evaluation of bi-annual reports, records of meetings and other relevant documents;
- Monitor inputs of international and national partners, ensuring that project obligations are fulfilled in a timely and coordinated fashion;
- Review and approve national components outputs.

Appendix 11: Co-financing commitment letters from project partners

WORLD RESOURCES INSTITUTE

GLOBAL FOREST WATCH

10 G Street, NE Suite 800 Washington, DC 20002 USA (PH) +1 (202) 729-7600 (FAX) +1 (202) 729-7610 www.WRI.org

7 December, 2014

Brennan Van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF Coordination and Contributions
United Nations Environment Programme

Brennan.vandyke@unep.org

Dear Ms. Van Dyke:

Co-financing for "Global Forest Watch"

On behalf of the **World Resources Institute**, I am pleased to confirm support for the UNEP-GEF project "Global Forest Watch", which is aimed at reducing deforestation and improving rural livelihoods by transforming forest management and conservation at a global scale.

We anticipate that our co-financing support will amount to USD 6 million in cash, based on grants from various sources, including the Governments of Norway, the United States and the United Kingdom. These funds will contribute to each of the project's three components. Funding for technical staff and other inputs will support the application and enhancement of GFW globally and in pilot countries (Component 1). Uptake and replication of GFW based on lessons learned in pilot and other countries will likewise be supported (Component 2). Finally, funds will support technical staff and sub-grants to GWF partner organizations, thus contributing to strengthening of the overall partnership (Component 3) and to the uptake and enhancement of the GFW platform globally.

Sincerely yours,

Steve Barker
CFO, World Resources Institute

Copy to:
GEF Operational Focal Point
Ersin Esen, UNEP/GEF Task Manager, Ersin.Esen@unep.org

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

KA060126330173914

საქართველო, 0114 თბილისი, გ.გულუას ქ. N6; ტელ:2727200, 2727220, ფაქსი:2727237; www.moe.gov.ge
6 G. Gulua Str. 0114, Tbilisi, Georgia, Tel:(+995 32) 2727200, 2727220, Fax:2727237; www.moe.gov.ge

7380 19 / December / 2014

To: Brennan Van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF Coordination and Contributions
United Nations Environment Programme
Brennan.vandyke@unep.org

Copy to: Ersin Esen
UNEP/GEF Task Manager
Ersin.Esen@unep.org

Nino Tkhilava
GEF Operational Focal Point
Head of the Environmental Policy and International Relations Department
Ministry of Environment and Natural Resources Protection of Georgia

Dear Ms. Van Dyke:

Co-financing for “Global Forest Watch”

On behalf of the Ministry of Environment and Natural Resources Protection of Georgia, I am pleased to confirm support for the GEF/UNEP Project "Global Forest Watch" which aims to develop and apply innovative GFW technology that will contribute to reducing deforestation, forest and land degradation, reduce illegal activities and support biodiversity conservation in the pilot countries (including Georgia) as well as on a global scale.

We anticipate that our support to the project over the next 3 years (April 2015 – April 2018) will amount to USD 2,000,000 in kind.

Sincerely yours,

Deputy Minister Giorgi Somkhishvili

REPOBLIKAN'I MADAGASIKARA
Fitiavana - Tanindrazana - Fandrosoana

Antananarivo, 02 FEB 2015

Secretary General

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to

Brennan Van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF Coordination and Contributions
United Nations Environment Programme

N° 076 /15/MEEMF/SG

Co-financing for Global Forest Wacth Project

Dear Van Dyke
On behalf of the Ministry of Environment, Ecology and Forest, I am pleased to confirm the support to the GEF/UNEP Project "Global Forest Watch 2.0" which aims to develop and apply innovative GFW technology for reducing deforestation and biodiversity loss in Madagascar during 3 years. Regarding to co-financing to implement the project activities, the Ministry in charge of Environment and its Partners commit to provide our in kind contribution **(US $ 2,500,000.00)** which is detailed below:

-the Ministry of Environment, Ecology and Forest through General Direction of Environment provides, as in-kind support, **US $ 197,000.00** (see below the detail):

Activity	In-kind Contribution Amount (USD)
DGE staff salaries in-kind for project preparation and implementation	63,000.00
In kind DGE facilities for project implementation	133,000.00
Meetings	1,000.00
Amount	**197,000.00**

-as the Ministry of Environment, Ecology and Forest cannot cover all amount of required co-financing (US $ 2,500,000.00), certain Partners of Ministry like Madagascar National Parks and Manondroala Project (Finnish Association for Nature Conservation) bring respectively **US $ 2,203,000.00** and **100,000.00** as in kind contribution during of implementation of this project .

Sincerely yours.

Copy to:
Ersin Esen, UNEP/GEF Task Manager

RABEANTOANDRO Marcellin

Suomen luonnonsuojeluliitto

Finnish Association for Nature Conservation

Letter of Support

January 20, 2015

United Nations Environment Programme (UNEP) / Global Environment Facility (GEF)
United Nations Avenue, Gigiri
PO Box 30552, 00100
Nairobi, Kenya
E-mail: gefinfo@unep.org

Dear Mr./Ms.,

It is my pleasure to write a letter in support of the proposal of Global Forest Watch (GFW) being submitted to the UNEP/GEF Trust Fund by the Ministry of Environment, Ecology and Forest of Madagascar (MEEF).

Project Manondroala, implemented in Madagascar by the Finnish Association for Nature Conservation (FANC) since 2011, is a development cooperation project funded by the Ministry for Foreign Affairs of Finland. The full name of the project is "Manondroala - Collaboration on protection, restoration and monitoring of forests in Madagascar ", and it has been focusing on mapping the degradation of eastern humid forest corridor of Madagascar. FANC is the biggest and most influential environmental non-governmental organization (NGO) in Finland with more than 30 000 members nationally.

The main NGO partners of FANC in project Manondroala are Transparent World from Russia and Association Mitsinjo, Madagascar Institute for the Conservation of Tropical Environments (MICET), Centre ValBio and Durrell Wildlife Conservation Trust in Madagascar. The project collaborates with the Universities of Antananarivo and Helsinki, and the Ministry of Environment, Ecology and Forest of Madagascar (MEEF), and is an active member of Comité National de Télédétection (CNT) in Madagascar.

The proposed GFW project is a great opportunity to create a coherent and widely applicable national forest mapping and monitoring tool, and gives our project a chance to find synergy with the global forest monitoring network. Our role in the project is to connect GFW to local actors, provide detailed forest data and technical support, and participate in the development of the methodology.

In conclusion, I fully support the proposal of GFW/MEEF, since I believe the project can greatly benefit the Malagasy state and environmental administration, as well as the whole conservation community from local to international level. Our in-kind co-financing for the GFW project will be **$ 100,000 (USD).**

Suomen luonnonsuojeluliitto – Finnish Association for Nature Conservation
Itälahdenkatu 22B, FI-00210 Helsinki, Finland | tel. +358 9 228 081
www.sll.fi | toimisto@sll.fi

Sincerely,

Suomen luonnonsuojeluliitto

Titta Lassila
Coordinator of Project Manondroala
Finnish Association for Nature Conservation

Suomen luonnonsuojeluliitto

Suomen luonnonsuojeluliitto – Finnish Association for Nature Conservation
Itälahdenkatu 22B, FI-00210 Helsinki, Finland | tel. +358 9 228 081
www.sll.fi | toimisto@sll.fi

Madagascar
National Parks

Antananarivo, le 09 AVR 2015

à

Madame le Directeur Général de l'Environnement
Ministère de l'Environnement,
de l'Ecologie, de la Mer et des Forêts
Ampandrianomby
Antananarivo

N° 250 /15/DG/DGA

Objet : Révision d'Engagement de co-financement pour le Projet Global Forest Watch 2.0
N/Référence : Lettre N°80/15/DG/DGA du 23 janvier 2015
V/Référence : Lettre N° 101– 15/MEEMF/SG/DGE/BNCCC en date du 30 mars 2015

Madame le Directeur Général,

Madagascar National Parks se félicite que Madagascar ait été choisi comme l'un des pays pilotes bénéficiaires de l'appui du Fonds pour l'Environnement Mondial dans le cadre du projet Global Forest Watch 2.0 dans lequel nous sommes impliqués. En effet, Madagascar National Parks contribue de par ses activités au sein d'un réseau de 2,8 millions d'Ha environ, à la réduction de la déforestation, de la dégradation des forêts et des terres, à la réduction des activités illégales, à la conservation de la biodiversité, ce qui est en totale cohérence avec le projet.

Nos activités dans ce sens (patrouilles et surveillance, restauration d'habitat, suivi écologique, surveillance des feux par voie satellitaire et lutte contre les feux, appui au développement local, éducation environnementale, etc....) sont liées à un PTA et un budget validés chaque année par notre Conseil d'Administration.

Nous nous engageons à assurer et à prendre en charge toutes ces actions qui contribuent à l'atteinte des objectifs du projet, et qui peuvent ainsi être comptabilisées comme co-financement de notre part. Cette contribution à travers nos activités peut être évaluée à un montant de l'ordre de 2,2 millions USD environ.

Veuillez agréer, Madame le Directeur Général, l'expression de nos salutations distinguées.

Pour le Directeur Général,p.o

Madagascar National Parks

Herijaona Randriamanantenasoa
Directeur Général Adjoint

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

giz 6, Gulua Street • 0114 Tbilisi • Georgia

Brennan Van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF
Coordination and Contributions
United Nations Environment Programme
Brennan.vandyke@unep.org

German Development Cooperation
Sustainable Management of Biodiversity, South Caucasus

6, Gulua Street
0114 Tbilisi, Georgia
T +995 32 220 18 28
F +995 32 220 18 01

Your reference:
Our reference: 11.2197.9-004.10 G8022/F20.5

December 19, 2014

Co-financing for "Global Forest Watch"

Dear Ms. Van Dyke,

On behalf of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, I am pleased to confirm support for the UNEP-GEF "Global Forest Watch" project, in particular with respect to Component 1 pilot country activities in the Republic of Georgia.

GIZ supports the Georgian Ministry of Environment and Natural Resource Protection (MoENRP) with its regional programme "Sustainable Management of Biodiversity, South Caucasus" in the field of national forest monitoring, among others. In Georgia, the project focuses, *inter alia*, on identification of forest cover based on RapidEye imagery, as well as support to planning the development of a comprehensive forest monitoring system.

We anticipate that the German and Austrian funding for the above-mentioned area of work, whose aims are potentially highly complementary to those of the GEF GFW project, will amount to at least USD 500,000 over the 2015-18 period. The work will be implemented in parallel with GEF GFW and no funds will be transferred from GIZ to the GEF project. Coordination of GIZ and GEF GFW support will be ensured through the MoENRP but I want to underline my wish that we also seek for close bilateral contact on that matter. We look forward to close co-operation with the GEF project team.

Kind regards,

Hans-Joachim Lipp
Programme Director

Cc MoENRP Georgia, attn. Mrs. Nino Tkhilava, International Cooperation and Policy Department
Cc MoENRP Georgia, attn. Mr. Karlo Amirajashvili (Forest Policy Service)
Cc Coordination Office of Austrian Development Agency in Tbilisi, attn. Mr. Gunther Zimmer
Cc Chris Cosslett; chris.cosslett@gmail.com
Cc Team Leader Georgia for "Sustainable Management of Biodiversity, South Caucasus"

Deutsche Gesellschaft für
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联合国环境规划署

UNEP

To:	Mrs Brennan Van Dyke Director, GEF Coordination Office, UNEP	Date:	22 December 2014
From:	Edoardo Zandri, Chief, Terrestrial Ecosystems Unit, CCATE Branch, DEPI, UNEP	Reference:	DEPI/TEU/EZ
Subject:	***Letter of co-funding commitment for the GEF full-size project: "Global Forest Watch"***		

Dear Brennan,

This note confirms the commitment of the UNEP DEPI Terrestrial Ecosystems Unit (TEU) to provide in-kind support to the full-size GEF/UNEP project: ***"Global Forest Watch".*** The in-kind co-financing to be provided by the TEU is estimated at $300,000 over a four years period (2015-2018), contributing to all project components and particularly to Component 2 (System uptake and replication), and Component 3 (Strengthening and sustaining the GFW partnership).

Our co-financing is linked to the ongoing UNEP project "*ecosystem management of productive landscapes*" which includes a list of 42 GEF/UNEP projects which may offer the opportunity to further test and scale-up GFW results, and i.e. subsequently also expand the scope of GFW to become a valuable tool for broader 'landscape monitoring', beyond Forest ecosystems. UNEP's in-kind co-financing will entail, but not necessarily be limited to, i.e.: TEU staff time to review project technical outputs and foster linkages and cross-fertilization with other UNEP initiatives on reducing deforestation and improving rural livelihoods by transforming forest management; sharing of relevant guidelines, publications, tools and methodologies on monitoring forest coverage, the role of forests in the transition to a Green Economy, the nexus between integrated ecosystem management and food security, biodiversity conservation and sustainable financing of forest management, that will be produced by UNEP and the TEU during the project period; providing linkages with the activities of UNEP in the framework of UN-REDD; Guidelines on multiple benefits of forests and the green economy, natural capital valuation and REDD+, REDD+ safeguards information systems, involvement of IPs and forest-dependent peoples in forest management and REDD+.

The TEU will also liaise with other relevant divisions in UNEP and within our partners on forest management including i.e. FAO, IFAD, LPFN and IUCN to ensure that project lessons learned are widely shared through the international networks,

Yours sincerely

Edoardo Zandri
Chief, Terrestrial Ecosystems Unit
UNEP/DEPI

Copy to:
Mohamed Sessay, UNEP-DEPI, mohamed.sessay@unep.org
Ersin Esen, UNEP-DEPI, ersin.esen@unep.org
Tim Christophersen, Team Leader, UNEP REDD, DEPI/TEU, Tim.Christophersen@unep.org
Keith Alverson, Head, DEPI/CCATEUB, Keith.alverson@unep.org
Neville Ash, Deputy Directory, UNEP DEPI, Neville.ash@unep.org
Niklas Hagelberg, EM SP Coordinator, UNEP-DEPI, niklas.hagelberg@unep.org

December 12, 2014

Brennan Van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF Coordination and Contributions
United Nations Environment Programme

RE: Co-financing for “UNEP-GEF Project 5636: Global Forest Watch”

Dear Ms. Van Dyke:

On behalf of Esri, I am pleased to confirm support for the GEF Project "UNEP-GEF Project 5636: Global Forest Watch" which is aimed at supporting global implementation of Global Forest Watch and national implementation in Georgia and Madagascar.

We anticipate that our support to the project over the next 3 years (project duration) will amount to **well over USD $9,494,000 in kind**. This would be comprised of ArcGIS software, online services, content and support.

Esri develops Geographic Information System (“GIS”) software to demonstrate geography as a primary means to solve complex problems through collection, analysis, and communication of information. We believe better information makes for better decisions. Through offering GIS software and service to the World Resources Institute and Global Forest Watch Partnership, Esri will contribute to a global online platform that will allow people to better manage forests all over the world.

On behalf of Esri, we look forward to working with and contributing to the ICMA Alliance’s efforts in bringing innovative solutions to the USAID’s Middle East Water Security Initiative.

Regards,

Sincerely yours,

Salim Sawaya
Manager, Esri Nonprofit & Global Organizations

Cc: GEF Operational Focal Point
Ersin Esen, UNEP/GEF Task Manager, Ersin.Esen@unep.org

380 New York Street
Redlands, California 92373-8100 USA

909 793 2853
info@esri.com

www.esri.com

Transparent World
www.transparentworld.ru
Rumyantsevo Business Park, bld.1, entrance 8, 5th floor, room 531a
Kiev Highway 1, 142784, Moscow, Russia
Tel./Fax: +7 (495) 739-738-5, E-mail: info@transparentworld.ru

Brennan van Dyke
Deputy Director, Office for Operations
Director, Donor Partnerships, GEF Coordination and Contributions
United Nations Environment Programme

Dr. Andrew Steer
President and CEO
World Resources Institute
10 G Street, NE
Washington DC 20002, USA

December 18, 2014

Dear Mr. van Dyke, dear Dr. Steer,

On behalf of Transparent World, I am pleased to offer our endorsement of the new Global Forest Watch (GFW) initiative and would like to aid by donating a substantial amount of high-resolution satellite imagery for use by its partners.

We make the high-resolution imagery available for use by WRI and other GFW partners, such as Imazon, University of Maryland, World Bank (Global Tiger Initiative, Snow Leopard Initiative, and Open Landscape Partnership Platform), Jane Goodall Institute, Consumer Goods Forum, and others to: (a) calibrate and validate the interpretation of lower-resolution imagery (e.g., from NASA's LandSat and MODIS platforms); (b) develop Open Landscape Platform, Open Street Map, and other crowd-mapping partnerships, local capacity for collaborative mapping and monitoring of conservation hotspots and critical habitats in the interested jurisdictions; and (c) advance other non-commercial applications of this imagery in the interest of promoting open spatial data use. We expect that this will greatly enhance the effectiveness of Global Forest Watch and related partnerships.

This contribution became available due to the generous donation by our close partners from the ScanEx Research& Development Center who paid the satellite data supplied by DigitalGlobe, Inc. and negotiated the conditions of the License Agreement for Transparent World.

Most of the images were selected by Transparent World on the bases of the following global priorities: protected areas within the tiger and snow leopard distribution in Asia, tropical plantations in various parts of the world to capture the diversity of plantations, and areas across the tropics where the GFW map shows significant changes in forest cover. A substantial amount of images have been selected for Madagascar, including areas where illegal logging of rose wood is known to occur.

The images may be used for visual analysis and for drawing contours through the web interface. Transparent World also could do processing and analysis of the raw data on request by WRI and other GFW partners. Raw data may also be transmitted to WRI or partners on request.

While targeted strictly at non-commercial applications, the value of the images most directly relevant to achievement of the project objectives is estimated at $7.1 million—including US$ 2.1 million for Madagascar images and at least US$ 5 million for other GFW global priority areas targeted by the GEF-GFW project.

We are confident that this donation will contribute substantially to achieving the objectives of the Madagascar and global components of UNEP-GEF Project 5356, Global Forest Watch. We look forward, in this context, to an ever closer partnership and collaboration with current and additional GFW partners, including the GEF.

Yours sincerely,

Dmitry Aksenov
Director General

Appendix 12: Endorsement letters of GEF National Focal Points

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Nino Tkhilava	Head, Department of Environmental Policy and International Relations	MINISTRY OF ENVIRONMENT PROTECTION OF GEORGIA	MARCH/14/ 2013
Ralalaharisoa Christine Edmée	General Director of Environment	MINISTRY OF ENVIRONMENT AND FORESTS	MARCH/18/ 2013

საქართველოს გარემოს დაცვის სამინისტრო

MINISTRY OF ENVIRONMENT PROTECTION OF GEORGIA

KA06016410115491З

საქართველო, 0114 თბილისი, გ.გულუას ქ. N6; ტელ:2727200, 2727220, ფაქსი:2727237; www.moe.gov.ge
6 G. Gulua Str. 0114, Tbilisi, Georgia. Tel:(+995 32) 2727200, 2727220; Fax:2727237; www.moe.gov.ge

 # 870

14 / March / 2013

To: Ms. Maryam Namir-Fuller
Director
GEF Coordination Office
United Nations Environment Programme
Block 2, North Wing, PO Box 30552 Nairobi, Kenya

Subject: Endorsement for Global Forest Watch 2.0

Dear Ms. Namir-Fuller,

In my capacity as GEF Operational Focal Point for Georgia, I confirm that the above project proposal (a) is in accordance with the national priorities of the Government of Georgia including, the priorities identified in the National Environmental Action Plan (NEAP 2012-2016) of Georgia and our commitment to the relevant global environmental conventions; and (b) was discussed with the stakeholders, including the National Focal Points of the relevant global environmental conventions.

I am pleased to endorse the preparation of the above project proposal with the support of UNEP. If approved, the proposal will be prepared and implemented by the Forestry Unit of the Ministry of Environment Protection of Georgia. I request UNEP to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing from GEF Trust Fund being requested for this project is US$2,000,000, inclusive of project preparation grant (PPG), if any, and Agency fees for project cycle management services associated with the total GEF grant. The financing requested for Georgia is detailed in the table below.

Source of Funds	GEF Agency	Focal Area	Amount (in US$)			
			Project Preparation	Project	Fee	Total
GEF TF	UNEP	CC	22,831	890,411	86,758	1,000,000
GEF TF	UNEP	LD	22,831	890,411	86,758	1,000,000
Total GEF Resources			45,662	1,780,822	173,516	2,000,000

I consent to the utilization of Georgia's allocations in GEF-5 as defined in the System for Transparent Allocation of Resources (STAR).

Sincerely,

GEF Operational Focal Point in Georgia
Head of Department of Environmental Policy and International Relations

ნ. თხილავა

Nino Tkhilava

Copy to: Mr. Grigol Lazriev, Convention Focal Point for

UNFCCC
Mr. Ioseb Kartsivadze, Convention Focal Point for UNCBD
Ms. Nino Chikovani, Convention Focal Point for UNCCD

REPOBLIKAN'I MADAGASIKARA
Fitiavana - Tanindrazana - Fandrosoana

SECRETARIAT GENERAL

DIRECTION GENERALE
DE L'ENVIRONNEMENT

Antananarivo, le 18 MAR 2013

The General Director of Environment
GEF Operational Focal Point pour Madagascar

To

Maryam Niamir-Fuller
Director, GEF Coordination Office
United Nations Environment Programme
Block 2, North Wing, P.O Box 30552 Nairobi, Kenya

N° 76 /13/MEF/SG/DGE.
Subject: Endorsement for the project „Global Forest Watch 2.0 (GFW 2.0)"

Dear,

In my capacity as GEF Operational Focal Point for Madagascar, I confirm that the above proposal (a) is in accordance with the government's national priorities and NBSAP and our commitment to the relevant global environmental conventions and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal with the support of the GEF Agency(ies) listed below. If approved, the proposal will be prepared and implemented by General Directorate of Environment (DGE) / Directorate of Climate Change in the Ministry in charge of Environment and GFW 2.0 partners. I request the Agency(ies) to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing (from GEFTF, LDCF, SCCF and/or NPIF) being requested for this project is US$ 2.500.000, inclusive of project preparation grant (PPG), if any, and Agency fees for the project cycle management services associated with the total GEF grant. The financing requested for Madagascar is detailed in the table below.

Source of Funds	GEF Agency	Focal Area	Amount (in US$)			
			Project preparation	Project	Fee	Total
(select)	UNEP	BD	45,662	1,780,822	173,516	2,000,000
(select)	UNEP	CC	11, 416	445,205	43,379	500,000
(select)	(select)	(select)				0
Total GEF Resources			57,078	2,226,027	216,895	2,500,000

I consent to the utilization of Madagascar's allocations in GEF-5 as defined in the System for Transparent Allocation of Resources (STAR).

Sincerely,

LE DIRECTEUR GENERAL DE L'ENVIRONNEMENT

RALALAHARISOA Christine Edmée

Copy to : Convention Focal Point for UNFCCC
Convention Focal Point for UNCBD

Appendix 13: Draft procurement plan

To be generated during inception phase and approved by UNEP within budget presented in Appendix 1.

Appendix 14: Tracking Tools

See separate Excel files

Appendix 15: GFW and REDD+

Relevance of GFW to REDD+ at the international level (policies, plans or needs):

GFW and associated analysis will provide international policymakers, analysts and other stakeholders with timely information on national levels of forest loss and regrowth on a consistent global basis, and analysis on drivers and underlying causes of forest loss. Initially, at least 58 tropical countries are covered by the near-real-time forest clearing alerts function, giving valuable indications, updated every 16 days and consolidated monthly, of where forest clearing is occurring near-real-time and of how regional patterns of forest cover change are shifting. For example, recent data from the prototype GFW system indicates declining rates of forest clearing events in Brazil, but rising rates in the majority of their neighboring countries and other tropical regions such as West Africa, perhaps indicative of regional leakage.

Through the partnership with the University of Maryland, forest cover loss and regrowth information annually will be available through GFW for all countries (for more details on the precise resolution and capabilities of various systems on the GFW platform, please see the *Technical Appendix* at the end of this proposal).

Relevance to development objectives of the country and the national REDD+ agenda (its own policies, plans or needs):

The initiative is designed from the start to support national development objectives, across dozens of countries. Key tasks that GFW will help support include:

Improving the design, implementation, and enforcement of policies and laws

Deeper understanding of *drivers* and *patterns* of deforestation, based on information and analysis from the GFW 2.0 platform and partners, will enable governments to design better policies and other interventions aimed at promoting sustainable management of forest lands and resources.

- Once new policies and measures are introduced, the GFW platform can provide rapid feedback to policy-makers on the policy impacts. Unintended impacts and ineffective measures can be detected quickly and adjustments can be made. Lessons learned about policy effectiveness will enhance future policy decisions
- Greatly enhanced detection and enforcement, for example around deforestation restrictions (such as Indonesia's moratorium), protected areas management, and plantation establishment. Government agencies and independent groups will be able to react quickly when high likelihood of infractions is detected with monthly updates online for all to see.

Enabling robust MRV of REDD+

- Support the creation of transparent reference levels and monitoring of sub-national REDD+ programs (jurisdictional and project level) that reward local actors for reducing emissions from deforestation and degradation
- Enabling national governments to consistently monitor REDD+ projects, strategies and investments across the forest landscape, detecting leakage and other dynamics that are key to the integrity of national REDD+ programs.

Appendix 16: Georgia national GFW report

I. Situation analysis related to forest information systems

1. Forest monitoring systems and related information flows

a. Policy, legal and institutional aspects

Forest Code of Georgia (1999), a major piece of legislation related to forest, obliges responsible national authorities to organize system for inventory of the state forest fund, and to establish rules for forest monitoring and for running the forest fund cadastre.[1] *Inventory* of the state forest fund includes a) determining forest conditions, species composition and age structure; quantitative and qualitative assessment of resources; b) revealing endangered and rare, relict, endemic plant species with restricted distribution area included in the Red List of Georgia; c) biological, pathological and other examination of the state forest fund.[2] *Monitoring* of the state forest fund is a system of assessment of the forest fund, continuous observation, analysis and prognosis of dynamics of its conditions.[3] Planning of use of the state forest fund is implemented on the basis of forest inventory and forest monitoring.[4] Results of monitoring need to be reflected in forest management and forest use plans.[5]

Agencies responsible for forest inventory and monitoring are: National Forest Agency, managing state forest fund, except forests in protected areas, forest in Autonomous Republics and forest of local importance; Agency of Protected Areas; authorities of Autonomous Republics and local authorities.[6] Though, local authorities due to lack of capacity and mechanisms to manage forest, have not been able to actually implement their competencies in practice.[7]

Law on Managing Forest Fund (2010), regulating management of the forest fund by the National Forest Agency, outlines competencies and responsibilities of the Agency, including related to forest inventory and monitoring.

Specific guidelines for inventory and monitoring of the state forest fund are defined by the Government resolution on **Forest Inventory, Planning and Monitoring Rules**.[8] The resolution defines a) types of forest inventory, implementation methods and requirements; b) methods for development of forest management and forest use plans and procedures for their review and approval; c) rules and methods for implementing monitoring. According to the resolution, forest inventory implies biological, ecological and economic assessment of forest condition that is the basis for rational use of forest and timber resources. Aim of forest inventory is defining quantitative and qualitative characteristics of forest natural resources and developing forest management plans or forest use plans on this basis. Forest inventory works include preparatory works – gathering information, field works and desk works – processing information obtained as a result of preparatory and field works, using computer software and developing forest management plans and forest use plans on its basis. Technical foundation of forest inventory are orthophoto plans, topographic maps, grove maps, existing forest inventory materials, the digital model of the terrain height, information on forest boundaries provided by the National Agency of Public Registry, adjusted forest boundaries based on field works and on the basis of land ownership information.

Forest inventory involves inventory of natural resources of forest, analysis of quality features of the existing forest and timber resources; elaboration of forest management measures for forest resources use, tending, protection, restoration and improvement; defining boundaries of the object and developing recommendations on its division by management units; developing GIS data base, thematic maps,

[1] The Forest Code of Georgia 1999, Article 11
[2] Ibid, Article 23
[3] Ibid, Article 25
[4] Ibid, Article 24
[5] Ibid, Article 25
[6] Forest Code of Georgia, 22 June 1999, Articles 15,16
[7] National Forest Concept of Georgia, approved by Parliament Resolution #1742-Is of 11 December 2013, Kutaisi, Georgia
[8] Forest Inventory, Planning and Monitoring Rules approved by Resolution N179 of Government of Georgia of 17 July 2013

cadastre drawings and other cartographic materials; defining areas covered by forest and areas not covered by forest, including preparing recommendations on categorization of areas not covered by forest; division of groves according to taxation characteristics; revealing degraded, eroded, burned, damaged areas and planning corresponding restoration-regeneration, fire safety, pest and disease control measures; determining volumes of forest and timber resources; gathering information about other non-timber resources; defining territories for recreational, tourist, sports and cultural purposes as well as other forest uses; obtaining other information about forest conditions; revealing intact groves containing endangered, rare, relict, endemic species with restricted distribution area included in the Red List of Georgia etc. The resolution defines two types of inventory – selective and detailed.

Forest monitoring is a system of assessment of forest fund and constant observation, analysis and prognosis of its conditions. The aim of forest monitoring is to reflect forest tending, restoration, forest use, physical protection and ecological condition of forests and to analyse obtained results in order to plan its improvement. Ground for forest monitoring is forest management plans and forest use plans. Forest monitoring is implemented by a responsible forest management agency. In addition, forest user conducts forest monitoring on its territory and submits results to the responsible agency. There are aerial and terrestrial monitoring methods. Aerial monitoring is conducted by means of satellite observation and aerial photographs. Terrestrial monitoring is conducted by means of physical observation-study of actual conditions, or distant observation and data actualization for inaccessible areas. Results of monitoring should be reflected in forest use plans and forest management plans.

Forest management plans are developed by a responsible forest management agency. Draft forest management plan should be published on the website. Stakeholders have 20 business days for submitting their comments to the responsible agency. Within 15 business days after this, responsible agency reviews received comments and organizes public hearing for stakeholders. Final forest management plan, together with the protocol of public hearing is submitted to the Minister for approval (or head of Environmental Agency in Adjara).

Forest use plan is developed on the basis of forest management plan. Terms of reference for forest inventory in the area subject to licensing is developed by the responsible agency who also implements inventory. Based on the inventory, license holder develops forest use plan. Responsible agency ensures publication of draft forest use plan on the official website no later than 5 business days after license seeker submits the draft plan. Stakeholders can submit their comments within 15 business days after publishing the draft plan. After this, responsible agency reviews submitted comments within 15 business days and organizes public hearing for stakeholders. Responsible agency provides received comments to the license seeker. In case all comments are duly considered and incorporated into the forest use plan, responsible agency submits the plan for approval to the Minister within 40 days after submitting the draft plan. Otherwise, the plan with comments is returned to the license seeker, which is required to re-submit the finalized plan within three month. After re-submitting, the plan undergoes all above-mentioned procedures from the start.

Order N262 of Ministry of Environment and Natural Resources Protection of 18 December 2012 on approving indicators for unified system of biodiversity monitoring and related methodologies and procedures defines 25 biodiversity indicators, including those related to forest, corresponding methodologies for their description and related procedures. The aim is to create unified biodiversity monitoring system and to promote data exchange in order to obtain adequate information on biodiversity and trends, create response system and integrate this into national policies.

Source of information for biodiversity monitoring (calculation of indicators) could be information received from state and non-governmental organizations upon written request of the Ministry of Environment and Natural Resources Protection; information produced within the Ministry; information produced on the basis of purchased services by the Ministry; information produced as a result of donor support by request of the Ministry and other. Service of Biodiversity Protection processes information and conducts monitoring according to approved indicators. The Ministry may publish results of biodiversity monitoring on the website or produce printed publications to be distributed to stakeholders. With the aim of implementing biodiversity monitoring, analysing monitoring results and developing recommendations, at the Ministry could be created Coordinating Council for Unified System of Biodiversity Monitoring. Based on biodiversity monitoring results and when needed also

recommendations of the council, the Ministry can develop recommendations on measures to be implemented for biodiversity protection and improved management of this field, and implement these measures accordingly.[9]

b. Stakeholder analysis, including responsibilities and requirements to generate and share data and information

Forest Policy Service a structural unit of Ministry of Environment and Natural Resources of Georgia participates in development of national policy in forest management and supports its implementation; develops forest strategy; reviews proposals on adjustment of forest borders and prepares corresponding recommendations; develops recommendations based on forest monitoring results. Forest Policy Service is eligible to request and obtain needed information and materials relevant for implementing their competences from other state structures.[10]

National Forest Agency a legal entity of public law under Ministry of Environment Protection and Natural Resources of Georgia manages forest fund; implements forest tending and recovery; manages forest use; conducts forest inventory; conducts forest monitoring and processes and analyses obtained data; carries out forest control activities, except for license conditions; ensures sustainable use of biodiversity components; observes forest fire prevention measures; participates in emergency response and other. The Agency has nine territorial units throughout Georgia.

Department of Forest Inventory under the Agency is responsible for preparing documentation for adjustment of forest boundaries; organizing forest monitoring; organizing GIS systems related to forest fund; organizing development of forest management plans and other. *Department of Forest Use* plans forest use; reviews forest use plans and prepares corresponding conclusions; prepares documentation for the object of forest use; prepares projects of forest use agreements; organizes surveillance on implementation of conditions defined under forest use agreements and participates in surveillance. *Department of Forest Tending and Restoration* is responsible for developing recommendations and projects on implementing forest tending and restoration activities and organizes planning, implementation and monitoring of these activities. *Analytical Department* among other responsibilities organizes development of electronic information system for the Agency use; and on the basis of consolidated data, prepares and manages reference books and analytical reports; systematizes data related to forest conditions and other information; organizes statistical reporting; prepares regular, including operative information-analytical materials; develops information and communication infrastructure and ensures its functioning and enhancement. *Regional Forest Services* located in nine regions in Georgia support defining/adjustment of forest boundaries; develop proposals for division of forest fund in management units; implement forest monitoring and process, systematize and analyse obtained information; identify areas for implementing forest tending and restoration and implement forest tending and restoration measures; support GIS system related to forest fund; prepare documentation for the object of forest use; support implementation of forest inventory and planning; run relevant electronic information systems; control implementation of conditions under forest use agreement; participate in review of forest use plans and develop corresponding proposals; participate in forest use planning; participate in developing proposals for reproduction of forest resources, improvement of species composition, restoration and regeneration, fire prevention, protection from pests and diseases; participate in planning and implementation of fire prevention measures; control observation of fire prevention rules on the territory of forest fund and in case of fire, take measures for its elimination and inform immediately relevant agencies; participate in emergency response in case of natural disasters on the territory of the forest fund; elaborate and implement measures for protection of forest from illegal use; issue forest use tickets; implement activities related to defining areas for timber cutting including reviewing materials on areas designated for timber cutting submitted by forest users; if needed, conduct surveillance of the areas designated for timber cutting and in case of revealed violations forward materials to the agency responsible for surveillance of license conditions; reveal administrative and criminal violations, other than

[9] Order N262 of Ministry of Environment and Natural Resources Protection of 18 December 2012 on approving indicators for unified system of biodiversity monitoring and related methodologies and procedures

[10] Statute of Forest Policy Service, approved by Order N18 of the Ministry of Environment and Natural Resources Protection of 10 May 2013

related to implementing license conditions, and take further measures including informing relevant agencies; register, systematize and analyse revealed violations.[11]

Agency of Protected Areas a legal entity of public law under Ministry of Environment Protection and Natural Resources of Georgia manages different category protected areas, develops corresponding management plans and monitors their implementation; manages natural resources within the protected areas and ensures their registration/inventory; organizes monitoring and scientific research and processes, stores and distributes obtained information; develops projects for establishing protected areas and for changing boundaries of protected areas; develops and implements measures for protection and restoration of species and habitats; participates in development of recommendations and programmes for improving flora and species composition, recovery-restoration, fire prevention, protection from pests and diseases including for forest resources; coordinates infrastructure and landscape planning; ensures development of ecotourism on protected area; runs GIS data bases related to protected areas; and other. The Agency implements protected area management through 22 PA territorial administrations throughout Georgia.[12]

Service of Biodiversity Protection a structural unit of Ministry of Environment and Natural Resources Protection participates in development and implementation of national policy on protection of biodiversity components and management of biological resources; develops biodiversity strategy and action plan of Georgia and coordinates its implementation; organizes and coordinates state system of biodiversity monitoring. The Service of Biodiversity Protection is eligible to request information and materials from other state agencies needed for implementing their competences.[13] Service of Biodiversity Protection processes information received from state, non-governmental and other organizations on approved biodiversity indicators, and implements biodiversity monitoring.[14]

Service of Climate Change participates in development and implementation of the national strategy and policy on climate change; coordinates reporting to the UNFCCC in collaboration with relevant stakeholders; conducts regular national inventory of GHG and reports to the UNFCCC and other.[15]

Department of Environmental Supervision a sub-agency structure of the Ministry of Environment and Natural Resources Protection implements state control in the field of environment protection and use of natural resources including biodiversity and forest protection and use of natural resources, and controls implementation of license conditions related to environment and natural resources use. The Department prevents, detects and suppresses illegal use of natural resources and pollution of the environment; controls implementation of conditions under licenses, including general license for forest use, special license for timber production and special license for hunting. The Department has eight territorial units throughout the Georgia.[16]

Department of Licensing in the National Environmental Agency, a legal entity of public law under Ministry of Environment and Natural Resources Protection issues licenses for natural resources use (except from oil and natural gas), including licenses related to forest: general license for forest use; special license for timber production; and special license for hunting. The Department receives and processes all documentation submitted by license seekers and submits to structural sub-divisions and other agencies of the Ministry for their review; organizes field expeditions when needed; organizes auctions and ensures publishing corresponding information in printed media; establishes natural resources use quotas for license holders; runs registry on issued licenses; in case of violation of license conditions,

[11] Statute of National Forest Agency, approved by Order N25 of the Ministry of Environment and Natural Resources Protection of 10 May 2013
[12] Statute of Agency of Protected Areas, approved by Order N3 of the Ministry of Environment and Natural Resources Protection of 10 May 2013
[13] Statute of Service of Biodiversity Protection, approved by Order N11 of Ministry of Environment and Natural Resources Protection of 10 May 2013
[14] Order N262 of Ministry of Environment and Natural Resources Protection of 18 December 2012 on approving indicators for unified system of biodiversity monitoring and related methodologies and procedures
[15] Statute of Service of Climate Change, approved by resolution N23 of Ministry of Environment and Natural Resources Protection of 10 May 2013
[16] Statute of Department of Environmental Supervision, a state§ sub-agency structure of the Ministry of Environment and Natural Resources Protection approved by Order N26 of Ministry of Environment and Natural Resources Protection of 10 May 2013

develops proposals for defining necessary conditions to be implemented and corresponding reasonably time-frame for implementation; develops maps and registries on mineral deposits etc.[17]

Environmental Information and Education Centre a legal entity of public law under Ministry of Environment and Natural Resources of Georgia is responsible for ensuring public access to environmental information, public participation in environmental decision-making and access to justice on environmental matters, as well as supporting public awareness raising and professional training of the stuff from different stakeholder organizations. The Centre creates and administers unified environmental data base on environmental information in collaboration with other public, academic, educational, non-governmental, private and international organizations; collects and distributes environmental information; collects statistical data related to the environment; creates environmental library, including electronic materials; supports creation of the register on pollutant emission distribution; ensures public access to environment related information through the webpage and other electronic means as well as media; ensures public access to information on licenses and permits related to natural resources extraction and use; organizes training courses in the environmental sector for different target groups.[18]

Council of National Security and Crisis Management is an advisory body under the Prime Minister. The permanent members of the Council are: Minister of Internal Affairs, Minister of Defence, Minister of Foreign Affairs, Minister of Finances, and Prime Minister – Head of Council and Assistant to Prime Minister in national security affairs – Secretary of the Council. Other sectoral Ministers and other state officials could be invited in the Council as needed. The council assesses internal and foreign threats; analyses key issues of internal and foreign policy directly related to the national security; organizes development of the national strategy in the field of foreign policy and security; controls activities of the Ministries and authorities of Autonomous Republics in the field of national defense and security; develops necessary measures to be implemented to reveal, neutralize and avoid threats; guides crisis management containing threat to national interests at the highest national level, and other.[19]

Department of Emergency Management under the Ministry of Internal Affairs is responsible for coordinating actions for: emergency prevention and elimination, and mitigation of their consequences; ensuring fire safety in the country and implementing measures for emergency mobilization preparedness. [20] The Department develops emergency response measures and coordinates their implementation; manages unified emergency warning system; organizes state supervision of fire safety; supervises activities of local authorities in terms of fire preparedness and firefighting; together with other state agencies organizes activities for natural and man-made emergency prognosis; develops main directions of state policy in the field of fire safety and supervises their implementation; organizes state statistical system on fires, their consequences and emergency measures and develops state statistical reports.[21]

According to the new Law on Public Safety of 29 May 2014, the Department of Emergency Management as well as relevant agencies at regional and local levels dealing with emergency situations has to be abolished before 1 November 2014 and a legal entity of public law Agency of Emergency Management under the Ministry of Internal Affairs has to be created. The Agency will ensure organizing emergency prevention, preparedness and response and restoration measures. The Agency also will be responsible for carrying out official statistics and reporting on fires and their consequences. The Agency will have structural units at regional and local levels.

National Agency of Public Registry registers ownership rights and develops and updates real estate cadastre database.[22]

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[17] Statute of National Environmental Agency, approved by Order N27 of Ministry of Environment and Natural Resources Protection of 10 May 2013

[18] Statute of Environmental Information and Education Centre, approved by Order N6 of Ministry of Environment and Natural Resources Protection of 10 May 2013

[19] Statute of the Council of National Security and Crisis Management, approved by Resolution N38 of the Government of Georgia of 6 January 2014

[20] Statute of the Ministry of Internal Affairs, approved by Resolution N337 of the Government of Georgia of 13 December 2013

[21] Statute of the Department of Emergency Management approved by Order N994 of the Ministry of Internal Affairs of 31 December 2013

[22] Statute of National Agency of Public Registry approved by Resolution N835 of Ministry of Justice of Georgia of 19 July 2004

Regional level
Authorities of Adjara and Abkhazia Autonomous Republics are responsible for managing forest on their territories and issuing forest use licenses.[23] Though currently there are no licenses issued on the territory of autonomous republics.

Adjara Autonomous Republic Forest Agency manages forest management within the borders of Adjara Autonomous Republic. The Agency is responsible for forest protection, tending and recovery; sustainable use of biodiversity components on the territory of the forest fund; supporting demarcation/adjustment of forest borders; managing forest fund; regulating forest use; forest inventory; implementing forest recovery measures; controlling territory of forest fund; implementing fire prevention and firefighting measures and other.[24]

Abkhazia Autonomous Republic Department of Agriculture, Environment and Natural Resources among other responsibilities collaborate with local, scientific and non-governmental organizations for forest sector development.[25]

Local level
Local Self-Governance Authorities have a formal competency to manage forests of local importance.[26] They are responsible for: supporting implementation of forest tending, protection, restoration, and firefighting measures; issuing forest use tickets; submitting recommendations to the responsible national agency regarding restriction, suspension or termination of forest use rights on their territories; developing corresponding local programmes and supporting their implementation; participating in emergency response, and other.[27] However, as mentioned, due to lack of capacities and actual implementation mechanisms, there is no practice of local authorities implementing most of the forest management related competences. **Akhmeta Municipality Local Self-Governance** is responsible for managing Tusheti Protected Landscape. This is the only case when management of protected areas, including forest resources, is handed over to local authorities.

c. Forest information sharing (flows), use and nonuse among sectors / ministries and levels of government

Forest related data and information is generated in different state agencies. National Forest Agency is responsible for inventory and monitoring of the state forest fund, except forests in protected areas, forest of local importance and forest located within the boundaries of the Autonomous Republics. Agency of Protected Areas implements similar activities in protected areas, and Authorities of Autonomous Republics – within their territories.[28] Correspondingly, these agencies process and store all related data and information and provide data to other structural divisions and agencies under the Ministry of Environment and Natural Resources Protection upon formal written request, including the Forest Policy Service, Department of Licenses under National Environmental Agency, Department of Environmental Supervision, Service of Biodiversity Protection and others. The same agencies responsible for managing the forest fund are accountable for running electronic system on timber resources, in order to register use, transportation and primary processing of timber.[29] In addition, information obtained as a result of forest monitoring is submitted to the National Statistics Office of Georgia.[30]

Forest use planning is based on forest inventory and forest monitoring materials. On the basis of forest use planning 10-year forest management plans and forest use plans are developed. Forest management plans are developed by abovementioned state agencies. Forest use plans are developed by license

[23] Forest Code of Georgia, 22 June 1999
[24] Statute of Adjara AR Forest Agency, approved by Resolution N55 of Adjara AR Government of 7 December 2010
[25] Statute of Abkhazia AR Department of Agriculture, Environment and Natural Resources, approved by Resolution N23 of Abkhazia AR Government of 30 March 2007
[26] Organic Law of Georgia Code of Local Self-Governance, 5 February 2014
[27] Forest Code of Georgia, 22 June 1999, Article 13
[28] Forest Code of Georgia, 22 June 1999, Articles 15,16
[29] Forest Code of Georgia, 22 June 1999, Article 93[1]
[30] Forest Code of Georgia, 22 June 1999, Article 25

holders.[31] Forest management plans and forest use plans are subject to public hearing, which is held by National Forest Agency. In addition, fixed time-frame is given to all stakeholders for submitting comments and suggestions. The Agency is obliged to provide all received comments on draft forest use plans to the license seeker.

As mentioned, forest use licenses are issued by Department of Licensing of the National Environmental Agency. However, object of licensing is prepared by the National Forest Agency. Preparing object of licensing includes description of the area; defining: area designated for timber cutting, tree species composition and supposed volume of timber; defining specific forest use type and rules; defining obligatory requirements to the license holder; preparing documentation for registering object of licensing in the public registry.[32] These materials are provided respectively to the Department of Licensing and the National Agency of Public Registry.

When needed, all forest related structural units and agencies of the Ministry can be involved in reviewing preliminary Environmental Impact Assessment report on specific activities subject to environmental permitting, and requested to submit comments.

All structural units of the Ministry are responsible for providing Department of Environmental Policy and International Relations information on international projects and related meetings and workshops, activities for meeting obligations under international conventions and related national reports.

All agencies responsible for managing the forest fund – regional units of the National Forest Agency and Agency of Protected Areas, local authorities and authorities of autonomous republics, in case of fire in the forest, are obliged to inform immediately relevant agencies and participate in emergency response. Regional units of the National Forest Agency, in case of revealed administrative and criminal violations on the territory of the forest fund, are obliged to inform Department of Environmental Supervision.

d. Overall assessment of the availability, quality and accessibility of forest-related data and information

There is no updated data on Georgian forests, so as regular forest inventory has not been undertaken since decades. Inventory has been undertaken only in areas leased for long-term use - approximately 160 thousand ha. The old data is not consistent with factual conditions, which creates significant barriers in planning rational and multifunctional use of forests.[33] Due to lack of data on forest conditions, before 2009 forest use licenses had been issued without prior forest inventory,[34] which resulted in improper license conditions leading to unsustainable forest management and at the same time imposing financial risks to license holders. Due to lack of information on functional purpose and value of forest, in some cases, licenses have been issued for areas with high conservation value.[35]

Lack of data is identified as a major barrier for biodiversity conservation and effective management of biological resources. It is difficult to reveal changes in species habitats and assess actual conditions and trends of biodiversity, so that there are no effective mechanisms for data collection, storing and analysis.[36]

In addition, there is no reliable data on forest degradation and negative impacts on forest. National Biodiversity Strategy and Action Plan of Georgia 2014-2020 suggests, as one of the strategic approaches, carrying out inventory of forest areas that have been lost, degraded or changed as a result of infrastructural projects or mining, assessment of conditions of these areas and restoration based on landscape adaptation methods.
There is no reliable countrywide data on forest fires.[37] Official statistics does not include fires on lands outside forests and protected areas, while most of the fires in Georgia occur or originate from agricultural lands.

[31] Forest Code of Georgia, 22 June 1999, Article 24
[32] Law of Georgia on Managing of the Forest Fund, 6 July 2010, Articles 6, 13
[33] National Forest Concept of Georgia, approved by Parliament Resolution #1742-Is of 11 December 2013, Kutaisi, Georgia
[34] M. Machavariani, Forest Management Standards and Practice in Georgia, Technical Report, 2010
[35] WWF, Thematic Study for NBSAP 2014-2020 - Georgian Forest Biodiversity, Situation Analysis, 2012
[36] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012

Georgia has prepared its Second National Communication to UNFCCC and the third Communication is on its way to finalization. National GHG inventory was undertaken as part of the Second Communication which included carbon removal by sinks from land use, land use change and forestry sectors. Changes in carbon stocks were examined by assessing: changes in forest and other woody biomass stocks; forest and grassland conversion to agricultural or other types of land; carbon uptake by the abandoned managed lands; and emissions and removals from soil. However, in most cases, due to lack of updated data it has not been possible to make assessments for recent years. Assessment of changes in forest and other woody biomass stocks was made based on forest classification on coniferous and deciduous, so that there is no detailed data on species composition. Still, calculations were made only for 1998-2002 years, so that there was no data on forest classification for more recent years. In addition, there is no data on conversion of forest and grassland to arable land to estimate annual losses of biomass. Though it is believed that there have not been large-scale conversions of different categories of land into arable land. Similarly, there is no data on changes in carbon stocks resulting from abandonment of cultivated arable land. Experts believe that this change has not been significant. CO_2 emissions and removals from soils are assessed based on changes in land use or changes in land cultivation. Changes in carbon stocks in arable land, pastures and hayfields, and mineral soils were also assessed only for 1998-2002, so as there is no data for more recent period.

There is need in improvement not only in terms of data generation but also access to data and public participation in forest related decision-making. Civil society sector currently does not have easy access to information on issued licenses and related materials. There has been reported cases NGOs having difficulty with obtaining public information related to implementing license conditions, forest use plans etc.[38]

2. Baseline activities to strengthen forest data and information systems

National efforts

Forest sector has undergone reforms several times since the late 1990s. Several draft forestry reform concepts and draft national forest management policy documents were developed, but none of them was approved since recently. New National Forest Policy Document – the Forest Sector Concept was adopted by the Georgian Parliament in December 2013. The Concept aims at establishing sustainable forest management system that will ensure improvement of qualitative and quantitative indices of Georgian forests, biodiversity protection, efficient use of economic potential of forests taking into account their ecological value, public participation in forest management and equitable distribution of benefits.

Institutional setup of forest management has also undergone frequent changes. Due to last institutional reform in 2013 was established National Forest Agency, a legal entity of public law under the Ministry of Environment and Natural Resources Protection. Number of staff in the Agency has been increased up to 800 people. Number of rangers has been increased up to 569. Consequently, area to be observed by each ranger was decreased to 3000 ha. In the same year was created Service of Forest Policy within the Ministry, and a sub-agency structure of the Ministry – Department of Environmental Supervision. The aim of this reform was to separate competences and responsibilities related to forest management, protection, policy and legislative support.

Based on the National Forest Concept and the National Biodiversity Strategy and Action Plan 2014-2020, the Ministry of Environment and Natural Resources Protection, with support of GIZ, has launched National Forest Programme since spring 2013. Working groups have been created in several thematic areas, including forest monitoring and assessment. It is planned to develop and implement action plans in identified thematic areas. In addition, work on a New Forest Code will be started in 2014.

In order to create unified biodiversity monitoring system and to promote data exchange, the Ministry of Environment and Natural Resources Protection with financial support of GIZ has developed a Concept of National Biodiversity Monitoring System. The aim is to obtain adequate information on biodiversity

[37] UNECE, Second Environmental Performance Review for Georgia, 2010

[38] Forest Management in Georgia, Problems and Challenges, Association Green Alternative, 2012

conditions and trends, create response system and integrate this into national policies. 25 biodiversity indicators, including related to forest, grouped on the basis of State-Pressure-Response approach has been already selected. The indicators, methodologies for their description and related procedures are approved by Ministerial Order.[39] Currently data collection according to the selected indicators is ongoing.

Activities related to forest inventory, monitoring and assessment has been limited in Georgia. Forest inventory has not been undertaken since decades, except in areas licensed for long term use – approximately 160 thousand ha and in Racha Region where forest inventory was conducted in 2003-2007. At present inventory of up to 100 thousand ha is ongoing in Samtskhe-Javakheti region. Forest inventory was undertaken in Adjara in 2005-2006. However, the project was ceased before completion and the results have never been approved formally. Due to this, the results of this inventory, which already have become outdated, have never been used. There are plans to undertake new forest inventory in Adjara next year. In addition, demarcation of forest borders was undertaken in Adjara last year. Now formal approval of the newly defined borders is in process.

Inputs from International Projects

Ongoing project "Sustainable Forest Governance in Georgia: Strengthening Local and National Capacity and Developing Structured Dialogue" implemented by CENN (Caucasus Environmental NGO Network) aims at contributing to successful implementation of the forest reform in Georgia via strengthening the capacities of authorities and civil society and enhancing issue based policy dialogue. Among other activities the project initiated independent forest monitoring activities in regions in Georgia, which involves local non-governmental organizations, media and private sector that implement independent forest monitoring. In addition, in the framework of a pilot project component there is an idea to create forest portal and link it to already existing Geo-Portal.[40] In addition, CENN has been developing forest zoning directive together with the Ministry of Environment and Natural Resources Protection. When finalized, this document will become a formal forest zoning guideline.

ENPI East Countries FLEG II Program implemented by the World Bank in partnership with WWF and IUCN among other activities implements detailed forest inventory of Tianeti municipality. In addition, it is planned to create forest information database through development of Geo Portal for Georgian forests – "Geo Forest Portal" and forest Resource Center, which will be delivered to the National Forest Agency. Possibly Geo Forest Portal will be incorporated into disaster Geo Portal of Natural Hazards and Risks in Georgia developed by CENN.[41] Apart from this, FLEG implements forest functionality analysis that implies studying dependency of local population on forests. Maps reflecting results of this analysis will be developed for Ajameti, Kintrishi and Mtirala protected areas.

3. Ongoing challenges / barriers facing efforts to strengthen forest information systems

a. Overall barriers

National Forest Concept of Georgia (2013) among major challenges that forest sector faces today, lists unsustainable forest practice, imperfect legislation, weak institutions and enforcement, unduly consideration of different values of forest in planning and decision making, lack of finances and other factors. The Concept underlines that lack of updated forest data creates serious barriers in planning rational and multifunctional use of forest. Under necessary measures to define functional purpose and values of forest in order to establish rational system of forest resources use, the Concept highlights a) forest inventory that ensures comprehensive determination of forest boundaries, conditions and basic qualitative characteristics/values of groves; b) categorization of forest according to their value and functional purpose; c) creating a system, which would enable responsible authorities as well as other stakeholders to implement monitoring of forests, the forest sector and ongoing processes. This system should be complementary to other systems, e.g. national biodiversity monitoring system. Additionally,

[39] Order N262 of Ministry of Environment and Natural Resources Protection of 18 December 2012 on approving indicators for unified system of biodiversity monitoring and related methodologies and procedures
[40] Land Degradation Map of the South Caucasus Region, http://land.cenn.org:8082/cenn/
[41] http://drm.cenn.org/index.php/en/

the Concept emphasizes need in revealing degraded forest areas and areas subject to restoration and afforestation and planning and implementing corresponding measures.

Currently, updated data does not exist for the most part of the forest fund, as since last inventory, which took place decades ago, inventory and assessment of forest has been fragmented and covered mostly leased areas. Collecting baseline information on forest, which is necessary for planning and decision-making on forest use, and which would be a starting point for continuous monitoring of forest change dynamics, requires significant resources. Lack of resources, including financial, administrative and human resources is one of the biggest constraints for improvement of forest information systems. In addition to the sufficient number of qualified stuff, there is need in expertize and methodologies to apply remote sensing data such as aerial and satellite information as a supportive tool to field work activities. Knowledge and skills in interpretation and analysis of remote sensing data is necessary not only for the stuff of responsible agencies, but also for civil society organizations undertaking independent forest monitoring or other forest related activities.

In addition, currently there is no system or platform for consolidating forest related data and information generated within the responsible agencies or as a result of activities implemented and funded by international donors, NGOs or other organizations. Correspondingly there is no system facilitating data sharing between state agencies as well as all other stakeholders and enabling easy public access to forest related information.

b. Barriers related to use scenarios described in section 8 below

Limited baseline data and information on forest conditions can be a barrier for forest monitoring and assessment activities. Baseline data is needed in order to observe forest change dynamics and to measure level of degradation or improvement. Forest monitoring is based on forest management plans and forest use plans, which are developed on the basis of forest inventory. As mentioned, forest inventory data is very limited and mostly outdated in Georgia.

In addition, forest degradation in Georgia is mainly related to decrease of forest density. There is no large-scale clear-cut logging or any other types of degradation, which would be easily identifiable on average resolution satellite images. Existing degradation is more difficult to detect at the given resolution provided on the global forest watch website.

Forest and other fires in Georgia are mostly small scale and don’t last long, which makes them harder to detect via satellite observation.

Another barrier could be lack of expertise and methodologies for interpreting remote sensing data. Relevant stuff in the responsible agencies will need adequate training in data interpretation in order to be able to use satellite information and integrate relevant tools in their daily work.

Additionally, language barrier, lack of ownership or other barriers can make GFW website less usable for the responsible stuff. In order to ensure sustainability of the efforts to improve data and information, and ensure that these data are regularly updated and used in planning and decision-making, there is need in creating national data portal, which would be managed and regularly updated by a responsible state agency.

4. Assessment of potential utility / applicability of Global Forest Watch (GFW) to baseline situation

As mentioned, financial, administrative and human resources are among the major constraints for improving forest data and information in Georgia. Global Forest Watch efforts can contribute to the improved forest data; help to create additional data generation and monitoring tools; and support establishing regularly updated data system shared by different stakeholders.

GFW activities can support implementing measures, which are required by the national forest legislation but have not been implemented due to lack of resources. Among these are: update/adjustment of forest boundaries; support functional categorization of forest; support revealing degraded areas subject to

restoration and reforestation; support data gathering on forest related biodiversity indicators; support forest assessment and monitoring including in areas which are difficult to access; assist forest inventory in terms of identifying areas for field studies and, in some cases, providing additional data to the field materials; support better management of leased areas; support better management of protected areas and expansion of protected area network; contribute to better forest fire information for better fire management, including identification of fire prone areas and planning fire prevention measures; contribute to accurate, updated data on forest annual increment of timber, and other data needed to assess changes in forest and other woody biomass stocks and to calculate corresponding carbon removal for reporting to UNFCCC, as well as for further planning, implementation and monitoring, including for Low Emission Development Strategy.

Transferring expertise and methodologies in interpretation and analysis of remote sensing data will have long-term benefit for responsible agencies and other stakeholders, so that they can successfully apply this knowledge in the future, when there are other opportunities for obtaining satellite or aerial photos (e.g. National Public Registry is planning to produce high resolution aerial photographs for the whole country).

In addition to lack of data, existing data and information is not always easily accessible, and often is dispersed in different organizations. As mentioned in chapter 3.a), National Forest Concept of Georgia underlines need in a system, enabling responsible authorities as well as other stakeholders to implement monitoring of forests, the forest sector and ongoing processes, which would be complementary to other systems, e.g. national biodiversity monitoring system. Apart from this, creation of a broader national environmental database has been already planned and initial efforts have been already made by responsible agencies. GFW can contribute to this portal by supporting creation of forest related data layers. The responsible agency – Environmental Information and Education Centre will ensure maintenance and regular update of the database, as well as providing needed information to the global GFW website. The planned database is envisaged to have different data sharing levels and will facilitate both, inter-agency data sharing and public access to environment related information. The data portal can incorporate other databases developed as a result of earlier efforts, including GEO Portals developed by CENN and IUCN. This will ensure sustainability of already undertaken efforts and will help to consolidate all existing data. In addition, the Centre has a formal responsibility to ensure public access to information concerning environment and natural resources related permits and licenses. Information on forest use licenses could be incorporated into the forest data portal and also uploaded on the GFW website.

II. Project design considerations / use cases

Use case title:	**1 Management of production forests**
Area(s) of geographic focus (if any):	Areas with potential economic value (which potentially can be leased); Areas under lease and adjacent areas
Problems / challenges / issues that GFW may help to address[42]:	Unsustainable use of forest has been a significant problem for last 20 years in Georgia. Due to lack of monitoring and enforcement capacity there is limited information on forest conditions, including in leased areas. In addition, illegal logging rate is still high, despite its significant decrease during last years. It has been observed that logging rate exceeds natural regeneration rate in forests adjacent to settlements, causing significant reduction of forest density[43]. Often higher forest degradation is observed in areas adjacent to leased territories than in the leased territories[44]. In this case more complete and verified information would help to analyse causes and prevent further degradation. Lack of reliable information on forest condition and forest categories prevent proper planning of sustainable forest management. Before 2009 forest use licenses had been issued without prior forest inventory.[45] This resulted in improper license conditions imposing financial risks to license holders. Furthermore, even though license holder is responsible for forest protection and restoration measures, due to lack of knowledge these measures often are not implemented properly.[46] In addition, in some cases licenses have been issued for areas with high conservation value[47], so that due to lack of data, categorization of forests according to their functional purpose and value has not been undertaken. Public information and participation in decisions on forest is very important for sustainable forest management. Civil society sector currently does not have easy access to information on issued licenses and related materials. There has been reported cases NGOs having difficulty with obtaining public information related to implementing license conditions, forest use plans etc.[48]
Initial conclusions from GFW re. historic baseline and trend / scenario:[49]	Satellite images show increasing forest degradation in certain areas in Georgia through the period of 2001-2013. However, providing that there is no large-scale clear cut logging, but mostly selective logging in Georgia, not all present degradation could be detected at the given resolution. According to national reports in 55% of forests due to intensive forest use stand density is alarmingly low (canopy density is 50% and less).[50]
Current activities / efforts to address problem (including Government, civil society and donor	Forest management sector has undergone frequent institutional changes through last years. Due to the last institutional reform in 2013, National Forest Agency, a legal entity of public law under the Ministry of Environment and Natural Resources Protection was created. Number of staff in the Agency has been increased up to 800 people. Number of rangers has been increased up to 569. Consequently, area to be

[42] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description
[43] National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014
[44] Irakli Macharashvili, Association Green Alternative, personal interview 11 July 2014
[45] M. Machavariani, Forest Management Standards and Practice in Georgia, Technical Report, 2010
[46] National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014, Tbilisi, Georgia
[47] WWF, Thematic Study for NBSAP 2014-2020 - Georgian Forest Biodiversity, Situation Analysis, 2012
[48] Forest Management in Georgia, Problems and Challenges, Association Green Alternative, 2012
[49] For site-based cases, a GFW-generated map should be attached
[50] WWF, Thematic Study for NBSAP 2014-2020 - Georgian Forest Biodiversity, Situation Analysis, 2012

support, as relevant), including the process into which GFW would fit:[51]	observed by each ranger was decreased to 3000 ha. In the same year was created Service of Forest Policy within the Ministry, and a sub-agency structure of the Ministry – Department of Environmental Supervision. The aim of this reform was to separate competences and responsibilities related to forest management, protection, policy and legislative support. Georgian Parliament adopted New National Forest Policy Document (Forest Sector Concept) in December 2013, which significantly changed approach to forest management. The aim of the Concept is to establish sustainable forest management system that will ensure improvement of qualitative and quantitative indices of Georgian forests, biodiversity protection, efficient use of economic potential of forests taking into account their ecological value, public participation in forest management and equitable distribution of benefits. Lack of forest related data is one of the challenges in the forest management sector in Georgia. Last forest inventory was undertaken decades ago. Inventory has been undertaken only in areas leased for long-term use - approximately 160 thousand ha. In total 180 Thousand ha is under licensed use currently.
Description of relevant baseline data layers:	Forest cover – tree cover extent; intact forest landscapes Forest change – loss and gain Forest use – areas licensed for logging; forest use plans and related data; areas that could be potentially leased; areas licensed for mining. Conservation – Protected Areas Land use – agricultural, non-agricultural, areas covered by forest, areas not covered by forest Land ownership Land degradation
Description of key stakeholders / potential partners:	*National level* • **Forest Policy Service** • **National Forest Agency** • **Department of Licensing in the National Environmental Agency**, • **Department of Environmental Supervision** • **Environmental Information and Education Centre** • **National Agency of Public Registry** *Regional level* • **Authorities of Adjara and Abkhazia Autonomous Republics** *Local level* • **Local Self-Governance Authorities** *Non-Governmental Organizations* • **CENN project "Sustainable Forest Governance in Georgia: Strengthening Local and National Capacity and Developing Structured Dialogue"** aims at contributing to successful implementation of the forest reform in Georgia via strengthening the capacities of authorities and civil society and enhancing issue based policy dialogue. Among other activities the project initiated independent forest monitoring activities in regions in Georgia, which involves local non-governmental organizations, media and private sector that implement independent forest monitoring. In addition, CENN has been developing forest-zoning directive together with the Ministry of Environment and Natural Resources Protection, which is supposed to become a formal forest zoning guideline.

[51] This should include data and information systems / process currently in place related to action.

	Association Green Alternative has been actively involved in the processes related to biodiversity protection and forest. The organization has prepared number of publications related to forest governance, forest policy and legislation analysis, forest sector monitoring, public participation in forest management etc. through last years.
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	*1) Functional categorization of forest* It has been fully recognized by the national authorities that categorization – functional zoning of forest is essential for their protection and sustainable, multifunctional use. According to the National Forest Concept of Georgia, significant part of the forests with high conservation value does not have status of protected forest and there is no categorization based on functional purpose of forest. Accordantly, existing forest management system does not comply with modern principles of sustainable forest management and ecosystem approach.[52] Improved management of production forests could be achieved through identifying areas of high conservation and other values, where forest use should be restricted. Forest with high conservation value, ecological corridors and intact forest should be revealed and mapped. This will help to identify areas where commercial logging should be restricted. *2) Monitoring/assessment of leased areas* Satellite data as well as baseline data could be used for analysing historic and more recent information on leased areas in order to undertake impact analysis of forest use. As a result of the assessment, efficiency of applied forest logging methods could be evaluated and the best practices revealed. In addition, there will be need in developing methodologies for data interpretation, sampling, and extrapolation and producing monitoring and assessment tools adapted for Georgia. Furthermore, there will be need in capacity building, trainings and consultations for responsible agencies. *3) Surveillance of License Conditions* Department of Environmental Supervision, responsible for surveillance of license conditions related to forest use, can use the satellite data for general observation of forest and fragmented areas. Such observation could become a ground for planning surveillance. Satellite observation will make possible to observe forest change dynamics in time, and also to observe remote, not easily accessible areas. Higher resolution would enable more precise observation. Such observation is more suitable for monitoring of the general situation than for revealing cases of illegal logging. There is high need in GIS compatible data processing software in the Department, which would make easier to facilitate surveillance field works in forest. This could include data on areas designated for timber cutting, calculation of volumes, in some cases identifying species by photos. Maps of the areas designated for timber cutting with area coordinates and other data, such as species composition and tree diameters should be attached to the software program. All this work is presently conducted on paper which is rather time consuming and inaccurate. *4) Public information and participation* Production forest management related data could become part of the national environmental data portal incorporating all available forest related information to be managed and updated by Environmental Information and Education Centre (discussed more broadly below in use case 3). This could include regularly updated information on issued licenses and related materials such as: names of license holder companies, forest use plans and maps of leased areas. This information together with satellite data on forest cover and forest change will help NGOs to undertake alternative monitoring of leased areas and will enable them to participate more actively in forest management related decision making. With different levels of data access, the data portal can become an effective tool for data and information sharing between responsible agencies at the same time facilitating public access to all available forest related information.
Assessment of	Higher resolution data is needed to observe smaller scale logging and degradation.

[52] National Forest Concept of Georgia, approved by Parliament Resolution #1742-Is of 11 December 2013, Kutaisi, Georgia

possible need for higher resolution data:	
Inputs / projected costs[53]:	
Targets and indicators, including specific biodiversity, carbon and land degradation-related benefits, where appropriate[54]	To be added later

[53] Typical use case demonstrations may typically range from $50-100,000
[54] These will be combined and incorporated into tracking tools

Use case title:	**2 Forest Fire Alert System**
Area(s) of geographic focus (if any):	Countrywide (could be identified pilot regions with higher risk of fires)
Problems / challenges / issues that GFW may help to address[55]:	It has been recognized that fires have become an increasing threat to forests, protected areas and other vegetation resources in Georgia due to climate change and certain land use patterns. Even though the annual average number and extent of forest fires for the last decade is believed to be moderate, some large fires in recent years – 2006 (765 ha), 2008 (1270 ha)[56] and 2010 (430 ha) reveals the high risk of larger scale fire disasters during dry seasons.[57] In total 2005 ha forest has been degraded during last 3-4 years due to forest fires.[58] Still, there is no reliable countywide data on forest areas, forest stock and forest fires.[59] In addition, official statistics does not include fires on lands outside forests and protected areas, while most of the fires in Georgia occur or originate from agricultural lands. At the same time, there is no regulatory framework for the use of fire in agricultural purposes, which makes this type of fires difficult to manage. Additional threats arise from remnants of military activities such as unexploded ordnance. Fires on these terrains contain high risk for civilians and fire fighters.[60] In overall, national capacities in fire management in terms of both, fire prevention and response needs strengthening. This include lack of comprehensive regulatory requirements, lack of resources to properly manage fires in the regions, limited technical and human resources to fight fires in areas which are not easily accessible, limited capacity for fire research, need in strengthening inter-agency coordination for effective fire management etc.
Initial conclusions from GFW re. historic baseline and trend / scenario:[61]	It could be seen on the GFW website that fires in Georgia mostly occur in areas not covered by forest and agricultural lands. In addition, fires in Georgia are mostly small scale and short, due to which, not all fires could be detected by the satellite.
Current activities / efforts to address problem (including Government, civil society and donor support, as relevant), including the process into which GFW would fit:[62]	*National efforts* National strategic documents such as the second National Environmental Action Programme of Georgia 2012-2016 (NEAP) and the second National Biodiversity Strategy and Action Plan of Georgia 2014-2020 (NBSAP) recognize forest fires as significant threat to forest ecosystems and protected areas. It is underlined that even though some efforts has been made to strengthen national fire management capacities, existing early warning and fire management systems are not effective. Both national documents outline urgent need in measures to protect forest from fires in order to achieve more sustainable forest management. The Government has been trying to improve national legal framework in disaster preparedness. Number of laws and regulations has been developed in the last few years and many of them have been abolished in a short time. Presently major laws in force, regulating emergency response are the Law of Georgia on Public Safety of 29 May 2014 and National Response Plan on Natural and Man-made Emergency Situations approved

[55] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description
[56] This does not include forest areas burnt due to military activities during the 2008 war
[57] Proposal for a National Fire Management Policy of Georgia, ENVSEC project "Enhancing National Capacity on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus"
[58] National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014
[59] UNECE, Second Environmental Performance Review for Georgia, 2010
[60] Proposal for a National Fire Management Policy of Georgia, ENVSEC project "Enhancing National Capacity on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus"
[61] For site-based cases, a GFW-generated map should be attached
[62] This should include data and information systems / process currently in place related to action.

by Presidential Ordinance N415 of 26 August 2008. The latter is a set of emergency plans of the Ministries and their sub-ordinate agencies aiming at protecting civilians and territories from natural and man-made emergency situations. Traditionally, laws and regulations related to emergency situations in Georgia have been more focused on emergency response rather than prevention and mitigation. Institutional setup of emergency response has been also undergoing changes during last years and some more changes are coming in a short term (see below).

Inputs from international projects
In the framework of the project funded by Caucasus Nature Fund established in 2006, Borjomi-Kharagauli National Park was equipped by fire-fighting equipment.[63]

The ongoing project of Environment and Security (ENVSEC) Initiative: Phase Three - Enhancing National Capacity on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus" works on improving the capacity of countries to efficiently respond to the wildfires and improve forest fire management in order to achieve the major objective of the project - reducing wildfire risks in the South Caucasus. Five national roundtables on fire management were held between 2007 and 2014 concerning the future scope of fire management in Georgia. Key stakeholders from the Georgian agencies directly and indirectly responsible in forest and land management, fire protection and emergency response, as well as representatives of academia, local communities and civil society organizations, with support by international experts, were involved in these consultations and confirmed these observations.

In addition, Proposal for a National Fire Management Policy of Georgia was developed in March 2014 in the framework of the same project. The document identifies six main areas of activities/measures to address current gaps and shortcomings in national fire management. Among others these include:

Monitoring, early warning, information and analysis
This implies addressing lack of regional and local data on fires and their magnitude. Strategic objectives include not only fire management but post-fire vegetation management; establishment and maintaining a national database, fire monitoring and early warning capacity; establishing advanced satellite and weather forecast data based fire early warning and monitoring capabilities at national level; supporting responsible agencies in fire risk assessment.

Reduction of fire hazard, risk and vulnerability, and prevention of uncontrolled fires
This includes better management of uncontrolled fires, which are mostly human induced and relate to agricultural activities; and addressing risks arising from areas containing remnants from military activities, such as unexploded land mines.

Preparedness: Provisions to improve fire response and safety
Preparedness includes improving the ability for early warning, rapid detection and reporting of uncontrolled fires.

Additionally, the document identifies among urgent priority actions use of Earth Observation products – open-source satellite-derived data and information to monitor forests and other vegetation cover to build capacities in near-real time detection, monitoring and impact assessment of fires. Furthermore, it underlines necessity in creating inter-agency coordination mechanism to secure harmonization, coordination and cooperation in fire management at all levels.

Description of relevant baseline data layers:

Active fires
Possible additional layers for the national data portal:
Land use (with indication of agricultural and non-agricultural land, land covered by forest and land not covered by forest)
Fire prone areas
Areas repeatedly subject to burning for agricultural purposes
Areas containing remnants of military activities such as unexploded ordnance.

[63] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012

Description of key stakeholders / potential partners:	*National Level* • **Council of National Security and Crisis Management** • **Department of Emergency Management** • **National Forest** • **Agency of Protected Areas** *Regional level* • **Adjara Autonomous Republic Forest Agency** *Local level* • **Local Self-Governance Authorities** *International Projects* • **ENVSEC project "Enhancing National Capacity on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus"** aims at improving the capacity of Southern Caucasus countries to efficiently respond to the wildfires and improve forest fire management in order to reduce wildfire risks. Five national roundtables have been held in the framework of the project concerning the future scope on fire management in Georgia. In addition, proposal for a National Fire Management Policy of Georgia was developed in March 2014.
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	*Information for analysis and prevention* Generally in Georgia there is lack of reliable statistical data on fires and their origin. Human induced fires related to agriculture activities are not recorded at all and there are no regulatory requirements for their management, while this type of fires constitute majority of uncontrolled fires in the country. Development of a nationally based updated database on fires (a part of the broader environmental data portal discussed in use case 3), which would mirror globally managed GFW website, would reduce and eliminate gaps in regional and local data on fires, their extent and consequences. Consolidated data would enable to study and analyse origin of fires, identify fire prone areas and based on this, implement fire prevention measures. Maps with indication of land use, including areas covered by forest, areas not covered by forest and agricultural lands would help to identify origin and cause of fires. As mentioned, vast majority of fires in Georgia originate from burning in agricultural fields. Prior mapping of such areas, where agriculture induced burning is likely to occur, would help to analyse risks and plan corresponding measures in case of satellite detection of such fires. This would also help to better control agriculture induced burning activities in case there is any regulatory mechanism in place, such as for example prior voluntary reporting or permits. In addition, to the maps could be added areas with remnants of military activities, such as unexploded ordnance. This would help to analyse possible risks and plan precautionary measures to protect civilians as well as fire teams during fire elimination activities. *Early detection* Early detection is a key for effective elimination of fires minimizing risks and damage to humans and the environment. Satellite information when downloaded and analysed daily, could become a part of the national fire detection system, complementing already existing practices. For areas with high risks of fires, especially during dry seasons, higher resolution and more frequently updated data could be provided. Prior identification of fire prone areas and classification of forests in terms fire risks, as well as identifying time periods with high probability of fire occurrence, would help to plan national level activities, such as ground patrolling or aerial surveillance for rapid detection of fires in regions with high fire risks especially during dry seasons. Maps indicating land use patterns and probability for agriculture induced burning could help to analyse early detection information, establish source and type of fire and plan needed response measures more effectively.

	Inter-Agency Coordination Creation of a regularly updated nationally managed data portal consolidating all forest fire related data and information would improve data and information sharing between relevant state agencies. Providing that the data portal is planned to have different access levels, it could contain data for limited interagency use, as well as publicly accessible data available for all users. This will allow the national agencies to share and exchange specific data and information, which would contribute to improving inter-agency coordination.
Assessment of possible need for higher resolution data:	Fires occurring in Georgia are mostly small scale. Higher resolution and more frequently updated data are needed for more accurate detection of fires.
Inputs / projected costs[64]:	… Nationally based data portal could be supported by the Center for Environmental Information and Education, a legal entity of public law under the Ministry of Environment and Natural Resources Protection. Development and maintenance of the database would not incur additional costs, so that this could be added to already ongoing and planned activities of the Center, such as development of a national data portal compiling all environment related data and information. In addition, the Ministry of Finances of Georgia ensures technical support to the data portal, such as maintenance of the server and other activities.
Targets and indicators, including specific biodiversity, carbon and land degradation-related benefits, where appropriate[65]	To be added later

[64] Typical use case demonstrations may typically range from $50-100,000
[65] These will be combined and incorporated into tracking tools

Use case title:	**3 Forest assessment / inventory / monitoring**
Area(s) of geographic focus (if any):	Countrywide (with possible pilot areas)
Problems / challenges / issues that GFW may help to address[66]:	There is no updated data on Georgian forests, so as regular forest inventory has not been undertaken since decades. The old data is not consistent with factual conditions, which creates significant barriers in planning rational and multifunctional use of forests.[67] Regular forest monitoring is needed to enable rational forest use and assessment of forest use effects as well as changes in the environment. Even though Georgia is rich in forest resources, average density of significant part of the forests is at critical level. Further degradation could cause sharp decline in protection functions and self-restoration ability, which in medium and long term could lead to irreversible degradation of forest ecosystems.[68] Updated data on forest conditions is necessary to assess forest change patterns and effectively address major factors having negative effect on forests – unsustainable forest use, overgrazing, pests and diseases and forest fires, as well as to adequately plan forest recovery measures. In addition, updated information on forests will help to properly consider forest ecosystem requirements in development planning. Large infrastructural projects are identified as one of the causes of forest degradation in Georgia[69] and with future increase of economic activity negative impacts on forest ecosystems will increase, unless better monitoring and planning system is established.
Initial conclusions from GFW re. historic baseline and trend / scenario:[70]	Satellite images on GFW website and layers indicating forest cover and forest change show increasing forest degradation in certain areas. However, providing that forest degradation in Georgia more relates to decline in forest density rather than massive degradation of large areas, degradation extent might be greater than could be observed on the website.
Current activities / efforts to address problem (including Government, civil society and donor support, as relevant), including the process into which GFW would fit:[71]	*National efforts* Forest sector has undergone reforms several times since the late 1990s. Several draft forestry reform concepts and draft national forest management policy documents were developed, but none of them was approved since recently. New National Forest Policy Document – the Forest Sector Concept was adopted by the Georgian Parliament in December 2013. The Concept aims at establishing sustainable forest management system that will ensure improvement of qualitative and quantitative indices of Georgian forests, biodiversity protection, efficient use of economic potential of forests taking into account their ecological value, public participation in forest management and equitable distribution of benefits. Institutional setup of forest management has also undergone frequent changes.

[66] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description

[67] National Forest Concept of Georgia, approved by Parliament Resolution #1742-Is of 11 December 2013, Kutaisi, Georgia

[6868] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012

[69] National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014

[70] For site-based cases, a GFW-generated map should be attached

[71] This should include data and information systems / process currently in place related to action.

Due to last institutional reform in 2013 was established National Forest Agency, a legal entity of public law under the Ministry of Environment and Natural Resources Protection.

Based on the National Forest Concept and the National Biodiversity Strategy and Action Plan 2014-2020, the Ministry of Environment and Natural Resources Protection, with support of GIZ, has launched National Forest Programme since Spring 2013. Working groups have been created in several thematic areas, including forest monitoring and assessment. It is planned to develop and implement action plans in identified thematic areas. In addition, work on a New Forest Code will be started in 2014.

In order to create unified biodiversity monitoring system and to promote data exchange, the Ministry of Environment and Natural Resources Protection with financial support of GIZ has developed a Concept of National Biodiversity Monitoring System. The aim is to obtain adequate information on biodiversity conditions and trends, create response system and integrate this into national policies. 25 biodiversity indicators, including related to forest, grouped on the basis of State-Pressure-Response approach has been already selected. The indicators, methodologies for their description and related procedures are approved by Ministerial Order.[72] Currently data collection according to the selected indicators is ongoing.

Activities related to forest inventory, monitoring and assessment has been limited in Georgia. Forest inventory has not been undertaken since decades, except in areas licensed for long term use – approximately 160 thousand ha and in Racha Region where forest inventory was conducted in 2003-2007. At present inventory of up to 100 thousand ha is ongoing in Samtskhe-Javakheti region.

Forest inventory had been undertaken in Adjara in 2005-2006. However, the project was ceased before completion and the results have never been approved formally. Due to this, the results of this inventory, which already have become outdated, have never been used. There are plans to undertake new forest inventory in Adjara next year. In addition, demarcation of forest borders was undertaken in Adjara last year. Now formal approval of the newly defined borders is in process.

Inputs from International Projects
Ongoing project "Sustainable Forest Governance in Georgia: Strengthening Local and National Capacity and Developing Structured Dialogue" implemented by CENN (Caucasus Environmental NGO Network) aims at contributing to successful implementation of the forest reform in Georgia via strengthening the capacities of authorities and civil society and enhancing issue based policy dialogue. Among other activities the project initiated independent forest monitoring activities in regions in Georgia, which involves local non-governmental organizations, media and private sector that implement independent forest monitoring. In addition, in the framework of a pilot project component there is an idea to create forest portal and link it to already existing Geo-Portal.[73] In addition, CENN has been developing forest zoning directive together with the Ministry of Environment and Natural Resources Protection. When finalized, this document will become a formal forest zoning guideline.

ENPI East Countries FLEG II Program implemented by the World Bank in partnership with WWF and IUCN among other activities implements detailed forest inventory of Tianeti municipality. In addition, it is planned to create forest information database through development of Geo Portal for Georgian forests – "Geo Forest Portal" and forest Resource Center, which will be delivered to the National Forest Agency. Possibly Geo Forest Portal will be incorporated into

[72] Order N262 of Ministry of Environment and Natural Resources Protection of 18 December 2012 on approving indicators for unified system of biodiversity monitoring and related methodologies and procedures
[73] Land Degradation Map of the South Caucasus Region, http://land.cenn.org:8082/cenn/

	disaster Geo Portal of Natural Hazards and Risks in Georgia developed by CENN.[74] Apart from this, FLEG implements forest functionality analysis that implies studying dependency of local population on forests. Maps reflecting results of this analysis will be developed for Ajameti, Kintrishi and Mtirala protected areas.
Description of relevant baseline data layers:	Forest cover – tree cover extent; intact forest landscapes Forest change – loss and gain Forest use – areas licensed for logging and mining Conservation – Protected Areas Land use – agricultural, non-agricultural, areas covered by forest, areas not covered by forest Land ownership Land degradation
Description of key stakeholders / potential partners:	• **Forest Policy Service** • **National Forest Agency** • **Agency of Protected Areas** • **Service of Biodiversity Protection** • **Environmental Information and Education Centre** *Regional level* • **Adjara Autonomous Republic Forest Agency** • **Abkhazia Autonomous Republic Department of Agriculture, Environment and Natural** *Local level* • **Local Self-Governance Authorities** *International Projects and Non-Governmental Organizations* • **ENPI East Countries FLEG II Program** implemented by the World Bank in partnership with **WWF** and **IUCN** • **CENN project "Sustainable Forest Governance in Georgia: Strengthening Local and National Capacity and Developing Structured Dialogue"** • Other non-governmental organizations that could be potential stakeholders and users or contributors to the forest data portal are NACRES and Green Alternative.
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	*Forest monitoring/assessment* GFW satellite data can be used for observing forest dynamics and implementing forest-monitoring activities. This includes: update and adjustment of borders of the forest fund, last defined in 2011; identifying and mapping different land use types: areas covered by forest and areas not covered by forest; agricultural land and non-agricultural land; forest under licensed use and other. Based on these data forest change dynamics – forest gain and forest degradation over time could be observed and different causes of degradation such as logging, pests and diseases, fires, overgrazing and other could be identified, analysed and addressed. In addition, natural succession of forest on former agricultural land could be studied and analysed. Correct land use information will improve land use planning and control of non-authorised activities e.g. construction within borders of the forest funds. Observation of forest change dynamics will also help to analyse impacts of climate change on forests and its possible consequences. Furthermore, tourist routes and tourist infrastructure could be planned. Satellite

[74] http://drm.cenn.org/index.php/en/

data could also enable to monitor forest in Abkhazia AR in order to assess forest conditions and support better management at regional and local levels.

This will also help to gather data for forest related biodiversity indicators such as: landscape fragmentations, area designated for timber cutting, intensity of forest use, forest diseases and forest fires, intact forests and other.

Forest zoning could be undertaken based on the forest-zoning directive under elaboration presently. Higher resolution images could allow studying species composition based of which forest grove plans could be developed. Pilot priority areas could be identified for higher resolution data, e.g. ecological corridors and floodplain and further, conservation plans for important corridors could be developed. Possible priority areas could be identified in Racha, Svaneti, Samtskhe-Javakheti regions, akhmeta and Tianeti municipalities.

In addition, satellite data could assist forest inventory process in terms of planning and better identifying areas for field studies, and in some cases providing additional data. E.g. ways could be identified to use satellite data as an additional tool to support planned forest inventory in Adjara. In addition, annually updated satellite information will be very important to see further change dynamics.

Expertise/methodologies in data interpretation and analysis
There will be need in methodologies in data interpretation and analysis for application of satellite images for data generation and analysis. Corresponding trainings will be needed for public officials as well as NGOs implementing independent forest monitoring or other forest related activities and possibly also for representatives of general public involved in such activities. This will have long term sustainable benefit so as knowledge and expertise will remain in the beneficiary agencies and could be successfully applied when there are other possibilities of using satellite or aerial images.

Interagency data sharing/public access to information
As mentioned, there is lack of updated forest related data in Georgia. In addition, existing information is not always easily accessible, and while forest management often affects multiple sectors, there is no mechanism for inter-sectoral data sharing. Furthermore, information and data produced as a result of efforts undertaken at different times by national institutions as well as international projects or NGOs, needs to be consolidated in order to ensure sustainability of these efforts and to help to provide broader picture based on consolidated information.

In order to address all this issues, there is need in national data portal that would gather all forest related information and that would be updated regularly by a responsible agency, including by using GFW satellite information. The data portal could mirror the GFW website in many aspects, and in some cases automatic parallel update could be arranged for selected data layers.

Forest data portal could be incorporated and become part of the broader environmental database to be developed by Environmental Information and Education Centre. The Ministry of Finances is planned to provide technical support for the database and provide a server with a backup system that excludes loss of data. Environmental Information and Education Centre will ensure maintenance and regular update of the database, as well as providing needed information to the global GFW website. The planned database is envisaged to have different data sharing levels for intra and inter-agency use as well as for the general public. This will improve inter-agency coordination and cooperation, and at the same time, will increase public access to forest related information and support NGO activities such as independent forest monitoring. The forest data portal could also incorporate Geo Portals developed by CENN and planned by IUCN; as well as other products e.g. plant cover and land use maps developed by NACRES for certain areas in Georgia, results of already completed inventories and existing historical data when appropriate. This will ensure sustainability of already undertaken efforts and will help to consolidate all existing data. In

	addition, the Centre has a formal responsibility to ensure public access to information related to environment and natural resources related permits and licenses. Information on forest use licenses could be incorporated into the forest data portal and also uploaded on the GFW website. It is also planned that the database will be used for electronic reporting to the Ministry, e.g. submitting applications or required documents by proponents. Additionally, Environmental Data Portal could incorporate other layers not directly related to forest, e.g. land degradation, natural disasters and other. *Other uses of the broader environmental database* Some more agencies/structural units can benefit from additional layers provided by the data portal Service of Land Resources Protection and Mineral Resources, MENRP needs information on land degradation and land use in order to study and analyse causes of land degradation, which is also affecting forest, including climate change. National Environmental Agency, MENR, Departments of Hydrometeorology and Geology need data for natural hazards prognosis and prevention. This includes data on conditions of glaciers, areas with landslide risks ant other. Providing that natural hazards represent one of the important concerns in Georgia, and there are insufficient resources to undertake regular field observation, satellite data could be extremely valuable. National Agency of Public Registry can both share and benefit from updating their data on land use, land ownership, borders of the forest fund, licensed areas and other.
Assessment of possible need for higher resolution data:	Different resolution images will provide data of different detail. Possible higher resolution images will be needed for almost all activities, especially for studying species composition.
Inputs / projected costs[75]:	… Nationally based data portal could be supported by the Center for Environmental Information and Education, a legal entity of public law under the Ministry of Environment and Natural Resources Protection. Development and maintenance of the database would not incur additional costs, so that this could be added to already ongoing and planned activities of the Center, such as development of a national data portal compiling all environment related data and information. In addition, the Ministry of Finances of Georgia ensures technical support to the data portal, such as maintenance of the server and other activities.
Targets and indicators, including specific biodiversity, carbon and land degradation-related benefits, where appropriate[76]	To be added later

Use case title:	**4 Protected Area Management**

[75] Typical use case demonstrations may typically range from $50-100,000
[76] These will be combined and incorporated into tracking tools

Area(s) of geographic focus (if any):	Protected areas
Problems / challenges / issues that GFW may help to address[77]:	There are in total more than 80 protected areas of different categories in Georgia, which cover 7.47% of the country area.[78] Protected areas are important tool for biodiversity conservation, and additionally, they have important role in scientific research and socio economic development, especially in terms of tourism development. One of the biggest challenges related to protected areas management in Georgia is development of unified protected area network. Still, protected areas are not connected in a single network and there are sensitive areas that do not have protected status. There is no plan for spatial development of protected areas, which would support increase of protected area coverage and connectivity. In addition, land use patterns in territories adjacent to protected areas, and activities such as extraction of natural resources, unsustainable agriculture, development projects etc. cause risks of negative impacts on protected areas, such as pollution, ecosystem degradation, disturbance and other. Other challenges are management planning and illegal use of natural resources. Most of the protected areas are managed without management plans, based on temporary regulations.[79] In addition, there are no effective mechanisms for data collection, storing and analysis, which makes difficult to reveal changes in species habitats. This makes difficult to assess actual conditions and trends of biodiversity. Lack of data is identified as major barrier for biodiversity conservation and effective management of biological resources.[80]
Initial conclusions from GFW re. historic baseline and trend / scenario:[81]	Data on protected areas in Georgia and their borders indicated on the GFW website is incorrect and outdated.
Current activities / efforts to address problem (including Government, civil society and donor support, as relevant), including the process into which GFW would fit:[82]	There has been significant progress in development of the protected areas network. Further increase of protected areas is planned and process of establishment of several of them is ongoing. Recently adopted second Biodiversity Strategy and Action Plan 2014-2020 sets target to reach protected area coverage at least 12% of the land area and 2.5% of marine space by 2020. This will significantly increase share of protected areas in the country. Significant work has been undertaken in terms of developing tourist infrastructure on protected areas. Presently number of the protected areas have adequate tourist infrastructure and can provide different services, which has resulted in increasing trend of visitors. Some other related capacity building activities are in progress.[83] Caucasus Nature Fund (CNF) was created in 2006, aiming at supporting the Southern Caucasus Countries by co-financing protected area expenses.
Description of relevant baseline data layers:	Protected areas Protected areas zoning – indicating level of protection and functional characteristics of protected areas Forest cover Forest change Intact forests Land use – areas covered by forest, areas not covered by forest, pastures Land degradation Land ownership
Description of key stakeholders /	• **Agency of Protected Areas**

[77] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description

[78] National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014

[79] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012; National Biodiversity Strategy and Action Plan 2014-2020, approved by Government Resolution N343 of 8 May 2014

[80] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012

[81] For site-based cases, a GFW-generated map should be attached

[82] This should include data and information systems / process currently in place related to action.

[83] National Environmental Action Programme of Georgia approved by Government Ordinance N127 of 24 January 2012

potential partners:	• **Akhmeta Municipality Local Self-Governance** • **Environmental Information and Education Centre** • **ENPI East Countries FLEG II Program** implemented by the World Bank in partnership with **WWF** and **IUCN** • **Support Programme for Protected Areas in Caucasus, Georgia** aims at improvement of natural resources and protected area management in the selected protected areas taking into account livelihoods of the rural population in a long-term perspective. • **UNDP-GEF Project on Machakhela Protected Area** in Adjara is designed to enhance management effectiveness, biogeographic coverage and connectivity of Protected Areas of Adjara Autonomous Region of Georgia in order to better conserve the globally unique Colchic Forests. • **Czech development Agency** has developed and will further support Draft Tusheti Protected Landscape Management Plan in the framework of the project "Preparation of Management Plan for Tusheti Protected Landscape. • **Caucasus Nature Fund** a German non-profit organization supports the protected areas in the South Caucasus countries by providing long-term funding for operating costs, improved management and sustainable development of the protected areas in the region. • **WWF Caucasus and the Critical Ecosystem Partnership Fund (CEPF) a partnership for biodiversity conservation in the Caucasus Ecoregion** focuses on the conservation of globally threatened species, priority sites and conservation corridors by providing funding and technical assistance for the scientific community and civil society groups.
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	*Defining protected area borders* Protected area borders need update and adjustment. Digitalization of old paper maps from 1990s caused inaccuracies, which need to be corrected. In addition, updates need to reflect expansion of protected areas network. At the first stage defining outer contour of protected areas with precision of at least half a meter is desirable. The next step will be mapping details – forests, pastures, rivers etc. Formal rules for defining protected area borders have been already developed. Demarcation of borders will need field works. However, satellite images could be used in preparatory stages. *Forest monitoring/assessment within the protected areas* Management of forest in protected areas differs from management of production forest so that in the first case the priority is to maintain natural ecosystem processes as much as possible and human intervention is justified only when it contributes to natural processes. Forest monitoring in protected areas is essential to observe natural processes and plan measures accordingly. GFW satellite data can be used for observing forest dynamics and implementing forest-monitoring activities. This includes: identifying and mapping land use types – areas covered by forest and areas not covered by forest including pastures; observing forest change dynamics over time and identifying causes; observing border change between alpine meadows and forest caused both, naturally and by overgrazing; assessing areas degraded due to natural disasters, fires or other and observing natural regeneration over time, including species shift from coniferous to deciduous. It is also very important to observe pastures and study erosion processes. Updating forest cover data (percentage of forest cover in protected areas) will help to identify extent of forest degradation within the protected areas through past years and analyse its causes including climate change. Analysing long-term natural regeneration process will help to identify areas where natural regeneration does not go well and human intervention is needed. Areas with good natural ability to regenerate will be left intact, to ensure maintaining natural ecosystem

	processes. It could be also studied how forest fires can help to ecosystem regeneration processes so that fires in some cases speed up ecosystem development processes. *Monitoring of adjacent areas* It is very important to observe areas adjacent to protected areas so that processes going on in these territories e.g. clear cutting, forest degradation, fires, pests etc. as well as infrastructure development and urbanization affect adjacent protected areas. *Identifying potential protected areas* Expansion of protected areas network is planned by national strategic and policy documents including new National Forest Concept of Georgia. Satellite data could help to identify intact areas, which could be considered as potential, new protected areas.
Assessment of possible need for higher resolution data:	
Inputs / projected costs[84]:	… Nationally based data portal could be supported by the Center for Environmental Information and Education, a legal entity of public law under the Ministry of Environment and Natural Resources Protection. Development and maintenance of the database would not incur additional costs, so that this could be added to already ongoing and planned activities of the Center, such as development of a national data portal compiling all environment related data and information. In addition, the Ministry of Finances of Georgia ensures technical support to the data portal, such as maintenance of the server and other activities.
Targets and indicators, including specific biodiversity, carbon and land degradation-related benefits, where appropriate[85]	To be added later

Use case title:	**5 Forest Carbon Stock Analysis for UNFCCC reporting**[86]
Area(s) of geographic focus (if any):	Countrywide
Problems / challenges / issues that GFW may help to address[87]:	National GHG inventory, which is part of the Second National Communication to UNFCCC, includes carbon removal by sinks from land use, land use change and forestry (LULUCF) sectors. The inventory of land use, land use change and the forestry sector is based on the idea that the flow of CO_2 from and to the atmosphere is equal to changes in carbon stocks existing in biomass or soils, and that the changes in carbon stocks could be assessed on the basis of land use changes and activities, causing these changes, such as burning, clear cutting, selective cutting etc. Changes in carbon stocks were examined by assessing: changes in forest and other woody biomass stocks; forest and grassland conversion to agricultural or other types of land; carbon uptake by the abandoned managed lands; and emissions and removals from soil. In most cases, due to lack of updated data it has not been possible to make assessments for recent years. Assessment of *changes in forest and other woody biomass stocks* is based on

[84] Typical use case demonstrations may typically range from $50-100,000
[85] These will be combined and incorporated into tracking tools
[86] Source: Georgia's Second National Communication to the UNFCCC
[87] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description

	existing forest data and average forest increment of timber. So that detailed data on species composition does not exist, and forests are classified only as coniferous and deciduous, the total absorption of CO_2 by forests was assessed by multiplying the areas occupied by coniferous and deciduous forests, by the IPCC 1996 default values of mean annual increment of biomass, and summarising the results obtained. Still, calculations were made only for 1998-2002 years, so that for other years the data is not available. CO_2 release is calculated based on commercial extraction and traditional consumption of firewood. There is no data on *conversion of forest and grassland to arable land* to estimate annual losses of biomass. Though it is believed that there have not been large-scale conversions of different categories of land into arable land. Similarly, there is no data on changes in carbon stocks resulting from the *abandonment of cultivated arable land*. Still, experts believe that this change has not been significant. *CO_2 emissions and removals from soils* are assessed based on changes in land use or changes in land cultivation. Changes in carbon stocks in arable land, pastures and hayfields, and mineral soils were assessed only for 1998-2002, so as there is no data for more recent period.
Initial conclusions from GFW re. historic baseline and trend / scenario:[88]	GFW website provides data on forest cover, annual loss and 12-year cumulative gain. However the given resolution might not be reflecting existing situation accurately. In addition, FAO data is provided on forest types, carbon stocks and GHG emissions.
Current activities / efforts to address problem (including Government, civil society and donor support, as relevant), including the process into which GFW would fit:[89]	First initial National Communication to UNFCCC was prepared in 1997-1999 as a first step towards implementing obligations under the Convention. Since then, number of projects has been implemented aimed at studying various aspects of climate change and preparing for mitigation and adaptation proposals. Second National Communication to the UNFCCC was prepared during 2006-2009. In the same period, GHG inventory has been undertaken, future climate change scenarios have been developed and the vulnerability of different ecosystems and economic sectors to current and expected climate change has been assessed. In addition, the adaptation projects were prepared, along with the planning of GHG abatement measures and numbers of activities in public awareness raising have been implemented. Based on the assessments and the SNC as well as other past and ongoing projects in Georgia, short and long-term climate change strategies have been prepared. The strategies are focused on the priority regions selected during the stocktaking exercise. The strategies aim at removing barriers in the following six areas: enhancing the local potential for the implementation of UNFCCC principles; ensuring the sustainability of the national GHG inventory; assessing the vulnerability to climate change and adaptation measures; mitigating GHG emissions and raising public awareness. Currently, work on the Third National Communication to UNFCCC is in progress.
Description of relevant baseline data layers:	Forest change – loss and gain Land use – agricultural, non-agricultural, areas covered by forest, areas not covered

[88] For site-based cases, a GFW-generated map should be attached
[89] This should include data and information systems / process currently in place related to action.

	by forest; grassland, cropland, wetlands, settlements.
Description of key stakeholders / potential partners:	• **Government of Georgia** is responsible for implementing UNFCCC including leading and coordinating all activities relating to climate change. • **Ministry of Environment and Natural Resources Protection** • **Service of Climate Change** • **National Environmental Agency** • **Forest Agency** • Other stakeholder Ministries – of Energy, Economy and Sustainable Development, Agriculture, Labour Health and Social Affairs and others, as well as National Statistics Office of Georgia and other agencies are also involved and support reporting to UNFCCC. • **UNDP-GEF Project on Second National Communication to UNFCCC** supported preparation of the Second National Communication to the UNFCCC. Preparation of the Third National Communication is in progress currently.
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	GFW can contribute to accurate, updated data on forest annual increment of timber, which is necessary to assess changes in forest and other woody biomass stocks. As mentioned above, the latest available data is dated by 1998-2002. Data used for the reporting to UNFCCC is mainly derived from the old existing statistical information, fragmented inventories carried out in different years by the national authorities, as well as data provided by license holders. Forest loss is mainly assessed on the basis of commercial extraction and traditional consumption of firewood. In addition, species composition, at least updated coniferous/deciduous breakdown is necessary for calculating carbon removal. Data on land use and land use change will be valuable to assess conversion of forest and grassland to arable land, abandonment of cultivated arable land and carbon removals from soils. Presently there is no data available to make such assessments. Accurate annual data on forest increment and forest loss is essential not only for reporting to UNFCCC, but for further planning, implementation and monitoring, including for Low Emission Development Strategy (LEDS).
Assessment of possible need for higher resolution data:	Higher resolution images are needed for generating more accurate data on forest loss and gain and species composition (at least coniferous/deciduous breakdown).
Inputs / projected costs[90]:	
Targets and indicators, including specific biodiversity, carbon and land degradation-related	To be added later

[90] Typical use case demonstrations may typically range from $50-100,000

benefits, where appropriate[91]	

Use case title:	**6 Reforestation**
Area(s) of geographic focus (if any):	Could be identified priority areas e.g. in Samtskhe-Javakheti region
Problems / challenges / issues that GFW may help to address[92]:	Unsustainable forest use, illegal cuts, overgrazing, pests and diseases and forest fires are identified as major causes of forest degradation in Georgia. The result is significant decline in forest density. Larger areas of forest have been degraded due to infrastructural projects and mining. National Forest Concept of Georgia among forest management priorities sets restoration of degraded forest and afforestation of areas not covered by forest. National Biodiversity Strategy and Action Plan of Georgia 2014-2020 suggests, as one of the strategic approaches, carrying out inventory of forest areas that have been lost, degraded or changed as a result of infrastructural projects or mining, assessment of conditions of these areas and restoration based on landscape adaptation methods.
Initial conclusions from GFW re. historic baseline and trend / scenario:[93]	Satellite images show increasing forest degradation in certain areas in Georgia through the period of 2001-2011. At the same time, forest degradation significantly exceeds reforestation. In addition, providing that decline of forest density, which is not easily observable on satellite images, is a significant issue in Georgia, actual degradation is expected to be greater.
Current activities / efforts to address problem (including Government, civil society and donor support, as relevant), including the process into which GFW would fit:[94]	National strategic and policy documents of Georgia identify reforestation and restoration of degraded areas among priority measures. In 2010 regulation on forest tending and restoration rules was adopted,[95] which outlines main provisions on forest tending and forest restoration. In addition, growing forest plantations on open areas, in order to decrease pressure on forests in a long term, is one of the strategic approaches suggested by National Biodiversity Strategy and Action plan. Activities supporting natural restoration have been carried out since mid-20th century and in total covered 230.9 thousand ha during last 50 years. From this, artificial forest was created on 72.5 ha. After 1991 forest restoration activities have been reduced dramatically. With financial support of the World Bank, reforestation activities covered 113.5 ha in 2003-2004 and 265 ha in 2006-2009; activities supporting natural reforestation process was implemented on 190.1 ha in 2003-2004 and 2096.4 ha in 2006-2009.[96] In Adjara activities supporting natural reforestation covered 32 ha last year and 100 ha this year. In addition, forest plantation was planted on 12 ha. Some other small-scale forest restoration activities have been implemented during

[91] These will be combined and incorporated into tracking tools
[92] Use 'initial thoughts' column in Table 2.4 as a starting point from which to build this description
[93] For site-based cases, a GFW-generated map should be attached
[94] This should include data and information systems / process currently in place related to action.
[95] Resolution N241 of the Government of Georgia of 13 August 2010 on forest tending and restoration rules
[96] Earlier Forest Policy Document, not adopted

	2008-2011 including in the framework of the BMU International Climate Initiative/KfW/WWF project "Mitigating Impacts of Climate Change through the Restoration of Forest Landscapes in the Southern Caucasus".
Description of relevant baseline data layers:	Forest cover – tree cover extent; intact forest landscapes Forest change – loss and gain Forest use – areas licensed for logging and mining Conservation – Protected Areas Land use – agricultural, non-agricultural, areas covered by forest, areas not covered by forest Land ownership Land degradation
Description of key stakeholders / potential partners:	• **Forest Policy Service** • **National Forest Agency** • **Service of Biodiversity Protection** • **Adjara Autonomous Republic Forest Agency** • **WWF Caucasus programme office**
Proposed GEF project activities to use GFW to address problem / challenge, including co-ordination and harmonization with baseline data and information systems and efforts:	Forest restoration, which includes supporting natural regeneration as well as planting and seeding, requires prior identification of areas subject to restoration, studying: species composition before degradation, causes of degradation, natural regeneration ability, favourable natural conditions, pressures to the area e.g. grazing, assessing negative consequences of forest degradation on the given area and other. To restoration are subject burnt areas and natural and artificial forests having degraded by other causes; as well as areas not covered by forest where climatic conditions allow afforestation; and thinned or degraded natural groves, which requires artificial restoration or reconstruction.[97] Satellite observation of forest change dynamics, forest degradation and natural restoration of degraded areas over time could serve as an additional tool in preparatory activities for forest restoration such as identifying degraded landscapes subject to restoration; as well as for monitoring areas recovered both, naturally and as a result of restoration activities. Additionally, in case broader environmental database provide data on occurred fires, natural disasters and land degradation, this could contribute to analysing possible causes of forest degradation and assessment its consequences. Identification of degraded areas subject to restoration has been a challenge also in Adjara. While forests in Adjara are no longer subject to licensing, causes of existing degradation are past logging activities and pests.
Assessment of possible need for higher resolution data:	Higher resolution data will be needed for observing decline in forest density or species shift.
Inputs / projected costs[98]:	
Targets and indicators, including specific biodiversity, carbon and land degradation-related	To be added later

[97] Resolution N241 of the Government of Georgia of 13 August 2010 on forest tending and restoration rules
[98] Typical use case demonstrations may typically range from $50-100,000

benefits, where appropriate[99]	

[99] These will be combined and incorporated into tracking tools

Appendix 1: Adjara pilot demonstration

Adjara Autonomous Republic is the southwestern part of Georgia located on the coast of the Black Sea with total area of 2 900 km^2. Forests in Adjara are diverse, represented by sub-alpine as well as mixed deciduous forests. Total forest area is 191 603,7 ha, about 65% of the whole territory, including 13 693 ha state reserves, 15 807 ha national parks and 7 084,1 ha sub-alpine forests. Areas within 1000-2000 m above sea level have the biggest forest coverage – 61%. 55,9% of the forest is located on slopes of 31 degree and more, having crucial land protection and water regulatory functions.

Adjara has been selected as a potential area for implementing project pilot case during the stakeholder consultations, including with the authorities of Adjara AR, as well as the validation workshop group discussions. Several key points, discussed below, have been identified in support to Adjara pilot case during the stakeholder consultations and discussions:

- the Adjara Government as well as the Ministry of Environment and Natural Resources Protection of Georgia strongly support implementation of the Adjara pilot case;
- there is good coordination among national, regional and local levels;
- while there is no commercial logging in Adjara, large scale social logging as well as pests and diseases have been identified as causes of forest degradation, requiring urgent measures;
- significant shift of the upper border of the forest have been observed caused by past unsustainable logging, overgrazing and climate change; there is certain amount of available forest data based on the past inventories, which can be used as a baseline for forest monitoring;
- except protected areas, there are important animal migration routes and the ecological corridor connected to inner regions of Georgia (Samtskhe-Javakheti and Guria) as well as Turkey;
- Adjara is bordered by Samtskhe-Javakheti region, where there is licensed logging, as well as illegal logging and large-scale forest fires.

The following use case areas have been identified as relevant for Adjara: forest assessment/inventory/ monitoring, forest carbon stock analysis and reforestation.

1) Forest assessment/inventory/monitoring

Forest change dynamics

There is relatively good amount of available information on Adjara forests. Forest inventory was undertaken in Adjara in 2005-2006. However, due to early termination of the project, the results have never been approved formally. Demarcation of forest borders was undertaken last year. The government is planning new forest inventory in Adjara for the next year. With certain amount of already available baseline information, satellite observation can assist in regular monitoring of forest change dynamics, including observation of natural succession processes as well as forest degradation.

Forest degradation

Diseases and pests have been identified as one of the major causes of forest degradation in Adjara. Total area of the forest affected by diseases is 11 788 ha, which is 7.2% of the total forest area. Despite small scales of the infection spread, the situation is considered as dangerous since the diseases are characterized with high intensity and have several distribution focuses, where 70-80% of forest is infected.[100] Adjara Climate Change Strategy developed in the framework of the Third National Communication to Climate Change links increased forest diseases to the climate change and identifies as one of the project proposals establishment of the monitoring system aiming at prevention of climate change impact on spreading wreck-diseases in Adjara forests. Another proposal concerns restoration of degraded sub-alpine forests, caused by excessive logging in the past. Satellite observation can be applied as an additional tool for revealing degraded areas and observing natural regeneration, based on which further interventions can be planned.

Conservation

[100] Regional Development Strategy of Adjara AR

Another focus of forest monitoring can be revealing forest groves with high conservation value with the aim to plan further conservation activities, which is identified as one of the measures for biodiversity protection in the Regional Development Strategy of Adjara AR.

2) Reforestation

Despite illegal logging rate have been significantly decreased in Adjara, due to inappropriate management as well as forest diseases and pests the density of the most of the forest is reduced. Forest restoration, identified as one of the priority measures in the strategic documents, has been implemented at different extent during past years. Activities supporting natural reforestation covered 32 ha last year and 100 ha this year. In addition, forest plantation was planted on 12 ha. However, identification of degraded areas subject to restoration has been a challenge. Remote sensing tools can assist in revealing such degraded areas and in planning restoration/reforestation where needed.

3) Forest carbon stock analysis for reporting to UNFCCC

Adjara, due to its unique subtropical climate and recourses and natural conditions, relevant for development of two of the national priority sectors – tourism and agriculture, have been one of the focus areas covered by the national communications to the UN Climate Change Convention.[101] The third National Communication to the UNFCCC pays special attention to the study of climate change impacts on different sectors of economy and natural ecosystems in Adjara, as well as assessment of the expected changes in climate in the nearest decades. In addition, in the process of preparation of the Third Communication, the first GHG inventory was undertaken in Adjara. Four sectors have been assessed including land use, land use change and forestry (LULUCF). The assessment was based on 2005 forest inventory of Adjara. While forest data in Adjara is relatively recent, compared to other regions in Georgia, it is not complete and already needs update. Accurate, updated data on annual increment of forest in Adjara as well as land use changes is very important not only for reporting to the UNFCCC, but for planning and implementing strategy for reduction of greenhouse gases.

[101] UNDP, Climate Change Strategy of Adjara, 2013

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LIST OF ABREVIATIONS

ARSIE: Association of the Networks of Environmental Information Systems
AP: Protected areas
CAZ: Ankeniheny Zahamena Corridor
UNFCCC: United Nations Framework Convention on Climate Change
CDB: Convention on Biological Diversity
CI: Conservation International
CIRAD: Center of international cooperation in agronomic research for development
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLB: Local Grassroots Community
COAP: Code of Protected Areas
COBA: Grassroots Community
COGESFOR: Malagasy Forest Ecosystems Management and Conservation Project
COMATSA: Marojejy – Tsaratanana – Anjanaharibe Corridor
COFAV: Fandriana – Ambositra Vondrozo Corridor
DCSAPM: Department of Conservation and System of Protected Areas of Madagascar
DGEF: Directorate General of the Environment and Forests
DREF: Regional Directorate of the Environment and of the Forests
DVRF: Department of Valorization of Forest Resources
FTM: Foibe Tao-tsaritany Malagasy
GCF: Forest Contract Management
GELOSE: Secure local management
GESFORCOM: Commune and Community Forest Management
GFW: Global Forest Watch
IEFN: National Ecological and Forest Inventory
INSTAT: National Institute of Statistics
IRD: Research Institute for Development
MECIE: Making Environment-friendly Investment
MNP: Madagascar National Parks
NAP: New Protected area
ONE: National Office for the Environment
ONESF: National Observatory of the Environment and Forests
ONG: Non-Governmental Organization
PAGS: Simplified Development and Management Plans
PCD: Commune Development Plan
PE: Environmental Program
PHCF: Holistic Program for Forest Conservation
PNAE: National Program for Environmental Actions
UNDP: United Nations Development Program
UNPE: United Nations Program for the Environment
PRD: Region Development Plan
PSE: Ecosystem Services Payment
REDD: Reduction of Emissions from Deforestation and forest Degradation
R-PP: Readiness Preparation Proposal
SAPM: System of Protected areas
SGBDF: Forest Database Management Office
SGFD: Sustainable Forest Management Site
TBE: Environmental specifications
TG: Management transfer
TGRF: Forest resource management transfer
EU: European Union
UICN: International Union for the Conservation of Nature
VOI: Vondron'Olona Ifotony
WCS: Wildlife Conservation Society
WRI: World Resource Institute
WWF: World Wildlife Fund for Nature

1. Background

In 1998 Madagascar ratified the United Nations Framework Convention on Climate Change (UNFCCC), and in 2011, adopted its National Policy of Fight against climate change. The goal for the strategic axis number 2 of this policy: « Implementation of the mitigation actions for the sake of the country's development » is to establish the different national, regional and sector-based strategies to contribute to mitigating greenhouse gas emissions. Likewise, one of the goals of strategic axis 3 is to develop and popularize all necessary tools and instruments to facilitate accountability at all levels. The present GEF-GFW project which aims at reducing deforestation and plans for stakeholder participation, thus contributes to achieving the goals of the Malagasy mitigation strategy.

Considering Madagascar's current environmental situation, one can argue that the Great Island is now facing a very important environmental dilemma. On one side, we have a highly exceptional biodiversity wealth, while on other side, we witness an alarming deforestation. Because of this paradox situation of biological wealth and high threat of degradation, Madagascar is among the ten hotspots of biological diversity. The following table shows a few figures on the exceptional endemicity rates in Madagascar.

Tableau n°1. : A few figures on endemicity rates in Madagascar

	Number of species	Percentage of endemicity
Mammals	**210**	**98%**
Avifauna	**310**	**60%**
Herpetofauna	**630**	**98%**
Freshwater fish	**164**	**60%**
Higher plants	**13,700**	**>90%**
Baobab	**8**	**75%**

As a paradox to this exceptional richness, the annual deforestation rates amount to 0.4% according to reports from ONE, DGF, FTM, MNP on the «Evolution of the natural forest cover in Madagascar 2005 - 2010». The same report concludes the facts on deforestation as follows:

- The natural forest cover in 2010 has been assessed at 9,220,040 Ha.
- Approximately 36,000 Ha of natural forests have been lost every year in Madagascar between 2005 and 2010.
- The annual deforestation rates for the 2005-2010 period are estimated at 0.4%. This represents a decrease compared to previous periods as the rates have been 0.8% between 1990 and 2000 and 0.5% from 2000 to 2005.
- The highest regional deforestation rates have been recorded in the regions of Boeny and Atsimo Andrefana, respectively with loss rates of 0.9% and 0.8% per year for that period.
- In terms of deforested surface, the regions of Atsimo Andrefana and Menabe are the most affected as they have lost respectively close to 66,000 Ha and 26,000 Ha between both dates; half of the lost surfaces are located in both regions.
- Low altitude forests located below 400 m are more affected by the deforestation than those of higher altitude, with loss rates of 0.5 % per year.
- The deforestation rates inside the Protected Areas (PA) managed by the MNP have reached 0.2% per year, i.e. half of the national rates.
- The thorny forests and the dry forests remain more threatened compared to rainy forests.
- Madagascar remains in the category of the high deforestation rate country.

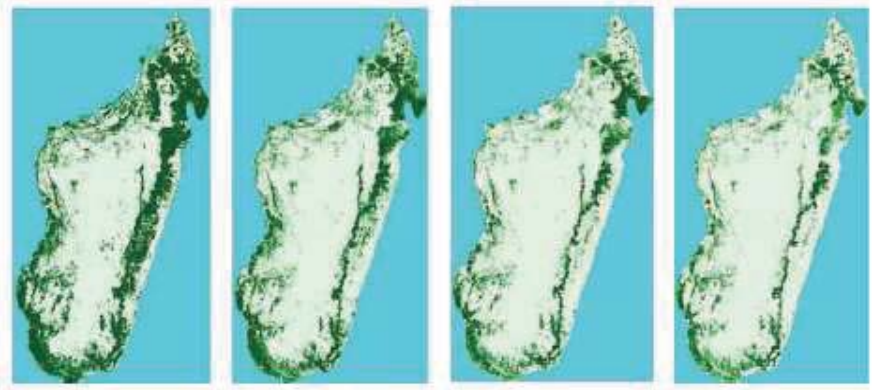

Figure 1. Evolution of forest cover in Madagascar (1950-1970-1990-2000)
(Source Conservation International)

There are several causes of deforestation, and they differ from one site to the next. Likewise, those figures are not static; they evolve along with the socio-economic status as well as the socio-political environment. Listed below are the four main causes of deforestation:

- The slash and burn farming practiced in the forest zones make up the main cause of deforestation. No forest ecosystem makes an exception to this devastating farming practice.
- Illegal mining exploitation activities also contribute to deforestation, especially to the forest degradation' biological wealth. In fact, this exploitation is carried out in a way that skims the forest massifs of the noble species. The exploitation technique used (level of cutting and logging …) does not care about forest integrity either.
- Mining settlements close the list of the causes of deforestation. The creation of industrial mining facilities is done at the expense of natural resources (forests, water, soil); while illegal mining activities also threaten the integrity of the biodiversity in Madagascar. In fact, illicit mining is always accompanied by the destruction of forests, soils and fauna.
- Finally, failure to enforce the laws and the lax attitude notices within the forest administration contributes to maintaining the process of forest degradation in Madagascar.

Deforestation has maintained widespread poverty among the population. There was an estimated total population of 17.9 million in 2004, i.e. a density of 30 inhabitants/km^2. The 2001 population growth rate was 2.8 per cent. 73% of the population lives in rural areas. In order to survive, the poor population was forced to exploit the natural resources available and within their reach. 92% of the population lives with less than USD 2 a day (WB, 2013)[1]. According to the United Nations Development Program, Madagascar is among those countries the most severely hit by malnutrition, along with Afghanistan and Haiti. Besides, the very instable political situation disturbs the development process. Madagascar has experienced periodic decade-long political crises, during which international funding is put on hold while conservation and development actions are practically frozen. Such situations only exacerbate the degradation process of forest and biodiversity in Madagascar.

Despite this rather grim situation, there are favorable factors as well as local and international initiatives to reduce the degradation of the environment in Madagascar. Early in the 90s, we felt a widespread awareness as the charter of the environment was adopted, forest legislations were reviewed, and local populations were empowered in natural resource management. The civil society, the private institutions and the Non-Governmental Organizations were rushing to protect the environment. However, the conservation actions and natural resource management are stalling because of the inexistent or insufficient communication of any information and data on the resources.

In fact, the availability of information is the missing link in natural resource management in Madagascar. All the more since if such information do exist, they are more often scattered and outdated. The technology used for data collection is not compatible to ensure credible, regular information that are updated in real time. Consequently, the use of such information is very limited and remains descriptive.

[1] http://hdr.undp.org/sites/default/files/hdr_2013_summary_fr_0.pdf

Yet, an adequate natural resource management requires permanent up-to-date information likely to help towards rapid decision-making and appropriate planning.

2. Analysis of the situation of the forest information systems

2.1. Forest monitoring systems and information flow

The following paragraphs provide a quick overview of the backgrounds of deforestation and the aspects ruling over the forest monitoring system and information flow.

2.1.1. The policy, legislation and institutional aspects

For a long time, Madagascar has a set of measures geared towards a better management of its forest resources and limiting their degradation. Aware of the issues of increased degradation of the environment and the loss of biodiversity related to the economic situation and poverty, the Government of Madagascar has drafted its National Plan for Environmental Action (PNAE) in 1989, with the support of the World Bank, international agencies and non-governmental organizations. Then in 1990, the adoption of the charter of the environment (law No. 90-033 of December 21, 1990, on the Charter of the environment) makes up the general framework for executing the National Environment Policy and has the goals and the strategy to be implementer for the three five-year Environmental Programs.

Indeed, as financial and human resources became very scarce towards the end of the 1975 – 1991 socialist revolution, it became obvious that the forest administration was ineffective in controlling and coordinating the country's forest heritage. At the same time, the early 90s saw more awareness of policy makers on the need to include local people in the resource management process. From an economic point of view, economic liberalization - by the divestiture from the productive sector - and decentralization have led to a change in the structure and management methods in forestry. Thus, the Malagasy Government has launched a review of the forestry legislation pursuant to the Law No. 97-017 of August 8, 1997, on the review of the forest legislation. Then, a new forest policy was adopted in October 1997 by the Decree No. 97-1200 of October 2, 1997, on the adoption of the Malagasy forest policy. Since then, various measures related to forest management have been taken to strengthen the process that was started:

- The law No. 96 025 establishing local management of renewable resources
- The decree No. 98-782 regulating logging
- The decree No. 99-954 of December 15, 1999, on the compliance of investment with the environment
- The decree No. 99-954 of December 15, 1999, as amended by the decree No. 2004-167 of February 3, 2004, on the implementation of Compliance of investment with the environment (MECIE)
- The decree No. 2001-122 of February 14, 2001, laying down the requirements for implementing the contractual management of state forests.
- The Code of Protected Areas (COAP) according to the law No. 2001-05 of February 11, 2003, on the Code of protected area management
- The decree No. 2002-793 establishing incentive measures to prevent and eradicate bushfires

Furthermore, for a more effective conservation and in order to express its absolute will to conserve the unique biodiversity, Madagascar signed several international conventions:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora or CITES: 1975
- RIO Convention on sustainable development: 1995
- Convention on Biological Diversity (CDB): 1995
- Convention on Climate Change (CCNUCC): 1998
- Convention to Combat Desertification: 1997
- …

In terms of policy, legislation and institutional Madagascar emerged from a period of lethargy characterized by loosening of natural resources management. The Government now has legislative and institutional assets to develop a coherent management of its natural resources.

2.1.2. Stakeholder analysis

The ecological role of the forest gives it a multi-sector nature. Indeed, the forest plays an important role in the availability of resources that are essential for the biological functions of living beings (water - minerals - air). Thus, it is obvious that less forest means more threats to all aspects of human existence: social, economic and cultural. Deforestation then becomes the prerogative of the entire society. The non-exhaustive list below indicates the potential stakeholders to address this challenge:

- The Government, represented by the various ministries and related agencies that contribute to improving natural resource governance (Ministry of the Ecology of the Environment and Forestry, Ministry of Water, Ministry of Agriculture) and planning (Ministry of landscape development) through more effective enforcement of the law in their respective sectors;
- The *Office Nationale de l'Environnement* is an organization that plays an important role in disseminating information on the environment at the national level. In fact, ONE publishes and updates the regional and national environmental terms and specifications. These latter indicate the condition, pressures and conservation measures for the environment in Madagascar. The ONE's latest contribution to dissemination of environmental information pertains to the designing of the deforestation map in Madagascar from 2005 to 2010, while the map for 2010 – 2014 is being designed.
- The SGBDF or Forest Database Management Office within the Office of the Director General of Forest. This office collects the information from the Regional Offices of the Environment and Forest. This information is presented as report of activities on several topics (reforestation completed, bushfires, logging…)
- Domestic and international NGOs working in environmental conservation and development will collaborate in the collection, processing and dissemination of information at their level and thus help fuel the national database.

    - *National Observatory of the Environment and the Forest sector*: the ONESF is an autonomous and independent body for information collection and analysis. The ONESF is a body that monitors good governance of environmental programs and actions as well as forest activities by the public or private sectors. The ONESF's attributions to collect, analyze, disseminate and monitor the evolution of environmental and forest information and data. The ONESF provides provisional-type recommendations that are used as elements of direction or correction for any decision affecting the environment and the forest sector or any related operations. The ONESF can provide support in the control and monitoring missions in the field of environmental and forest activities;
    - The FTM is an agency of the State Ministry for Infrastructure, Equipment and Territory Planning. It is the key player in mapping at the national level. The institution has a department focusing on Geographic Information System (GIS), using material with high standards of perfection and a number of human resources in the field of image processing and GIS.
    - *Association of Networks of Environmental Information Systems*: The ARSIE is a non-profit organization established in May 1999. It is a structure of facilitation and consultation for organizations and resource persons having or using information related to the environment. The ARSIE's mission is to facilitate and stimulate the flow of reliable information and data about the environment in Madagascar.

      The ARSIE's activities include:

        - Producing and disseminating metadata on members;
        - Diagnosing, typing in a standard format, consolidating and cataloguing existing metadata within institutions;
        - Training for members on using the WinIsis software.
        - Implementing the conceptual model of information exchange between ARSIE and the regions (2 pilot sites in the Menabe and Alaotra-Mangoro Regions).
        - Writing and editing a quarterly newsletter: FEHY

- Holding exhibitions accompanied by panel discussions.

- Local grassroots communities managing natural resource (especially COBA managing forest resources) in their local community and other organizations relying on forest resource use.
- International public and private investors and donors can more effectively target their impacts thanks to an increased ability to track and analyze the results and trends.
- Scientific communities using globally consistent data to foster a better understanding of the causes of deforestation and degradation, come up with more accurate and timely global models, addressed to policymakers.
- Civil society and the media contribute to policy debates and fight against corruption. They are effective advocates for forests and are the ones who can mobilize public opinion on the action against deforestation.

2.1.3. Sharing of forest information (flow), degree of use

Since forest information is scarce, they cannot be made available in an adequate and transparent fashion to users (government, communities, private institutions and NGO, the greater public…). As of now, each Ministry has a website that gives an overview of the Ministry, its missions, activities and achievements. Each Ministry also has documentation centers providing printed documents and often analogic maps.

There are no magazines or periodicals specialized in communicating forest information regularly. The only institution authorized to carry out this activity is the National Institute of Statistics (INSTAT) and the FTM (Foibe Tao-tsaritany Malagasy) but they do not have accurate and timely data on deforestation and forests in general. On the contrary, data on forest products exist although they are not complete and are of little use.

Nevertheless, some governmental and Non-Governmental institutions suggest investing in the dissemination of information on natural resources. The following stand out from the rest:
- The National Office for the Environment (ONE)
- The National Observatory of the Environment and the Forest Sector (ONESF)
- The Association of Environmental Information Networks (ARSIE)
- The Foibe Tao-tsari-tany malagasy (FTM)

Besides, those institutions operating in natural resource management have essential information but remain located in their intervention zone and are not always available for the greater public and users. The data are published in the reports of activities or posted on these institutions' websites. Among these institutions, there are projects in the context of bilateral cooperation as well as international NGOs (CI-WCS-WWF…)

2.1.4. General evaluation of information availability, quality, and accessibility

An effective and sustainable forest resources management depends in the timely availability of the data and information related to deforestation. A rapid analysis of the situation in the field of forest information reveals the existence of flaws and the listing below qualifies the characteristics of forest information in Madagascar:
- Non availability. The availability of information is not regular; it depends on the existence of funding and/or programs of activities of those organizations interested in such information. There is no national structure that is well equipped to ensure the effective availability of forest information. Although the Forest Administration is the first body in charge of forest information, it does not have the necessary means to do so effectively;
- The existing data presently go back a few years: IEFN (1996 – 2006), CI (2009), ONE (2010)[2]. Thus, deforestation rates are estimated by a deductive method, based on data from these landmark years. Efforts are now underway within the ONE to assess the deforestation occurring during the 2010-2014 period with improved means;

[2] www.pnae.mg

- The search for alternative to deforestation or the fight against deforestation requires diversified data and information from different sources (forest cover, land use, demography, infrastructures…). In the present case, such data are scattered among various institutions, while a cross-cutting and integrated procedure of fight against deforestation requires centralized data and information;
- An analysis of the availability of data and forest information in Madagascar reveals a regional misbalance. In fact, the eastern slope, home to evergreen rainforests, has an edge over the western one, home to dry forests deciduous.

The following table summarizes the information available in Madagascar in the field of forestry.

Tableau n°2. **Table: Environmental information available in Madagascar**

USE CASE	EXISTING INFORMATION	TYPE	FORMAT	OWNERS
Protected areas and NAP	Baseline mapping data	BD 100 (curve - administrative boundaries - hydrography …)	Vector map	FTM
	Total surface of forest cover	Deforestation 2000-2005-2010-2013	Digital map (Image raster)	CI – ONE
		Deforestation 2000-2005	Digital map (Image raster)	CI
		Ecosystems and land use (IEFN-1996)	Digital map (shapefiles)	DGEF/DVRF/ONE
	Location and boundary of the PA	Map	Digital map (shapefiles)	DGEF/DCSAPM
	Incidence of fire	Fire warning CI	Incidence of fire	DGEF/DVRNF
	Forest clearing	Location	Quantified data	DGEF/DVRNF
	Biodiversity	Occurrence of species	Local map	WCS
		Loss of forest (habitats)	Surface	WCS
		Distribution of species	Local map	WCS
		Natural habitats (IEFN - 1996)	National map	DGEF/DVRF/ONE
		Surfaces of the main ecosystems	National map	DGEF/DVRNF ONE
Community management	Baseline data of the TG	Location/Surface/Managing community	Map	DGEF/DVRNF
	Zoning	Zoning by type of use (Protection, right of use…)	Map	DGEF/DVRNF
	Management tools	Management contracts/PAGS	Document	DGEF/DVRNF
	Supervision, monitoring and control	Promoters	Technical document, management	DREF - CI-WCS-WWF-GIZ-CIRAD…
			Monitoring form	DREF - CI-WCS-WWF-GIZ-CIRAD…
REDD	Reference data	Surfaces of projects	Document	DGEF – ETC - WWFTERRA – WCS - CI
	Carbon stock	In terms of volume	Quantified data	DGEF – ETC - WWFTERRA – WCS - CI
	Inventory carbon source – biomass volume,	Aerial biomass	Volume	ETC TERRA – WCS – CI - WWF
Mangroves	Baseline data	Location/Boundary/Surface	Map	WWF - ONE
		Biology	Quantified document	WWF-ESSA Forest -
		Carbon production		ESSA Forest-LRI
	National Communication		Quantified document	MEEF/DGE
Mines	Mining plots	Surface/owner	Geographic coordinates-Map of region	Ministry of Mining - BCMM

USE CASE	EXISTING INFORMATION	TYPE	FORMAT	OWNERS
	National Communication (Industrial Sector)	Inventory of the GES	Quantified document	MEEF/DGE
EIE	Environmental Impact Assessment	EIE results and Reference status	Document	ONE and Projects (CI-CIRAD…)
Catchment area and water resources	Baseline mapping data	BD 500 - BD 200 at the national level - (curve - administrative boundaries - hydrography - roads …)	"Vector" map	FTM
		IEFN	GIS "digital" map	DGEF/DVRF
	Pluivio	Daily rainfall		Directorate General of Meteorology
		Monthly rainfall		Directorate General of Meteorology
		Satellite estimate of rainfall	Daily (height/intensity, temperature)	Directorate General of Meteorology
	Hydrology	Hydrography/Hydrology	National map	Directorate General of Meteorology
			Environmental specifications	ONE
		Hydrography/Regime/Debit	Large and small rivers of Madagascar	Directorate General of Meteorology
		Global database on water	Surface catchment area, volume of water available	FAO
		National hydro database	Databank	Directorate General of Meteorology
	Land use	Map (shapefiles)	Ecosystem and land use	DGEF/DVRF/ONE
	Soils	Global databank FAO – Boundary of great categories of soils	Digital map (FAO classification)	FOFIFA/IRD
		Physical potentials of soils	Analogue map	IRD
	Aquatic resources	Fish farming production	Quantified data	Ministry of Fishing Resources and Fisheries
Forest production	Total surface/potential	Boundary of KoloAla sites	Digital map (shapefiles)	DGEF/DVRF/DPPSE/SGBDF
	Forest operators	Map of boundary	Geographic coordinates	DGEF/DVRF/DPPSE/SGBDF
		Location, name of operator, surface, volume of wood	Administrative document	DGEF/DVRF/DPPSE/SGBDF
	Type of exploitation	Adjudication/Management contract		DGEF/DVRF/DPPSE
	Reforestation	Surface/species/location	Document/report of activity	DGEF/DVRF/DPPSE/SGBDF
	Volume of wood	Volume of wood exploited/type of cover	Underway	DGEF/WAVES Project
Landscape	Landscape planning	National Plan of Landscape Development	Quantified data -maps	MECIEAT

USE CASE	EXISTING INFORMATION	TYPE	FORMAT	OWNERS
Development		Regional Development Plan	Quantified data -maps	MECIEAT/Regions
		Regional Schema of AGT Landscape	Quantified data -maps	MECIEAT/Region

2.2. Guidelines of activities to improve forest data and information systems

An analysis of the existing information above reveals important flaws in the field of forest resource monitoring and evaluation in Madagascar. The reference data useful for this monitoring is there but needs an update. If we want this monitoring to be transparent and realistic, we also need updated and regular data in almost real time. GFW can intervene effectively in this field of monitoring by providing data in almost real time and in rapid fashion on the evolution of forest covers. For more effectiveness and in view of the participation of the bodies affected by deforestation, the new GEF – GFW Madagascar project should be integrated into the national conservation strategies.

Standing out from among these strategies are the empowerment of local communities for natural resource management, the reorganization and extension of protected areas, the implementation of REDD+ Project, etc. However, it is not enough to develop synergies involving all stakeholders in the field of information to give shape to and implement the programs expressed at the level of the guideline of the National Environmental Policy. Considering the means available and the performance of the advanced technology that it has, the GEF – GFW project turns out to be of great help and offers the systems likely to address the challenge.

2.2.1. Participation of local communities in managing the RNR

In the legal context, the GELOSE law recommends compliance with the principle of integration of the grassroots community. The goal is to allow for the effective participation of rural populations (grassroots communities or COBA) in the sustainable management of renewable natural resources within the boundary of their landscape. The targeted natural resources are those within state properties (public or private national land) or Territorial bodies, and including water or terrestrial wildlife, the water and range.

Since GEF – GFW project is a project aimed at looking for solutions or alternative to deforestation, COBAs have a predominant place in analyzing the causes of deforestation and implementing the alternative. In fact, COBAs make up an important link in the acquisition of field information. The project could greatly benefit from their contribution by monitoring the process for collecting information and forwarding these data. Besides, as to the implementation of the simplified landscape management plans, COBAs have the obligation to participate in forest surveillance in general, and in monitoring deforestation, particularly.

In this context, GFW can contribute by:

- mapping the forest plots under GELOLSE contract and the zoning by the PAGS;
- monitoring deforestation and illegal logging in the Management Transfers;
- providing information for forest surveillance to COBAs.

2.2.2. Protected areas

During the World Parks Congress in Durban, on September 17, 2003, Madagascar has decided to increase the surface of protected areas from 1.7 million to 6 million hectares in the next five years, and in reference to the categories of UICN's protected areas. This ambition brought about the creation of the SAPM Committee, which takes up the responsibility of supporting the creation of New Protected Areas (NAP) with the Ministry of the Environment, Ecology and Forests. The « fundamental conservation goals » in the Madagascar's protected areas are to:

- Ensure the representativity of Madagascar's unique biodiversity,
- Contribute to the conservation of the Malagasy cultural heritage,
- Maintain ecologic services and promote the sustainable use of natural resources to contribute to poverty reduction». (art. 1 of decree 2005-248).

The appendix of the Code of Protected Areas (COAP) adopts as strategic principle the fact that « **the management decisions for the development of biodiversity rely on the best knowledge available and on a wide range of researches as well as a commitment to ensure an integrated scientific surveillance.** »

In the absence of information describing the descriptive reference status of the milieu, there can be no accurate measure of the positive or negative discrepancies coming from the management. In terms of lessons drawn from the results and dictating the measures to be taken, the measurable facts pertaining to the valorization of the assets from the research can only be forwarded to the larger public and users through the data from direct observations or from the statements by role players, which are turned into information. Based on this principle, great importance is granted to information in the forest resource management.

The collection of information carried out at the national level reveals the existence of flaws to which the GFW can contribute:

- Forest surveillance inside and around parks and reserves.
- Fire warning in almost real time or other pressures (illegal logging)
- Control of overlapping with other sectors (e.g. mines)

2.2.3. The KoloAla sites

Experiences have shown that the protection measures are not enough for a sustainable management of forest resources. Considering the growing needs of the population in COS (timber and lumber), which reach 4 million m3 per year nationwide) (Jariala and al, 2007), forests with productive potentials experience high deforestation rates every year (2.5% versus 0.4 to 0.5% in protected areas or priority conservation zones) (MEFT, USAID & CI, 2009). Hence the need to devise a more realistic and more pragmatic management strategy adapted to the local, regional and national socio-economic context at the level of the forest massifs with production potentials. Hence the adoption of the KoloAla concept.

The main goal of the « KoloAla » concept is to contribute to the conservation of forest resources by establishing a rational and sustainable forest management system, helping to guarantee sustained production in ligneous and non-ligneous forest products, and to improve the participation of the forest sector to rural development. This initiative is understood as an integral part of the conservation efforts for forest resources and complements the activities of protection and restoration of forest ecosystems. In addition, it stresses particularly on improved participation of the forest sector to rural development by a professional, effective and sustainable use of ligneous and non-ligneous forest resources.

The overall goal of setting in place the KoloAla sites at the national level is to take part in conserving forest resources at the national level, by creating legally well-defined zones that will be used to add economic value to forests in a rational way, while maintaining or increasing the ecosystem's ability to produce forest goods (ligneous and non-ligneous forest products) and services (water regulation, protection, biodiversity conservation). Consequently, the main goal of the KoloAla sites would be the sustainable and rational production of ligneous products to meet the needs at the local, regional, national and international levels. But they can also include other zones for other forest products as well as protection zones in which some logging might be forbidden, so as to limit impacts on biodiversity.

The specific goals of the KoloAla sites are to:

- Establish viable economic management sites for a long term exploitation of ligneous forest products in natural forests outside Madagascar's current and potential protected areas;
- Maximize the financial values of specific forest blocks through the exploitation of the PFL and the PFNL while maintaining the ecosystem's critical services such as the protection of the catchment areas and biodiversity conservation;
- Facilitate the creation of sustainable forest development plans by creating well-defined large forest zones and reserved for activities of long term forest production;
- Define a clear and standardized approach for determining and managing the KoloAla sites through regional zoning workshops so as to in order to meet as a priority the need for wood supply at the regional and national levels;
- Provide clear guidance and guidelines on the processing of biodiversity and the ecologic services for the sustainable forest activities in Madagascar.

Tableau n°3. Spatial distribution of the surfaces of Protected areas and KoloAla sites

Zones	Surface (ha)
AP managed by MNP	2 126 893.1
Extension of PA MNP	511 118.5
New Protected area	4 326 543.0
Priority PA Sites	1 038 599.6
Important KoloAla Sites	1 199 063.6
Potential KoloAla Sites	1 171 239.6

Just like for protected areas, GFW can invest in:

- the spatial location of the effective exploitation zones.
- the surveillance of the KoloAla sites in the field of fire, illegal logging and sector overlapping (mines…)
- the surveillance of the real application of the specifications

2.2.4. The REDD Project

The REDD+ Project is an essential element of the national conservation strategies. Madagascar has started to develop the REDD Project since 2001. Now, there are four REDD+ Project, including:

- Makira REDD Project: under the supervision of WCS, the project started in 2003 and covers 360,000 Ha. This project is considered to reduce greenhouse gas emissions by 38 million tons.
- CAZ REDD Project: started in 2007 and managed by the NGO Conservation International, the project covers 325,000 Ha in the Ankeniheny Zahamena forest corridor. It projects to reduce greenhouse gas emissions by 15,750,840 tons.
- Both REDD projects of PHCF (phase 2): funded by Air France, the first phase of the project took place in 2008-2012 and affected 5 sites. The second phase started in 2013 and the number of sites has been cut down to two in the rainforest of the East, the Marojejy Anjanaharibe Tsaratanana corridor (COMATSA) in the North and Beampingarata in Anosy, in the South. Both fields cover 300,000 Ha.

Test sales of carbon on the voluntary market have been initiated since 2006, showing the country's dynamism and willingness to prepare for the REDD mechanism. The preparation of the R-PP has started in 2008, led by the REDD Madagascar Technical Committee. Four strategic options have been studied in-depth in preparation for the R-PP:

- Improve the forest sector governance;
- Create incentives to sustainable management and effective use of forest resources;
- Strengthen forest monitoring and control and the enforcement of the law;
- Develop of alternatives to deforestation and the degradation of forest resources.

In its implementation phase, the REDD Project will need information to which GFW can contribute:

- Reference data on the boundaries, the quantity and production of biomass.
- Surveillance and control of the REDD project forests.
- Assessment of carbon sequestration
- …

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2.3. Challenge/hurdle on the efforts to improve forest data and information systems

Still starting from the principle of the importance of information on the effectiveness of decision-making and on a good planning of natural resource management, findings have shown that altogether, Madagascar does not have access to credible, independent, and regularly updated information on its forests. Indeed, some efforts have been made, but they are still scattered and very dependent on role players' location. Likewise, the timely availability of information is not always guaranteed. After analyzing the situation, one can argue the factors preventing from establishing constant information flow:

- Lack of the means for the administration in the fulfilling its mission of information collection and dissemination;
- High cost the material means for the regular acquisition of high quality information;
- Technical complexity of the exploitation of available data (satellite image);

- Scattered information;
- Inaccurate and incoherent information.

Decision-making necessarily requires data from different sources, but these latter are scattered among the different sectors. The information related to logging permit, agricultural investment, infrastructures and demography, which must be analyzed with the variations of forest cover, are generally monopolized within several distinct institutions in different formats, preventing any integrated analysis.

2.4. Evaluation of the potential of use/applicability of GFW

The proposed Global Forest Watch project aims at addressing all the obstacles above, by relying on the existing resources, and by developing innovative, technically very advanced but user-friendly tools. In addition, the project will actively involve with strategic user groups, including governmental organizations, companies and local NGOs to make sure the information is used effectively. Thus, the GEF – GFW project will deploy its capacities and intervention in synergy with the different national conservation and development strategies.

- *Greater ability for rapid response:* GFW will allow the enforcement of the laws and PA management to achieve an almost immediate response to fight illegal activities of deforestation, even in faraway areas. This will considerably reduce the impacts of illegal activities which can often go unnoticed for long periods because of the lack of means for the patrols and the non-enforcement the law in the field;
- *Less implementation cost:* officers in the field will be able to focus their interventions geographically, using the warning data in almost real time. This will help reduce high costs in the field and painful activities for patrols;
- *More effective advocacy*: GFW will have a system that is accessible to the public, user-friendly and transparent. Local bodies, the private sector and the government will be able to use GFW to support the advocacy based on technology and community mobilization to support the interventions of forest conservation;
- *Enhanced empowerment:* GFW is designed to provide transparent and credible information. This will be the basis for (a) timely surveillance of the public and private sector's performance in forest management, (b) defining and measuring the baseline parameters on the change of forest cover and the payment for ecosystem services (PSE), (c) improved measuring of the evolution of the effectiveness of PA management and (d) rapidly evaluating the impact of the management measures in the forest zones and the protected areas.

GFW will contribute directly to the development, implementation and monitoring of the Voluntary Partnership Agreements (VPAs) in the context of the EU's FLEGT Action plan (application of forest regulations, governance and commercial exchanges), by improved effectiveness of law enforcement, as well as by providing essential support in the field of negotiation.

The information and data available from Global Forest Watch relate to forest cover losses and gains, presence of fires, conservation zones, and intact forests. National or local inputs can certainly enrich such data. An in-depth analysis of the GFW data might create accurate evaluations as to how a loss of forest cover took place at a given location, the speed at which the phenomenon occurred before, during and after the project. Using these data can contribute to improving the forest management and the planning for landscape development.

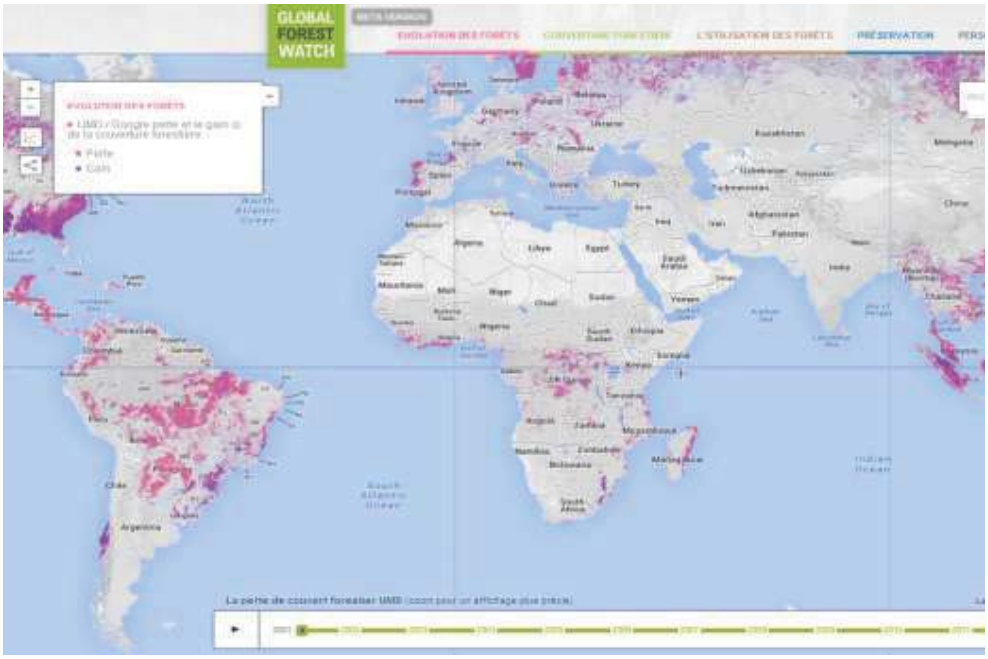

Figure 1. Screenshot of the GFW's website

GFW can provide information and references likely to be useful for forest management:

- In the field of community management, the overlapping of the maps of the forests transferred to local communities throughout the island with data on forest cover losses is likely to reveal important deforestation in these community-managed forest zones.
- Particularly for the REDD+, the system can intervene to help the MRV aspects (Measure, Report and Verification) of the REDD + activities, by providing a tool for monitoring and managing the forest cover in a rapid, reliable and user-friendly manner for information analysis. This might simplify the visualization, analysis and communication of the data on forest cover by cutting on costs and time necessary to produce the maps and reports. GFW will also facilitate the transparent verification of the information provided by parties on the changes of forest cover.
- As to mining activities, data from Global Forest Watch show the forest cover losses within the premises of the mining facilities of Ambatovy (Sherritt) and Fort-Dauphin (QMM) in activity as well as the adjacent infrastructures. Global Forest Watch can intervene in regional planning by highlighting any overlapping layers (Mines vs. PA, Logging vs. PA…)
- With the availability of high resolution and high frequency images (1 month), GFW helps on one hand in completing the Environmental Impact Assessment and, on the other hand, for monitoring the implementation of the Environmental Management Plans at large or small scale.
- Management of protected areas and production sites: in fact, the information from GFW shows the losses of forests and the fires occurring in the areas covered by the forest spaces, including Madagascar's KoloAla sites.

3. Main considerations

3.1. Analysis of the Use case

The concept of use cases is introduced in this process of preparing the GFW project document for a better collection of information among potential partner institutions, so as to deduct the possibilities of intervention for the said project. Therefore, the Use case is a sector of activities underway that affect the natural resource management, which GFW can contribute to improve planning and impacts.

3.1.1. Use case 1: Protected area management

3.1.1.1. Geographic fields

The System of Protected areas of Madagascar (SAPM) gather in general the protected areas in the island, classified by their categories, their periods of creation and their management modes. They are namely:

- The protected areas managed by « Madagascar National Parks » (e.g. ANGAP)
- The Extension of the protected areas managed by « Madagascar National Parks » (e.g. ANGAP)
- The Protected areas with a Temporary Status
- New Protected Areas
- Les Important Conservation Sites (priority sites to be declared as Protected areas)
- Potential Conservation Sites (sites with strong likelihood to become Protected areas)

3.1.1.2. Issues-stakes - challenges that GWF can contribute to solve

The terrestrial protected areas of Madagascar cover over 5.5 million hectares, i.e. approximately 9.4% of the country's surface. They are managed by governmental or non-governmental non-profit organizations. Despite the status of protected area regulating these areas, the forest cover in them is constantly shrinking because of the subsistence agricultural activities by neighboring communities, such as the collection of fuel wood or wood top produce charcoal, illegal collection of forest products and sub-products. The deforestation rates in the protected areas is 0.2% per year for the 2005 – 2010 period, as reported by ONE, DGF, FTM, MNP on the «Evolution of the cover of natural forest in Madagascar between 2005-2010». This rate remains high even if it stays lower than the 0.4%yearly national average.

The threats are exacerbated by the existence of a lax attitude to the detriment of the aggregated effect of the lack of good governance within the administration, and the failure of the forest control to enforce the legislation in effect. Let us point out a sizeable portion of the precious wood present on the market mainly comes from protected areas. Besides, palisander and other noble wood are now hard to find on the domestic market because of illegal logging. Despite of numerous interventions of surveillance and the administrative measures of coercion, illegal logging is constantly on the rise. Therefore, it is obvious that protected area managers as well as the forest administration need more context-based information and technical assistance to improve the way these areas are managed.

3.1.1.3. The activities underway and efforts deployed integrating the process in which the GEF – GFW project can intervene

In 2003, during the World Parks Congress, Madagascar has committed in the context of the Durban Goal to triple the size of protected areas from 1.7 to 6 million hectares. This goal has now been achieved. This illustrates the efforts deployed to enhance the effects of the conservation of forest and biodiversity in Madagascar. The management of these areas is highly decentralized, by relying on governmental, non-profit, private and/or community organizations. Yet, pursuant to the political crisis since 2009, protected area management has suffered and donors' funding has been drastically reduced, leading to increased perturbations and degradation of Madagascar's forest.

The ANGAP (National Association for Protected Area Management), now MNP (Madagascar National Parks) has been entrusted with managing protected areas. This private association has been recognized as useful for the public through the decree No. 91-592 of December 4, 1991. It is in charge of the conservation and sustainable and rational management of Madagascar's national network of national parks and reserves. Now, MNP manages 52 protected areas covering all of the Madagascar's ecoregions over a total surface of 2,858,458 ha.

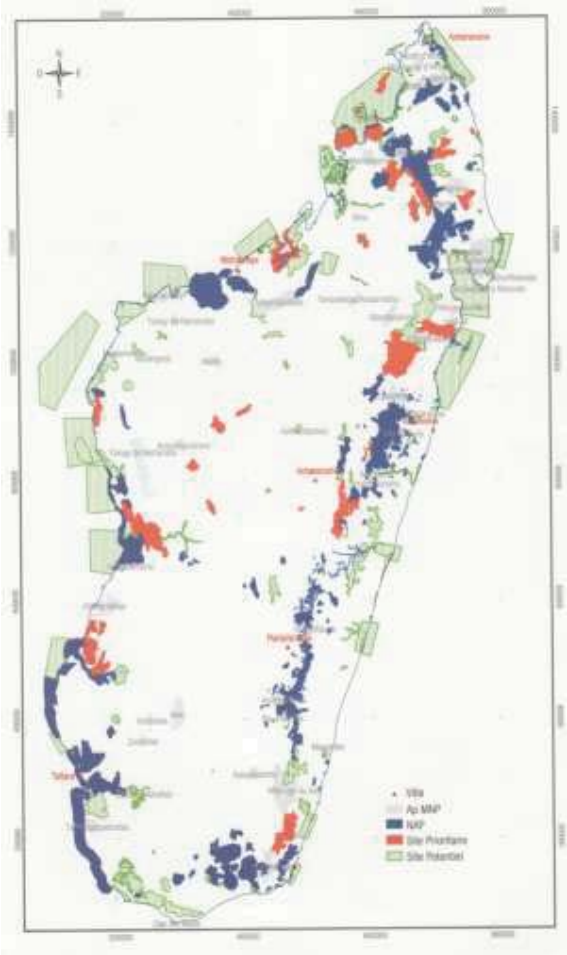

Figure 2. Map of the Protected areas (DCSAPM)

Now, the system of the protected areas in Madagascar is distributed as follows:

Tableau n°4. Surface of the protected areas in Madagascar

Protected areas	Surface (ha)
Surface of protected areas managed by MNP	**2,858,458**
Surface of new protected areas outside MNP	**4,087,955**
Total surface of protected areas of the SAPM	**6,946,412**

In 2014, after the organization and completion of the democratic presidential election, donors' funding for Madagascar has resumed, including the restoration of the ties with the World Bank. The elected president has taken leadership over the country and has pledged accountable forest management, including the fight against illegal trade in woods. As an illustration, now, within the MNP, the project to « *Support neighboring communities around protected areas managed by Madagascar National Parks, in terms of organization forest management and income-generation*» is well underway. This project contributes to the economic motivation of communities for conservation.

3.1.1.4. Description of the relevant layers of reference data

Tableau n°5. Availability of information and gaps for protected area management

Data layers	Information available	Information not available
Map of the protected areas.	- **Boundaries of the PA (digital)**	

	- **Categories** - **Managers** - **Surfaces**	
Map of the protected areas according to their categories	- **Boundaries of the PA (digital)** - **Reference status**	**Status of protection inside and around**
Protected areas outside the PA network managed by MNP	- **Boundaries (digital) NAP** - **Managers** - **Surfaces** - **Reference status**	**Current status versus reference level**
Map of forest cover	- **Map of the cover 2010: ONE – DGF – FTM - MNP**	**Map of the forest cover 2014**
Change of forests	- **Map of the cover 2010: ONE – DGF – FTM - MNP**	**Map of the forest cover 2014**
Intact forests	- **Global level**	**National level**
Map of land use	- **IEFN 2000**	**Update of the land use**
Biodiversity	- **REBIOMA: Occurrence and distribution of the species**	**Occurrence and distribution of the species at the national level**
Rights on resources	- **Local level: Simplified development and management plans of grassroots communities**	**Compilation at the national level**
Real estate rights (SFR)	- **Local level: Simplified development and management plans of grassroots communities**	**Compilation at the national level**
Boundaries of the carbon credit projects	- **Boundaries (digital)**	**Current status of protection** **Evaluation of carbon rates** **Biomass**

3.1.1.5. Proposed activities of the Global Forest Watch project

GFW provides at the global level[3] some data and information on different layers such as forest loss and gain… such baseline global data can be used for first degree analyses. For a finer analysis and for the sake of a transparent and credible planning, inputs of the national or local data are necessary.

- **Update of the information on protected areas (existing data)**

Support the MNP and the DCSAPM in updating the information on protected to include all information on their categories, status, and their functions. In addition, we need to adjust the changes of borders and land use. Within the REBIOMA project, there are already digital data on the boundaries of the PA managed by MNP and the NAP. Likewise, some data on biodiversity exist in the form of occurrence of species of fauna and flora as well as a distribution model of species.

- **Monitoring - evaluation of forests in the protected areas**

GFW is an agency for implementing the UNPE funded by GEF and approved by FEM. This project comes in the form of a platform of online data gathering several partners (WRI, Google, University of Maryland, ESRI …) and providing the spatial information available in real time through baseline data layers on the whole world, country by country and zone by zone. These layers of baseline information have been drafted by a group of researchers from available and interactive algorithms. Technically, GFW

[3] www.globalforestwatch.org

is a data management system accessible to anyone. Handling it helps maintain the baseline information for technicians and simplified information for decision-makers. The connection with the GFW system offers a wide range of possibilities, even on Smartphones.

All a country needs is a simple agreement to join the system, but enriching and giving accuracy to the data require this latter's contribution according to the topic and/or Use case on which further information is desired. In other words, GFW is a good base but it will be necessary to strengthen it.

The priority of protected area management is to maintain the natural ecologic functions as best possible. Forest surveillance in the protected areas is essential for observing the natural process or that of anthropic origin, also for planning the measures to be enforced consequently. Updating the data on forest cover (percentage of forest cover in protected areas) will help determine the scope of forest degradation in protected areas over the last years and analyze its causes. The satellite data from GFW can be used to observe the dynamic of forests and implement the activities of forest surveillance.

Inserting data on a given country might enrich what's already on GFW, or provide the necessary additional data that does not exist in GFW and is yet to be collected; but in any case, the idea is to have more added values on handling the tool. The information useful for monitoring deforestation mainly deals with:

- Forest loss and gain
- Incidences of fires
- Identification and mapping of the types of land use - forest zones and the open areas, including degraded lands, deforested and farmlands in the surrounding areas.
- Location of the holes caused by illegal logging, with high resolution observations
- Observation of the dynamic evolution of forests in time and definition of the causes.
- Observation of the modifications of the forest boundaries by natural and anthropic causes (vegetation fires or others).
- Observation of natural regeneration, including the change in sociophytology. The analysis of long term natural regeneration process will help identify the areas where natural regeneration is not occurring well, hence the need for intervention. Those areas with a good natural capacity for regeneration will be left intact to make sure the natural process of reconstitution of the ecosystem is maintained.

- **Forest surveillance of protected areas**

It is very important to observe both inside of the PA and their surrounding areas so that the process underway in these landscapes, for instance forest degradation, fires, etc. … as well as the development of infrastructures, agriculture and urbanization do not affect the relevant protected areas. For this purpose, the need for high resolution image came up in order to monitor:

- Fires
- Illegal loggings
- Boats penetrating the marine PA and mangroves
- Illegal settlements

- **Plan potential protected areas and develop land use scenarios**

The combination of satellite data with data on biodiversity, land use, population and environment management goals might help identify the fields that might be considered as potential New Protected Areas (NAP) as well as inform on progress in landscape development. GFW can also plan an important role in this process for improved decision-making and planning thanks to the baseline data already available, such as the affectation of the forest concessions and fire warnings which might be completed and combined with such additional data as those on the occurrence of species, their distribution model, those related to protected areas in atlas.rebioma.net, etc.

3.1.1.6. The management targets and indicators of impacts

- Reduction of deforestation and forest degradation
- Increased biodiversity
- Increased carbon stock

- Effective forest surveillance
- Improved forest governance
- Increased participation of community members in forest governance
- Increased availability of information and improved communication of such information for forest governance

3.1.2. Use case 2: Forest resource management transfer

3.1.2.1. Field of geographic intervention

The natural resource management transfer is found throughout the country and affects areas managed by local grassroots communities. For the time being, no proper mapping document exists to present all the zones covered by these Management Transfers. Nevertheless, a thesis project on the evaluation of the TG is underway and plans to produce this map of the TG.

According to the information from the DGF, there are 1,200 to 1,300 TG throughout Madagascar and they cover a surface of approximately 2,500,000 Ha, i.e. 4% of the country.

3.1.2.2. Issues - stakes - challenges that GFW can contribute to solve

The regulations in effect which would help transfer the management to local grassroots communities have been in effect since 1996 by the GELOSE law (Secure local management) No. 96 025 of September 30, 1996, followed by the decree No. 2001-122 of February 14, 2001, determining the conditions for implementing the State forest contract management (GCF). These areas are managed by local communities or associations known as Vondron Olona Ifotony (VOI), Local Grassroots Community (CLB) and Grassroots communities (COBA).

Over the first years of experience in the field of management transfer, failures were recorded everywhere. The main causes are the low economic impact of the actions, low level of capacity building for the CLB, competition with other forest users (forest operators, population not integrated, traditions that advocate for the traditional use of forests).

Despite evidence showing that these initiatives have largely failed to protect the zones subject to management transfer, several community forest management contracts have been renewed and new contracts are being drafted. These failures can be largely tied to the inexistence of alternative to the subsistence needs of the communities that used the forest as well as the discrepancies between environmental stakes and local culture, land use and the solution to real estate problems.

The assessment of the management transfers by the Forest administration has shown the main issues in the process:

- Weakness of monitoring and control caused by the inability of the forest administration. However, we found out that the TG display good governance provided they receive support and supervision from specialized organizations. Conversely, if the TG are established by local initiatives or in remote areas, the results are not satisfactory;
  To react to this, the Forest administration is now designing tools and policies aimed at improving the TG since many abuses have been noticed as to policy, illegal practice (scheming, fraud, etc.). Many monitoring evaluation tools have also been developed for this purpose;
- There is the least deforestation where the « alternative and safeguard » system is well established by the promoters of specialized TG (IGA and other motivating aspects).

3.1.2.3. The activities underway and efforts deployed integrating the process in which the GEF – GFW project can intervene

Throughout Madagascar, domestic and international non-profit organizations are committed to provide support to the management of the zones managed by the entities and associations. For instance, WCS works with the associations of GCF for the Makira REDD + project to support activities aimed at reducing deforestation.

The activities proposed in the RPP include the explicit integration of communities and COBAs so as to determine carbon stocks (via the results of forest inventories). Communities take part in the surveillance, notification and verification of income distribution, of payments for ecosystem services.

Some activities rather geared towards strengthening the economic benefits of the TG have also been completed; particularly in the areas surrounding the category VI protected areas where sustainable forest activities[4] as well as the researches[5] on forest products are authorized. For instance, the VOI supervised by the GESFORCOM and COGESFOR projects, still in the context of the GELOSE law, have set up reasoned exploitation systems for lumber for forests managed by VOI in the forest massif of Ambohilero, Rural Commune of Didy, Alaotra Mangoro Region.

3.1.2.4. Description of the relevant layers of reference data

Tableau n°6. Availability of information and gaps for the transferred forest management

Data layers	Information available	Information not available
Distributions of TGRF in space	**- Geographic coordinates - Zoning map - Contract - PAGS**	**Compilation at the national level**
Scope of the forest cover and the changes	**- Map of the 2010 cover: ONE – DGF – FTM – MNP**	**Map of forest cover in 2014**
Scope of the burnt surfaces		**Level of the TGRF zones National level**
Map of land use	**IEFN map for 1996 and 2000**	**Update of the map of land use**
Location of the transferred zones	**Quantified data and geographic coordinates**	**Map of location digitized at the national level**
Zones of access to resources	**PAGS map**	
Real estate map	**PAGS map**	

3.1.2.5. Proposed activities of the Global Forest Watch project

The combination of satellite data on TG sites, zoning, the managing population and management goals might help map the community-managed sites and inform on the influence zone of the Management Transfers. GFW can also play an important role in this process so as to improve decision-making and planning thanks to those baseline data already available, such as the boundary of protected areas and fire warnings that might be completed and combined with additional data like ecologic data, the zones subject to various pressures…

The needs in information particularly relates to:

- The monitoring of logging in the production zone
- The monitoring of reforestations
- The monitoring of the rights of use.

We have also found out that the administrative boundaries of FTM (BD 500) no longer match the reality. Border disputes sprung up everywhere and generate conflicts on forest resource management. An update is more than necessary.

- **Boundary of the TGRF zones**

TGRF zones must be digitized with updated maps including all the categories of protected areas and exploitation zones (KoloAla sites), and stating the status of the zone allocated and the legal manager. Besides, it is necessary to adjust the changes of borders and land uses.

- **Planning of TGRF zones, land use scenarios, protected areas and boundaries of potential REDD+ and biodiversity projects**

[4] Authorization for any removal of forest products, even for economic purposes (logging, rights of use, GCF), under reserve of maintaining to natural condition of at least 2/3 of the PA

[5] Scientific research and maintaining the ecosystem, authorization of the Ministry in charge of forests and specific convention between the Ministry in charge of Scientific Research, the Ministry in charge of the Environment, the organization in charge of managing the network of PA, and the relevant research institutions

The combination of the satellite data with the data on the TGRF aspects, biodiversity, land use, biomass, carbon stocks, population and environment management goals, might help identify potential fields (terrestrial landscapes) to be protected or managed by the communities, as well as design the related development plans, considering the possibility of development in terms of carbon and biodiversity projects.

- **Monitoring-evaluation of forests in the TGRF zones.**

GFW's satellite data can be used to observe the dynamics of forests and the implementation of the activities of forest surveillance in the zones of GELOSE and GCF contract as well as the surrounding areas. This includes:

- The identification and the mapping of the types of land use - the zones covered by the forest and the open areas, including degraded, deforested and farmlands;
- The observation of the forest dynamics and natural regeneration;
- The observation of the modifications of the forest boundaries by natural and anthropic factors (vegetation fires or others);
- The observation of the changes of vegetal cover and the evaluation of the erosion process.

Updating the data on forest cover (percentage of forest cover in the transferred zones) will help determine the scope of forest degradation in almost real time, in the transferred zones, to help analyze the causes.

- **Surveillance of adjacent zones**

It is very important to observe the areas surrounding the TGRF zones so the process underway in these landscapes – e.g. instance forest degradation, fires – as well as the development of infrastructures and agriculture do not affect the « buffer » zones.

- **Forest reconversion**

Some high resolution data will be necessary to detect and monitor the changes of forests caused by slash and burn farming, agricultural plantations…. the conversion of forests into agricultural land or logging taking place on a small-scale will not necessarily be detectable with the existing 500 m resolutions.

- **Management targets and indicators of impacts**

- Reduced deforestation and forest degradation
- Increased biodiversity
- Increased carbon stock
- Increased participation in forest governance by the entire local community (members and non-members)
- Increased availability of information and improved communication of these information for and on forest governance, forest use, and the markets for forest products

3.1.3. Use case 3: the REDD + projects

3.1.3.1. Geographical field affected

- Makira forest, possibly the national park of Masoala;
- Ankeniheny-Zahamena NAP (CAZ);
- Ambositra-Vondrozo forest corridor NAP (COFAV),
- Bekoratsaka, Sofia
- Beampingaratra, Anosy

3.1.3.2. Issues, stakes and challenges that GFW can contribute to solve

Each step of an AFOLU carbon credit project offers different challenges.

- In the development phase, role players must indicate the boundaries of the project that take into account the current land use, future needs of land use, and the various project goals. GFW might offer n user-friendly platform to accommodate these data layers, so that all stakeholders are aware of the different boundaries of the intervention zones of the different projects, including such data as the organization, supervision and management of the open areas as to the collection of forest resources, etc. GFW can also provide a visualization of the boundaries for the projects underway throughout the country.
- In the implementation, monitoring and verification phase pertaining to community actions, the sampling of biomass for carbon sequestration can complete the data on teledetection. Local bodies can also play a role in monitoring the biodiversity through the results of the forest inventory or reports of observations on the fauna. The GFW platform might provide to verification bodies, institutions, researchers and other interested parties, the real time visualization of the recordings of these data.
- The amortization of these REDD+ projects largely depends on the creation of sustainable carbon sequestration. In fact, forest loss can pose important challenges to the projects' viability. Besides, the GFW platform can give role players in the field some data in almost real time on the location and time where the loss of forest cover occurs.

3.1.3.3. The activities underway and efforts deployed integrating the process in which the GEF – GFW project can intervene

In July 2014, Madagascar has presented its Readiness Plan Proposal or RPP for the partnership funds for forest carbon. The first ideas in the program include integrating the spatial planning of REDD and improving forest governance. In addition, the World Bank has approved USD 42 million for the project to support the 3rd Environmental Program, while the World Bank's contribution for the protected areas now reaches USD 17.5 million.

The « conservation pacts » initiated with the partners (Conservation International, Durrell, Wildlife Conservation Society, …) for a few years now in different regions of Madagascar have been established in order to strengthen the structuring and empowerment of the communities in forest resource management while providing sustainable solutions for the benefit of conservation and the populations. A conservation pact helps users of the resources and local communities to choose the conservation of these resources in exchange of benefits that compensate for their loss of earnings.

The experience with the 13 « conservation pacts » has shown positive impacts in the field, via the more accountable behaviors in favor of natural resources, as the populations are motivated by incentives to carry out conservation actions. From these experiences, one might think that this mechanism might be an effective instrument both for distributing the benefits of REDD+ and for monitoring/evaluating deforestation/degradation. In fact, this strengthening of the « conservation pacts » includes the introduction of deforestation and degradation monitoring by the communities themselves.

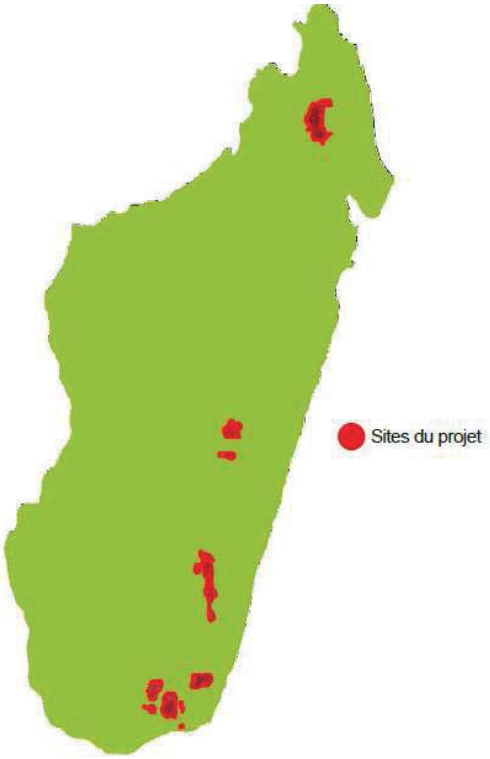

Figure 3. REDD Project sites in Madagascar

3.1.3.4. Description of the relevant layers of reference data

Tableau n°7. Availability of information and gaps for the REDD+ project management

Data layers	Information available	Information not available
Project boundaries, including supervision (e.g., international NGO, organization of management by grassroots communities)	**Map of the REDD+ projects**	**Current forest situation**
Concessions	**Map of KoloAla sites**	**Map of allocated exploitations**
Protected areas	**Map of the PA**	**Current forest situation**
Forest cover	**National forest cover**	**Current situation of forest cover**
Forest cover loss and gain	**Map of deforestation**	**Map of deforestation 2014**
Biodiversity, including the density of species	**Occurrence and distribution of a few species**	**Compilation at national level and by endangered species**
Biomass	**Tonnage**	
Carbon stock	**Tonnage of carbon (aerial and soil biomass)**	**At the level of ecosystems: thorny forests, dry forests, mangroves**
Fire warnings	**Incidence of fire**	**Information on burnt surfaces**
Rights of access to resources	**Zone of TG**	**High resolution images**

rights of access to land	**Zone of TG (SFR)**	**High resolution images**

3.1.3.5. Proposed activities of the GFW project

Four (4) projects of AFOLU carbon credit are now underway in Madagascar through different types of forests. These projects are implemented by international organizations such as Wildlife Conservation Society and Conservation International, with the local community organizations, different levels of government and audit organizations.

The GFW project might contribute to creating a technical committee for data visualization and storage, including fire warning and forest cover loss. The technical committee should also help stakeholders and other interested parties monitor the project's progress, such as the reduction in deforestation rates, forest cover gains and carbon sequestration levels. These data can reveal the way the compensations can be distributed appropriately.

At the end of the day, the GEF – GFW project can provide support to the creation of reference level for those ecoregions not covered by existing funding:

- Thorny forests
- Dry forests of the west.
- Mangroves
- Support to the MRV (Monitoring – Reporting – Verification) process and inventory.

3.1.3.6. Management targets and indicators of impacts

- Reduced deforestation and forest degradation
- Increased biodiversity
- Increased carbon stock
- Enhanced use of the GFW platform by community organizations, governmental organizations and other forest management organizations
- Increased participation in forest governance by local community members and the poor
- Increased availability and communication of evidence for and on forest governance, logging, markets of forest products, and the value of forest products from people entitled to use the forests
- Change in the alignment of the policy between REDD + and other processes addressing land use within forests.

3.1.4. Use Case 4: Mangroves

3.1.4.1. Geographical field

Mangrove forests are mainly located along the west coast of Madagascar, with fewer sites along the east coast.

3.1.4.2. Issues, stakes and challenges that GFW can contribute to solve

In Madagascar, mangrove forests are threatened by the collection of wood to make charcoal and fuel wood, the conversion of mangroves into rice fields, intensified shrimp fishing and aquaculture in general. Urban development only makes this situation worse. Upstream soil erosion disturbs the coastal ecosystem. Yet, a study on mangroves in northwestern Madagascar reveals a « very important concentration of organic carbon in the mangroves and soils that they keep in place ». In the Ambaro and Ambanja Bay, the high-standing forests with closed canopy contain on average 147 mg/ha of carbon in their vegetation and 446 mg/ha in their soils. The perturbation of the superficial soil layers can lead to considerable greenhouse gas emissions into the atmosphere, responsible for climate change. Although mangroves represent only 3% of the world's forest cover, the loss of these habitats produces up to 19% of global emissions related to deforestation. Their destruction means more economic loss, estimated to be between USD 6 and 42 billion a year, particularly in the fisheries and aquaculture sectors.

3.1.4.3. The activities underway and efforts deployed integrating the process in which the GEF – GFW project can intervene

Presently, WWF, Blue Ventures and Honko manage projects to protect and restore mangrove forests. Activities aimed at improving local livelihood and the search for ways in which mangrove forests in Madagascar might be positioned within the REDD + landscape of blue carbon are underway. WWF also undertakes activities for a better management of mangroves, which are targeted by illegal logging to protect charcoal.

3.1.4.4. Description of the relevant layers of reference data

Tableau n°8. Availability of information and gaps for the forest management of mangroves

Data layers	Information available	Information not available
Current data on land use	**Map IEFN 2000**	**Update of data on land use**
Forest cover	**National forest cover**	**Current situation of the forest cover**
Protected areas	**Map of the PA**	**Current forest situation**
Forest cover loss and gain	**Map of deforestation**	**Map of deforestation 2014**
Biodiversity, including density of species	**Occurrence and distribution of a few species**	**Compilation at the national level and by endangered species**
Carbon stock	**Tonnage of carbon (aerial and soil biomass)**	**Update of the data**
Fire warning	**Incidence of fire**	**Information on burnt surfaces**
Water quality		**Water quality in**

terms of silting and chemical disturbance

3.1.4.5. Proposed activities of the Global Forest Watch project

The Blue ventures, LRI (Laboratoire de Radios Isotopes) institutions have information respectively on the carbon stock in aerial biomass and in soils of the mangroves. These information need to be honed and improved by high resolution images. GFW can play an essential role in prioritizing the interventions in the field of the dry forest of the west.

High resolution images should not be limited to merely observing the fires. The other pressures should also be taken into account: incrustation of boast into the marine and coastal protected areas, illegal cutting and detection of settlements of criminals.

GFW can also contribute to drafting the mangroves development plans compared with the collection of wood to make charcoal and lumber (fence, poles, tool handles …). We noted the existence of fire warning system but this latter is not used for field interventions, except only to assess the scope of the fires (fire monitoring...)

3.1.4.6. Management targets and indicators of impacts

- Reduced deforestation and forest degradation
- Increased biodiversity
- Increased carbon stock
- Increased income
- Improved marine environment
- Protection of upstream lands by an integrated management.
- Enhanced use of the GFW platform by community organizations, governmental organizations and other forest management organizations.

3.1.5. Use Case 5: Mines

3.1.5.1. Geographical field

Mining and oil concessions (exploration and exploitation)

3.1.5.2. Issues / stakes / challenges that GWF can contribute to solve

Mining activity (including oil) can disturb everything: land, marine, soil, air, freshwater, habitats, forests. Therefore, the biggest challenge lies in determining, extract and process mineral resources, while causing the least disturbance possible to our ecosystem. In 2000, pursuant to the law No. 98-031 of January 20, 1998, defining public institutions, the Malagasy Government has set up the Office of Mining Registry of Madagascar (BCMM) which is a public institution with an industrial and commercial nature. It is placed under the technical supervision of the Minister of Energy and Mines, according to the data on mining permits (license for research and/or exploitation, issued in compliance with the provisions of the Malagasy Mining Code). The data provided by the BCMM as of October 1st, 2008, inform us of the existence of the following mining titles and applications:

- The exploitation permit
- The permit reserved to Small scale operators
- The research permit
- The exclusive authorizations of reservation of perimeters
- The applications for exploitation permit
- The applications for permits reserved to small scale operators
- The applications for research permits
- The applications for exclusives authorization of reservation of perimeters

The industrial mining sector and the small-scale mining exploitations have caused important losses of forests of high conservation value in Madagascar. By the same occasion, the settlement of large mining facilities has caused the displacement of local communities, destroyed forest and agricultural spaces. Instance, the mining complex of Ambatovy has caused the loss of 785 Ha of rice field as they set up pipelines, causing a loss of production of 2,777 kg of rice (BIODEV2011).

Besides, illegal small-scale mining exploitation often occurs within protected areas, like the explosion of the exploitation of sapphire in the Ankeniheny Zahamena Corridor in 2013. The KoloAla site in Andilamena is also targeted by an illegal small-scale mining exploitation. These activities cause not only degradation and deforestation in the direct influence zone and the surrounding areas of the mining exploitation, but also as to ancillary infrastructure like pipelines, access roads and tailings dams. In addition, mining activities can cause soil erosion with downstream negative impacts.

3.1.5.3. The activities underway and efforts deployed integrating the process in which the GEF – GFW project can intervene

Rio Tinto QMM and Sherritt are two industrial mining companies operating in Madagascar. Both undertake the compensation of biodiversity for "zero net loss" in exchange for the destruction of habitat by mining activities. In 2011, the Extractive Industries Transparency Initiative has been suspended because of the political crisis in the country. In June 2014, the EITI has removed the suspension of Madagascar as political life came back to normal in the country, and considering the commitment to comply with the EITI's standards of transparency of mining incomes.

En 2009, Alliance Voahary Gasy (AVG) has trained over 30 national and local non-profit organizations and communities to support the participation of the civil society in the accountable management of natural resources. Alliance Voary Gasy has since drafted a framework for guiding the development of good governance for the economic and environmental policies of extractive industries.

3.1.5.4. Description of the relevant layers of reference data

Tableau n°9. Availability of information and gaps for the management of the mining activities

Data layers	Information available	Information not available
Mining registers (e.g. type of concession, small scale exploitations, mining plots)	**Geographic coordinates of the mining plots and blocks**	**Mapping of the mining plots and blocks**
Intact forests	**Global level**	**National level**
Protected areas	**Map of the PA**	**Current forest situation**
Forest cover	**National forest cover**	**Current situation of the forest cover**
Soil erosion	**Data very localized according to vegetal covers and land use**	**Soil erosion in the large catchment areas**
Biodiversity, including the density of species	**Occurrence and distribution of a few species**	**Compilation at national level and by endangered species**
Water quality		**Water quality in terms of silting and chemical disturbance**
Carbon stock	**Tonnage of carbon (aerial and soil biomass)**	**At the level of ecosystems: thorny forests, dry forests, mangroves**
Fire warning	**Incidence of fire**	**Information on burnt surfaces**
Rights of access to resources	**Zone of TG**	
Rights of access to land	**Zone of TG (SFR)**	

3.1.5.5. Proposed activities of the Global Forest Watch project

- **Evaluation and forest surveillance**

The GFW satellite data can be used to observe the dynamics of forests and the implementation of the forest surveillance activities. This includes:

- Updating and adjusting forest borders compared with industrial mining settlements;
- Identifying and mapping the different types of land use and their change;
- The real estate system;
- The correct information on the land use will help improve the planning and control of unauthorized activities, such as illegal small-scale mining activities.

This will also help collect data related to the forest for the indicators of biodiversity, such as landscape fragmentation, zones with high conservation value, intact forest landscapes, and the important forests for the stability of the catchment area.

- **Monitoring and evaluation of concession zones**

The data from satellites as well as the reference data can be used to analyze the old and newer information on the concession zones (both for exploration and active mining exploitation) in order to analyze the impact. The need in intervention pertains to:

- The boundaries of the allocated zones (plots and blocks)
- The monitoring-control of the mining plots

- **Planning of the surveillance**

The ONE, which is responsible for the surveillance of the environment, can use the satellite data for the general observation of the forest and the fragmented zones. This observation might become grounds for

planning surveillance. Satellite images will make it possible to observe both the dynamic evolution of the forests in time, and the remote areas, difficult to access. A higher resolution would allow for a more accurate observation.

- **Public information and participation**

The data of the extractive industries might be included in the national database of the environment, integrating all available information related to forests. This might include the information regularly updated on the permits issued as well as the related documents such as: the names of license holders, the plans and maps of the concession zones. Such information as well as the satellite data on the forest cover and the evolution of forests will help the NGOs and the communities to carry out an alternative monitoring of the relevant areas and help them get more actively involved in management and decision-making. With different levels of access to data, the data portal can become an effective tool for sharing information among the offices in charge and, eventually, facilitate public participation in assessing all related information available.

- **Planning of the biodiversity management**

By identifying the forests and habitats with high conservation value and by combining these information with the data on biodiversity, land use, the environment, and the socio-economic goals, this process inform on the boundaries of the concession zones, in addition to planning for conservation banks.

3.1.5.6. Management targets and indicators

- Better mining governance
- Reduced deforestation
- Reduced pollution.
- Concerted development of space.

3.1.6. Use case 6: EIA monitoring

3.1.6.1. Geographical field affected

Industrial concession zones, road axis, development and residence areas, zones of development of tourist activities, establishment of New Protected Areas…

3.1.6.2. Issues - stakes - challenges that GFW can contribute to solve

In the context of a research and application of a high growth economic policy, Madagascar is calling on international investors to carry out large mining, industrial and tourist projects. These activities affect environmental integrity and cause huge prejudices to conservation and biodiversity forest. All that goes against the international commitments made in favor of the protection of Nature.

Therefore, for the sake of good environmental governance, Madagascar has adopted the MECIE decree (decree No. 99-954 of December 15, 1999, modified by the decree No. 2004-167 of February 3rd, 2004, related to the compliance of investments with the environment (MECIE decree) which aims at determining the rules and procedures to be followed upon ensuring compliance of investments with the environment (MECIE) and determine the nature, respective attributions and the degree of authority of the institutions or organizations affected by the MECIE.

3.1.6.3. The activities underway and efforts deployed, integrating the process in which the GEF - GFW project can intervene

All activities mentioned below or reaching one of the following thresholds are subject to the environmental impact assessment:

- All developments, infrastructures and works likely to affect sensitive zones;
- All plans, programs or policies likely to modify the natural setting or the use of natural resources, and/or the quality of the human environment in urban and/or rural setting;
- Any use or transfer of technology likely to have adverse consequences on the environment;
- Any storage of any liquid beyond 50,000 m3;
- Any regular and frequent or one-time commercial transportation by road, railroad or air of hazardous materials (corrosive, toxic, contagious or radioactive, etc.);
- Any displacement of population of over 500 individuals;
- The developments, infrastructures and works likely, because of their technical nature, their scope and the sensitivity of the settlement area, to have adverse consequences on the environment.

Efforts have been made in the field of monitoring of mining activities pertaining to the environment and forests:

- Completion of environmental assessment EES for World Bank projects (PRSM and PGRM) to develop and rule over the mining sector;
- Manuals, guidelines and guides for the EIE of mining activities - operational regional mining environmental bodies;
- Creation and implementation of the Interdepartmental Mining– Forests Committee (CIMF) to harmonize the management tools of both sectors and process cases of disputes
- Manual of procedures to address the overlapping of the mining zones with forest zones for New Protected Areas and KoloAla sites – interdepartmental orders on the suspension of issuance of mining permits in some forest zones (since 2004) - Protocol of data exchanges between both Ministries.

3.1.6.4. Description of the relevant layers of reference data

Tableau n°10. Availability of information and gaps for completing the EIE

Data layers	Information available	Information not available
Location of zones transformed by human settlements (roads, mines, plantation, New Protected Areas…)	**Data and maps not updated**	**Update of the mapping of the transformed zones at the national level**
Intact forests	**Global level**	**National level**
Protected areas (MNP and NAP)	**Map of the PA and NAP**	**Current forest situation**
Forest cover	**National forest cover**	**Current situation of the forest cover**
Biodiversity, including the density of species	**Occurrence and distribution of a few species**	**Compilation at national level and by endangered species**

3.1.6.5. Proposed activities of the Global Forest Watch project

- Monitoring of the enforcement of the PGEP (Project Environmental Management Plan) which makes up the environmental specifications of the said project and includes a program to implement and monitor the measures planned by the EIE to remove, reduce and possibly compensate for the adverse consequences of the project on the environment;
- Monitoring of the enforcement of the PREE (Environmental Commitment Program)**:** a program directly managed by the environmental unit of the ministry in charge of the activity, which consists in the promoter's commitment to take some measures to mitigate the impacts of its activity on the environment, as well as possible measures to restore the implantation site to its original condition.
- Monitoring of the PGESS (Environmental Management and Social Safeguard Plan)
- Monitoring system of integrated impacts: social, economic and ecological

3.1.6.6. Management targets and indicators

- Reduced deforestation and forest degradation
- Enhanced biodiversity conservation
- Reduced pollution
- Enhanced protection of biodiversity
- Developed social and human protection

3.1.7. Use Case 7: management of catchment areas and water resource

3.1.7.1. Geographical field affected

- For agricultural waters: in the field of irrigated perimeters, coastal zones upstream from mangrove ecosystems, inside zones (Ambatondrazaka, Andapa…)
- For potable water and sanitation: potable water collection area and zones upstream from water sources.

3.1.7.2. Issues - stakes - challenges that GFW can contribute to solve

Renewable water resources are estimated to be 337 km^3/year. Renewable surface water resources are assessed at 332 km^3/year, while underground resources are at 55 km^3/year, with a common part between surface waters and underground waters estimated at 50 km^3/an. The main large and small rivers drain close to 335,405 km^2 of catchment areas, i.e. 57 per cent of the country's total surface. The thirteen (13) most important intake barrages have a total capacity of approximately 493 million m^3, of which 108 million are allocated to irrigation and 385 million to hydro-electricity.

The spatial situation of irrigation is as follows:

- Large irrigated perimeters (GPI) of unit surface above 2,500 ha.
- Small irrigated perimeters (PPI) between 200 Ha and 2,500 ha.
- Micro-irrigated perimeters (MPI) below 200 ha.
- Family perimeters (PF) (a few hundred m^2) which might cover a total surface of 300,000 ha.

The development of the Malagasy agriculture is limited by the serious degradation of natural resources. Because of demographic pressure, areas that are increasingly unfavorable on hills are used as farmlands, with devastating practices for the environment: practice of slash and burn agriculture, overexploitation of fragile soils on slopes by repeated food crops. The result is a rapid decrease of soil fertility on the hills and the phenomena of erosion that threatens the irrigated areas downstream and taking its toll on their maintenance cost as well as on their sustainability: silting of the perimeters, increased runoff, decreased debit and low level the of watercourses that supply the irrigation systems. Soil erosion from the highlands causes considerable damages on the bottomlands of coastal plains and pollutes both the coastal zones and the marine ecosystem.

The hydrographic networks, water sources for food and agriculture, are subject to various exploitation which can affect the soil and the environment quantitatively and qualitatively. These activities include mainly the hydro agricultural and hydro electrical dams, the discharging of wastes from industrial and agricultural facilities (excessive fertilization of plantations). The availability of source water is also influenced by the way catchment areas are treated. Thus, the massive deforestation of catchment areas limits soil infiltration and depletes source waters. Consequently, holes appear and low flow extends. Finally, climate change affects the availability of water both for food and agriculture.

3.1.7.3. The activities underway and efforts deployed, integrating the process in which the GEF - GFW project can intervene

The Water and sanitation databank (BDEA) is available to the Ministry of Water:

- Water points
- Stand posts
- Latrines

This information is not yet in network.

The activities in the field of development of catchment areas relate to several topics:

- Development of forest valleys in the context of the development projects (Swiss Cooperation, SAF FJKM, JICA, CIRAD…)
- Promotion of agroforestry and agro biological management of soils
- Plantation of forest trees
- Reforestation and plantation of forest trees
- Drafting a development scheme
- Technical capacity building for farmers

In the field of the water and sanitation, the water management in Madagascar is subject to the law No. 98 – 029 on the Code of Water. This latter states that the following are considered is public domain: water, the management, conservation and development of water resources, the organization of the public service of potable water and collective sanitation of household waste waters, water police, funding for the water and sanitation sectors, the organization of the water and sanitation sectors.

Article 25 of the Code of Water gives an illustration of the interdependence of water management and forest: « In compliance with the provisions of the forest policy, the highly protective role of a forest cover, or at least that of a thick herbaceous cover over the basins, as well as the protection against erosion and the silting of the hydro electrical infrastructures and downstream irrigated perimeters, is of public interest and will be subject to specific consultation measures, in order to **maintain the standards of water quality, regulate hydrologic systems and prevent serious floods** ».

3.1.7.4. Description of the relevant layers of reference data

Tableau n°11. Availability of information and gaps for catchment area and water resource management

Data layers	Information available	Information not available
Geographical data on large catchment areas		**Mapping of large catchment areas (hydro agricultural and hydro electrical) and water basins** **Digital model of the land**
Hydrological data	**Hydrological map of Madagascar**	
Topographical data	**Map of the slopes**	**Digital model of the land**
Pedagogical data	**- Map of Madagascar's soils** **- Map of physical potentials**	
Geological data	**Geological map of Madagascar**	
Map of land use	**Map IEFN 1996 - 2000**	**Update of the data and map of land use**
Forest cover	**National forest cover**	**Current situation of the forest cover**
Soil erosion	**Very localized data according to vegetal covers and land use**	**Soil erosion in large catchment areas**
Rights of access to resources	**Zone of TG**	
Rights of access to land	**Zone of TG (SFR)**	

- Extent of forest cover
- Extent of the changes in forest covers
- Access to resources

3.1.7.5. Proposed activities of the Global Forest Watch project

The need for information on soil erosion and the status of water is also felt at the national level. For this purpose, we recommend using the SWAT model (Soil and Water Assessment Tool). The Polytechnic college of Antananarivo has a competence in the field of SWAT.

The GEF - GFW project can also contribute to:

- monitoring the changes of land use;
- the environmental impact assessment for large scale agricultural developments on the natural resources within large catchment areas;
- the evaluation of soils and waters under different types of use (use of SWAT software).
- the monitoring of water quality;
- the availability of data on the evolution of forest covers in hydro agricultural and hydro electrical catchment areas.

3.1.7.6. Management targets and indicators

- Reduced deforestation and forest degradation
- Changes in land use
- Reduced erosion and pollution
- Enhanced protection of biodiversity
- Developed social and human protection

3.1.8. Use case 8: Production forests

3.1.8.1. Geographical field affected

Forest zones under KoloAla sites

3.1.8.2. Issues - stakes - challenges that GFW can contribute to solve

Considering all the aspects of conservation and valorization of natural resources, the Directorate General of the Environment and Forests (DGEF) has initiated in 2006 the creation of a national network of Sustainable forest management sites (SGFD), later called « KoloAla sites ». The « KoloAla » concept has been designed to achieve balance between strict conservation and the valorization of these resources for a sustainable management of natural resources applied in Madagascar. Following are the principles:

- Integration of the identification of the SGFD in the procedures of forest zoning, just like that of protected areas, the restored areas and reforestation;
- If necessary, integrate of protection zones inside a SGFD;
- If possible, valorize the existing forest status (classified forest, forest reserve)

The goals of the following KoloAla sites would make up the challenges that the GFW project should contribute to achieve by monitoring deforestation and looking for alternatives:

- Participation in the conservation of national forest resources;
- Sustainable exploitation (according to an exploitation and development plan complying with standards) of ligneous forest products outside current and potential PAs;
- Rational economic valorization of ligneous and non-ligneous forest products;
- Long term maintaining of the production potentials in forest goods and services.

3.1.8.3. The activities underway and efforts deployed, integrating the process in which the GEF – GFW project can intervene

In the field of forest surveillance and control, the forest administration has established a participatory control system involving grassroots communities and local authorities. The forest tax system has also been improved so as to motivate the affected entities in forest surveillance and control. However, the data of Global Forest Watch show losses of forests and fires taking place in the zones covered by the forest massifs, regardless of their status (Protected areas, KoloAla sites, transferred forests …)..

3.1.8.4. Description of the relevant layers of reference data

Tableau n°12. Availability of information and gaps for the forest management concessions

Data layers	Information available	Information not available
Map of KoloAla sites.	- **Boundaries of the PA (digital)** - **Categories** - **Managers** - **Surfaces**	
Map of KoloAla sites effectively exploited (forest concessions)	- **Boundaries of the PA (digital)** - **Reference status**	**Mapped boundaries of forest concessions** **Status of protection inside and around**
Map of the forest cover	- **Map of the cover 2010: ONE – DGF – FTM - MNP**	**Map of the forest cover 2014**
Change of the forests	- **Map of the cover 2010: ONE – DGF – FTM - MNP**	**Map of the forest cover 2014**
Intact forests	- **Global level**	**National level**
Map of the land use	- **IEFN 2000**	**Update of the land use**
Plantation forests	- **Quantified data**	**Map of the plantation forests**
Agricultural plantation	- **Quantified data**	**Map of agricultural**

		plantation
Biodiversity	- **REBIOMA: Occurrence and distribution of species**	**Occurrence and distribution of species at the national level**
Rights on resources	- **Local level: Simplified development and management plans of grassroots communities**	**Compilation at the national level**
Real estate rights (SFR)	- **Local level: Simplified development and management plans of grassroots communities**	**Compilation at the national level**

3.1.8.5. Proposed activities of the Global Forest Watch project

- **Update of the information on the KoloAla sites (existing data)**

With the DCSAPM's support, updates on the KoloAla sites are necessary as to the sites allocated to successful bidders and/or communities under GCF contract. It is also necessary to assess the current status of potential KoloAla sites that are not allocated so as to determine their biological and forest integrity.

- **Monitoring - evaluation of the forests in the KoloAla sites**

The priority for the site management is to maintain as best possible the natural ecological functions by applying reasoned valorizations of forest resources. The forest surveillance in KoloAla sites is essential for observing the natural process and planning the measures to be undertaken consequently (adjustment of the development schemas and plans). The GFW satellite data can be used to observe infringements, forest dynamics and the implementation of the surveillance activities. This includes:

- Identifying and mapping the types of land use - the zones covered by the forest and the open areas, including degraded lands, deforested lands and farmlands in the surrounding areas;
- Locating the holes caused by logging violations through high resolution satellite observations;
- Observing the dynamic evolution of forests in time and define its causes;
- Observing the modifications of the forest boundaries by natural and anthropic causes (vegetation fires or others);
- Observing the natural regeneration, including the change of species pursuant to logging or destruction.

- **Surveillance of adjacent zones**

It is very important to observer the areas surrounding the protected areas so that the process underway in these landscapes – such as forest degradation, fires, etc., as well as the development of agricultural and urbanization infrastructures in the adjacent zones – does not affect the relevant protected areas.

- **Plan for potential KoloAla sites and develop land use scenarios**

The combination of satellite data with data on the biodiversity, land use, population and the management goals of the environment might help identify the fields which might be considered as new KoloAla sites; while also informing on the progress in Landscape Development. GFW can also play an important role in the decision-making and planning, through a multi-variable analysis of setting up the KoloAla sites in the priority sites.

3.1.8.6. Targets and indicators

- Reduced deforestation and forest degradation
- Increased biodiversity
- Increased carbon stock

- Effective forest surveillance
- Improved forest governance
- Increased availability of information and improved communication of such information for and on forest governance.

3.1.9. Use Case 9: Landscape planning (Intersectoral-based landscape planning)

3.1.9.1. Geographical field affected

Landscape development affects both national and local levels.

3.1.9.2. Issues / stakes / challenges that GWF can contribute to solve

Economic recovery should be grounded in good spatial planning of development. ~~In fact, the Malagasy Government should apply to foreign and domestic investments in order to start up the national economy.~~ The spatial arrangement of said investments requires an accurate and transparent development policy focused on national and regional priorities. Without accurate and diversified information, it is difficult to achieve adequate spatial planning free from any coercion. Such information mainly pertains to: land use, real estate, forest infrastructures and resources. GFW can intervene by overlapping multiple layers of information designed to improve decision-making.

3.1.9.3. The activities underway and efforts deployed, integrating the process in which the GEF – GFW project can intervene

Landscape development pertains to a concerted management of the entire space and landscape. It is a reflection of the country's development options and is an essential means in the field of regional development (decentralization, planning). Each region now has a Regional Development Plan (PRD) and Regional Schema of Landscape Development (SRAT). These plans are supposed to be updated in order to be relevant to the region's economic and social contexts as well as to national development policies. At a local scale, each commune also has its Commune Development Plan (PCD) which is now being updated.

Within the FTM, the available information is made up of three « vector » databases, two of which cover all of Madagascar: BD500 and BD200. Initially printed at the base of the 1: 500.000 digitized maps (respectively at 1: 200.000), they have been completed in an advantageous manner and updated by exogenous data. But for now, the BD100 covers the protected areas of Madagascar. An Urban Database on the city of Antananarivo will also be available soon. These « vector » databases are available in the following formats: Arc/Info, MapInfo, and DXF...

Besides, FTM has a number of topical maps for professional use: maps of vegetation for the **National Ecological and Forest Inventory** in 1**996-97,** available all over the country; maps of water and land resources going back to 1994 for some areas.

3.1.9.4. Description of the relevant layers of reference data

Tableau n°13. Availability of information and gaps for landscape development

Data layers	Information available	Information not available
Map of forest cover	- **Map of coverage 2010: ONE – DGF – FTM - MNP**	**Map of forest cover 2014**
Hydrological resources	- **Map of large catchment areas**	**Location of water and hydro-electricity basins**
Landscape development	- **National landscape development plan** - **Regional schema of landscape development** - **Regional Development Plan**	**Update:** - **National landscape development plan** - **Regional schema of landscape development** - **Regional Development**

		Plan
Geological data	**Geological map of Madagascar**	
Map of land use	**Map IEFN 1996 - 2000**	**Update of the data and map of land use**
Road infrastructure	- **Road maps**	**Update of the national map of road infrastructures**
Mining registers	- **Geographic coordinates of the mining plots and blocks**	**Update of the maps of the mining plots and blocks**

3.1.9.5. Proposed activities of the Global Forest Watch project

- **Update of the PRD (Regional Development Plan), SRAT (Regional Schema of Landscape Development), PCD (Commune Development Plans)**

GFW presents itself as an effective means an accurate analysis of the information necessary for decision-making and a better control of the spatial-temporal planning of changes in the targeted area.

- **Surveillance of overlapping**

By providing layers of spatial information (roads, forests, cities, demography, land use…) available and by working on an advanced geographical information system, GFW allows visualizing the constraints and potentials of development.

- **Technical support and capacity building for technicians of the Ministry and related organizations**

The GEF - GFW project will be able to contribute to the technical capacity building of stakeholders in the field of satellite image processing and geographical information system.

3.1.9.6. Management targets and indicators

- Improved spatial management
- Improved spatial governance
- Effective law enforcement
- Communication
- Adequate management of intersectoral-based information (availability)
- Enhanced consultation of different stakeholders in the forest field

3.2. Description of the main role players / potential partners

3.2.1.1. Ministry of the Environment, Ecology and Forests

The Ministry of the Environment, Ecology and Forests (MEEF) is in charge of designing, coordinating, implementing and monitoring-assessing the Government's policy in the field of the environment and forest resources. Its mission is to « *Safeguard Madagascar's unique environment and wealth for present and future generations* ».

The Ministry's goals are to:

- develop the required institutions and regulatory frameworks to protect the Environment and Nature;
- put an end to deforestation and bushfires;
- promote the rational management of natural resources by communities;
- ensure the financial sustainability of forest and environmental actions;
- ensure good environmental and forest governance;
- take up the protection, conservation and valorization of the Environment by appropriate measures;
- create the favorable environmental conditions for rapid and sustainable development;

- ensure the creation of a rigorous and effective organization to help improve the procedures for enforcing the regulations on the compliance of investments with the Environment;
- promote the main tools to implement the forest policy (le National Master Forest Plan and the Regional Master Forest Plan);
- promote the main tools to implement of environmental policy, the actions of prevention, sensitization, studies and researches in the field of the fight against pollution and the protection of the Environment, in collaboration with the relevant private organizations and associations.

Forests belong to the Malagasy Government. This latter is represented by the Ministry in charge of forests, which is the ultimate entity responsible for the forest sector. By its competences, it is responsible of for the control and ensures the enforcement of the laws on forest management and forest products. It can delegate its management powers to requesting institutions or individuals according to article 24 of the law No. 97-017 of August 8, 1997, reviewing the forest legislation: « the Government's forests can be managed by delegation. The Government can delegate the management of its forests to other public or private individuals. A decree issued during a Cabinet Meeting shall determine the procedures for delegation ».

The Directorate General of Forests has departments focusing on the responsibilities related to forest resource management:

- DCSAPM
- DVRF
- DREF
- Finally, the DGF has an office in charge of Forest Database Management located in Antananarivo

3.2.1.2. ***State Ministry in charge of Infrastructures, Equipment and Landscape Development***

The State Secretary supervised by the Prime Minister in charge of the development of infrastructures and landscape and in charge of:

- controlling the key bodies and projects of the Overall State Policy, for a better distribution of the wealth and means through a streamlined optimization of landscape development;
- promoting and coordinating the constructions of the large public and private infrastructures;
- identifying and harmonizing the management of growth spaces;
- preparing the national directions, the planning and the coordination of public investments in the field of development and of landscape development, so as to cut down on poverty;
- consolidating the landscape planning tools for a contributive, harmonious and balanced landscape development;
- completing new large road projects, redevelopment and extension of airports, ports, and large construction works of hydraulic dams, hydro agricultural networks, equipment as well as urban and rural housing developments.

3.2.1.3. Ministry of Agriculture

Mission: direct, coordinate and implement the Malagasy Government's policy in the field of agriculture and rural development, including the agronomic research giving priority to food and nutritional security while considering the context of climate change. The Ministry's specific goals are to:

- Ensure the achievement of the major development goals for the agricultural sector and rural development, namely;
- Contribute to food and nutritional security, and reduce risks for the vulnerable;
- Improve the incomes of agricultural producers and provide employment to the rural population;
- Increase productivity in a sustainable manner, and develop competitive production systems;
- Extend and perpetuate standardized production spaces/zones and operational infrastructures;
- Develop access to domestic markets and contribute to improved trade balance;
- Improve the governance of institutions and role players, and strengthen their capacity

The MinAgri, through the BVPI program, ensures the completion of the letter of the development policy for catchment areas and irrigated perimeters in Madagascar. The project operates in four zones with high potentials for agricultural production: Andapa (Sava Region), Marovoay (Boeny Region), the Itasy Region, and Lake Alaotra (Alaotra Mangoro Region). Following are the program's overall goals:

- Sustainable improvement of the living conditions and incomes of those rural population in the catchment areas and integrating the irrigated perimeters in the four areas listed above;
- Better and sustainable valorization of natural resources.

This program has three technical components:

- Development of the landscape of catchment areas
- Sustainable systems for agricultural production
- Improved irrigated perimeters

3.2.1.4. Public and private institutions and organizations

- **National Office of the Environment**

The National Office of the Environment (ONE) is a public organization created in 1990 and subject to the decree No. 2008-600. In the field of information, the ONE ensures the management of the Environmental Information Systems, the monitoring and evaluation of the status of the environment to support the environmental assessment and for a better decision-making at all levels. For this purpose, the ONE:

- Manages, coordinates and deploys the environmental data and information system;
- Prepares, produces and updates the national and regional environmental specifications, and the reports on the status of the environment in Madagascar;
- Develops systems for the environmental watch, namely the observatory of the status of the environment.

As to the prevention of the environmental risks in public and private investments and the fight against pollutions, the ONE ensures the implementation of the MECIE decree as a delegated project manager and one-stop shop. Thus, the ONE:

- proposes threshold values and drafts reference environmental standards as well as environmental technical guidelines, in collaboration with the relevant sector-based Ministries;
- watches over the prevention of the risks of degradation of the environment by coordinating the monitoring of the Environmental Management Plans (PGE) and suggesting sanctions or adequate measures;
- promotes the Strategic Environmental Assessment (EES);
- provides advices and expertise.

- **Madagascar National Parks**

This private Association has been recognized as being useful to the public through the decree No. 91-592 of December 4, 1991. Through its bodies, the association focuses on protecting the ecosystems in protected areas, on researches dedicated to scientific progress, to environmental education and to the valorization of protected areas by ecotourism.

MNP now manages fifty six (56) protected areas, namely:

- 19 national parks
- 5 integral national reserves
- 23 special reserves
- 9 PA under an order for overall protection

3.2.1.5. Local communities managing RNRs (Vondron'olona ifotony VOI)

The VOIs are subject to the decree No. 2000-027 of January 13, 2000, on grassroots communities in charge of the local management of renewable natural resources. According to article 2 of this decree, the grassroots community is a voluntary group of individuals united by the same interests and subject to the

rules of communal life. According to the case, it gathers inhabitants of a hamlet, a village or a group of villages. It is considered as a private individual.

Pursuant to the law No. 96 025, Art. 43 – Starting from its notification, the authorization provides the beneficiary grassroots community, during the period stated in the deed, with the management of the access, conservation, exploitation and valorization of the resources subject to the management transfer, under reserve of compliance with the prescriptions and rules of operation as defined in the management contract. The COBA is required to comply with the stipulations and clauses of the management contract and the specifications previously negotiated and agreed among the parties. The obligations of the COBA include the application of the PAGS and the obligation to report on its activities.

3.2.1.6. NGOs and cooperation projects

The peculiar interests in the wealth of Madagascar's biodiversity, which is important worldwide, attract conservation and development organizations to be involved in its conservation. Their activities are focused on the protection of the biodiversity through the protected area management, support to local communities for development, the management of the natural resource-related industries (fuel wood, non-ligneous forest products …). Such NGOs namely include: WWF (World Wildlife Fund for Nature), WCS (Wildlife Conservation Society), CI (Conservation International), and GoodPlanet, Durrell, Terra, PHCF... and many others.

Bilateral cooperation projects also partake in the conservation of Nature and in local development in Madagascar. They review the establishment of sustainable natural resources management structures: German, French, Swiss, American, Japanese cooperation... etc.

4. Pilot site

The GFW system is characterized by the possibility of monitor forest information at different scales: global, regional (east Africa, Oceania…), national and local (great basin or region). Decision-makers (political and technical) can collect the information according to their need and the target level. Thus, with the GFW, it is possible to determine a zone where deforestation will be monitored and use this information based on the planning needs by overlapping them with other layers of information (e.g. land use, demography, infrastructure…). The choice of the sites should be determined by the presence of a larger number of cases of use and the needs in information.

Pursuant to the discussions with stakeholders, many of them suggest the field of dry forests in the west. This choice is dictated by:

- Poor availability of environmental information;
- The importance of biodiversity;
- Scarce interventions in the field of biodiversity management and conservation compared to the eastern zone;
- The importance of subsistence agriculture;
- The existence of large catchment areas (Mangoky, Mahavavy, Morondava, Betsiboka basins) upstream from agricultural perimeters (Lower-Mangoky, Dabara, Namakia, Marovoay…);
- The existence of protected areas threatened by the vegetation fires;
- The existence of oil exploration zones.

5. Participation/Responsibilities of stakeholders

A consultation of the stakeholders has been organized during this phase for preparing the project document. The goal is to collect the relevant information required for implementing the GFW project in Madagascar. This would allow for a better targeting of the activities to be completed in the context of the project. The consultation has also been necessary to evaluate the possibilities of stakeholder participation

in the project. This consultation has been rich in information and highlighted the interest among many stakeholders. The consultations of the institutions were very broad-based because of the multisectoral nature of the project's approach:

- Government institutions;
- organizations and associations managing protected areas;
- International NGOs working in natural resource management and delegated to manage forest fields, whether NAP or REDD Projects;
- Autonomous public organizations.

At the end of the consultation, we noticed the following findings by stakeholders:

- Information on deforestation and topics related to degradation and that of the environment does exist but is neither exploited nor updated, and is located within different institutions or offices. However, there are efforts designed to collect and update the information (management transfer, deforestation, monitoring evaluation and environmental impact assessment…)
- Almost general interest among stakeholders in completing this project. In fact, there is an unanimous need for information (availability, relevance, easy access, rapidity, regional and national)
- However, we noticed the existence of a concern on the risk of duplicate and not complementarity, particularly as to data collection. This is justified by the works by the ONE – FTM – DGF on the evaluation of deforestation between 2005 and 2010; while the evaluation of deforestation between 2010 and 2014 is now underway. We need to point out that the ONE also uses high resolution means and technologies.

The following table provides the distribution of the institutions intervening according to the Use case affected.

Tableau n°14. Table of the institutions compared with Use case

Institutions	Use case
MEEF – DGE – DGF– DCC	**Use case 1: Protected area management** **Use case 2: Forest resource management transfer** **Use case 3: REDD+ Project** **Use case 4: Mangroves** **Use case 5: Mines** **Use case: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation** **Use case 8: Forest production**
State Ministry in charge of Infrastructures, Equipment and Landscape Development	**Use case 5: Mines** **Use case 6: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation**
DGF/SAPM	**Use case 1: Protected area management** **Use case 6: Environmental impact monitoring**
DGF/SGBDF	**Use case 1: Protected area management** **Use case 2: Forest resource management transfer** **Use case 8: Forest production**
DGEF/DVRF	**Use case 2: Forest resource management transfer** **Use case 8: Forest production**
DGF/DREF	**Use case 1: Protected area management** **Use case 2: Forest resource management transfer** **Use case 3: REDD+ Project** **Use case 4: Mangroves** **Use case 8: Forest production**
DGF/REDD+ Project	**Use case 3: REDD+ Project**
MinEnergie and Mines	**Use case 5: Mines**

MinAgri (BVPI-Environmental body)	**Use case 6: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation**
Min water	**Use case 7: Management of catchment areas, water and sanitation**
COBA	**Use case 2: Forest resource management transfer** **Use case 3: REDD+ Project** **Use case 4: Mangroves** **Use case 6: Environmental impact monitoring** **Use case 8: Forest production**
ONE	**Use case 3: REDD+ Project** **Use case 5: Mines** **Use case 6: Environmental impact monitoring**
MNP	**Use case 1: Protected area management** **Use case 4: Mangroves** **Use case 6: Environmental impact monitoring**
ONG (WWF-WCS-CI-Fanamby-Blue venture – GoodPlanet – Asity, ETC Terra, PHCF…)	**Use case 1: Protected area management (NAP)** **Use case 2: Forest resource management transfer** **Use case 3: REDD+ Project** **Use case 4: Mangroves** **Use case 6: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation**
Project (GIZ – CIRAD – Intercooperation-JICA- USAID	**Use case 2: Forest resource management transfer** **Use case 4: Mangroves** **Use case 6: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation** **Use case 8: Forest production**
CTD	**Use case 1: Protected area management** **Use case 2: Forest resource management transfer** **Use case 3: REDD+ Project** **Use case 4: Mangroves** **Use case 5: Mines** **Use case 6: Environmental impact monitoring** **Use case 7: Management of catchment areas, water and sanitation** **Use case 8: Forest production**
UNDP	**Use case 1: Protected area management (NAP)** **Use case 2: Forest resource management transfer** **Use case 6: Environmental impact monitoring**
FAO	**Use case 8: Forest production**

The following table provides a prospective overview of the possibilities of stakeholder contributions in completing the GFW project in Madagascar. These proposals will be subject to discussions and exchanges during the validation workshop.

Tableau n°15. Potential partner institutions

Institutions	Field of intervention	Inputs
MEEF	**Ministry in charge**	- **Structure in charge of the project** - **Promote dialogue on governance and on the sustainable valorization of the RNR.**
State Ministry in charge of Infrastructures, Equipment and	**National landscape management and planning**	- **Participate in the GFW planning platform.** - **Provide the information in the field of national planning**

Institutions	Field of intervention	Inputs
Landscape Development		
DGE	**Department in charge**	- **Supervise the project activities.**
DCC	**Coordination of actions on the CC**	- **Project focal point** - **Coordinate project activities**
DGF		**Supervise the DT and STD's intervention**
SAPM	**Coordination of the PA**	- **Leads, coordinates and/or support the creation of NAP** - **Monitors the evolution of the biological and physical well-being of the protected areas.** - **Participates in the ecological, environmental and social assessment.** - **Contributes in analyzing the data on deforestation and fires** - **Participates in the coordination of the intersectoral relations**
SGBDF	**Management BDF**	- **Interface between GFW and the DGF on the BDF;** - **Participates in supplying the BDF** - **Contributes in analyzing the data on deforestation and fires** - **Contributes to the deforestation and fire warning system (dissemination of information).**
DVRF	**Control and monitoring of the TG and logging**	- **Coordinates and ensures the information on the TG and logging** - **Participates in the ecological, environmental and social assessment.** - **Contributes in analyzing the data on deforestation and fires**
DREF	**Decentralized technical office of forests**	- **Management of information at the regional level** - **Coordinates the activities of surveillance at the regional level** - **Participates in the ecological, environmental and social assessment.** - **Contributes in analyzing the data on deforestation and fires**
COBA	**Managers of the landscape**	- **Collection and submission of the data from the ecological, environmental and social monitoring.** - **Participates in the ecological, environmental and social assessment.** - **Implementation of the PAGS.** - **Surveillance of the management tools** - **Surveillance of transferred forest**
ONE	**Coordination of the national action plan for the Environment,**	- **Coordinates intersectoral relations**
	Environmental impact assessments	- **Ensures legality of procedures (environmental impact assessments)** - **Manages the information on the PREE.**
	Management of the	- **Manages the platform of information**

Institutions	Field of intervention	Inputs
	Environmental Information Systems	**management** - **Participates in the development of forest information** - **Participates in the large scale dissemination of the information**
MNP	**Management of protected areas**	- **Management of the information at PA level** - **Coordinates the activities of surveillance at PA level** - **Forest surveillance at PA level**
NGO	**Manager REDD Project (WWF-WCS-ETC TERRA – PHCF - CI)**	- **Collection and submission of the data from the ecological, environmental and social monitoring.** - **Participates in the ecological, environmental and social assessment.** - **Contributes in analyzing the data on deforestation and fires** - **Surveillance of the implementation of the management tools** - **Forest surveillance and control** - **Participatory assessment of the reduction of GHG emission.**
	NAP Managers (CI – WWF - FANAMBY …)	- **Collection and submission of data from the ecological, environmental and social monitoring.** - **Participates in the ecological, environmental and social assessment.** - **Contributes in analyzing the data on deforestation and fires** - **Surveillance of the implementation of the management tools** - **Forest surveillance and control**
Project	**Promotion TG (CIRAD – Intercooperation - GIZ**	- **Collection and submission of data from the ecological, environmental and social monitoring.** - **Contributes in analyzing the data on deforestation and fires** - **Participates in the ecological, environmental and social assessment.** - **Surveillance of the implementation of the management tools** - **Forest surveillance and control**
Decentralized territorial entity	**Local administration**	- **Monitoring and control of the implementation of the management tools** - **Social mobilization**

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