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## **Chapter VI**

# **Geospatial Studies on Compensatory Afforestation**

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## Chapter VI

### Geospatial Studies on Compensatory Afforestation

#### 6.1 Introduction

Geospatial Studies on Compensatory Afforestation and Land Use Land Cover (LULC) in Reserved Forests<sup>1</sup> (RFs)/ Demarcated Protected Forests<sup>2</sup> (DPFs) were carried out with the objective of strengthening the audit findings and for identification of cases of CA where there have been deviations from approvals. The study was carried out by using the services of Aryabhata Geo-Informatics and Space Application Centre (AGISAC)<sup>3</sup>, which functions as a nodal agency to facilitate the use of spatial and geo-spatial technologies for planning and developmental activities in the State. The study was carried out between October and December 2022.

#### 6.2 Geospatial study on Compensatory Afforestation

The study on Compensatory Afforestation (CA) was carried out by using three different types of databases to find out the present and past scenario of the CA sites.

1. Forest Classification done by Forest Survey of India- (To know the past Scenario)

As per FSI, the forest classification is broadly classified into five classes as per details given in **Table 6.1**.

**Table 6.1: Classification Scheme**

Very Dense Forest (VDF)	All lands with tree cover (including mangrove cover) of canopy density of 70 <i>per cent</i> and above.	Very Dense Forest
Moderately Dense Forest (MDF)	All lands with tree cover (including mangrove cover) of canopy density between 40 and 70 <i>per cent</i> .	Moderately Dense Forest
Open Forest (OF)/Open Degraded Forest (ODF)	All lands with tree cover (including mangrove cover) of canopy density between 10 and 40 <i>per cent</i> .	Open Forest / Open Degraded Forest
Scrub	All forest lands with poor tree growth mainly of small or stunted trees having canopy density less than 10 <i>per cent</i> .	Scrub
Non-Forest (NF)	Any area not included in the above classes.	Non-Forest

*Source: Scheme of Classification as per FSI*

2. Land Use and Land Cover classification - (To know the present scenario)

Land use is based on the functional dimension of land for different human purposes or economic activities, whereas land cover refers to the surface cover on the ground, whether

<sup>1</sup> Reserved Forest (RF) is an area notified under the provisions of India Forest Act 1927 or the State Forest Acts and having full degree of protection. In RFs all activities are prohibited unless permitted.

<sup>2</sup> Demarcated Protected Forest (DPF) is an area notified under the provisions of India Forest Act 1927 or the State Forest Acts having limited degree of protection. In Protected Forests (PFs), any existing rights of individuals or communities are not affected.

<sup>3</sup> Functioning under the aegis of H.P. Council for Science Technology and Environment (HIMCOSTE), Government of Himachal Pradesh.

vegetation, urban infrastructure, water, bare soil or other; it does not describe the use of land, and the use of land may be different for lands with the same cover type. The extraction of vector layers<sup>4</sup> from satellite data are built-up; agriculture; green cover; grass/grazing; barren unculturable /waste/open; wetland/water bodies.

3. Satellite Data to overview the Area of Interest (AoI) - (To know the present scenario).

To conduct the geospatial study of CA sites and land use land cover in RFs/ DPFs (to verify the extent of encroachments), the data from satellite GEO Eye (launched in 2008 and providing very high resolution of 0.50 meter) has been used for interpretation of Land Use Land Cover and encroachment status by using ARCGIS software.

### **6.2.1 Scope and Methodology**

For the purpose of geospatial analysis, the services of an expert consultant (AGiSAC) were utilised and the exercise was carried out between October and December 2022. The analysis was conducted on the basis of secondary data<sup>5</sup> obtained from Geographic Information System (GIS) cell of HP Forest Department, field divisions of the Department and E-Green Watch<sup>6</sup> portal. 22 CA sites were selected for geospatial studies on the basis of judgemental sampling, risk analysis<sup>7</sup> done by AGiSAC and the data available for downloading on E-Green Watch portal. Of these, shape files of 13 CA sites<sup>8</sup> were downloaded from E-Green Watch portal and nine sites were supplied by Divisions (which were also further cross verified with E-Green watch).

The shape files (polygons) provided by the Forest Department were superimposed on FSI data (to analyse the accuracy of CA sites under different categories i.e., VDF, DF, OF, Scrub) and on satellite data to interpret<sup>9</sup> LULC in the present scenario in year 2020.

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<sup>4</sup> Vector layers/ Vectorisation - The conversion of satellite image to vector data (points, lines, and polygons) - Obtained from GEO EYE satellite image.

<sup>5</sup> FSI data for the years 2009 and 2019 was obtained from GIS cell of HP Forest Department and CA polygons were obtained from field divisions and E-Green Watch portal of the MoEFCC. The compartment (Forest compartment is the smallest unit of management. A group of compartments make one block and several blocks forms a forest range) level data for the purpose of carrying out geospatial study on land use and land cover in DPFs/ RFs was obtained from the GIS cell of the Forest Department.

<sup>6</sup> An e-Governance Portal for automation, streamlining & effective management of processes related to plantation & other Forestry works, with the supervision of Compensatory Afforestation Fund Management and Planning Authority (CAMPA), set up under the Chairmanship of Union Minister of Environment, Forest and Climate Change by the orders of the Hon'ble Supreme Court of India.

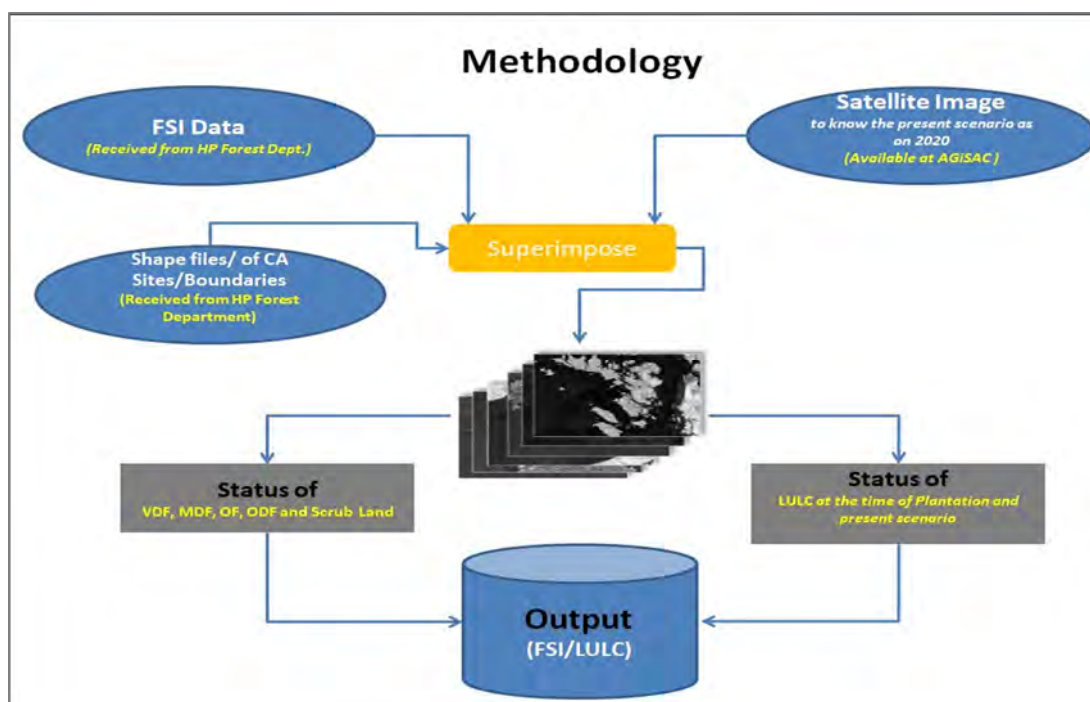
<sup>7</sup> Keeping in view issues like unclear images from satellite due to polygons falling in shadowy portion, cloud cover over the area etc.

<sup>8</sup> A shape file (in SHZ/KMZ/KML format) is a simple, non-topological format for storing the location and attribute information of geographic location of sites. Geographic features in a shape file can be represented by points, lines, or polygons (areas).

<sup>9</sup> Image Interpretation - Process of examining images and identifying and judging their significance by considering their location and extent.



Chart 6.1: Methodology for study



Source: AGISAC

## 6.2.2 Audit Findings from Geospatial study

### 6.2.2.1 Status of uploading of polygons on E-Green Watch against Compensatory Afforestation sites

MoEF&CC directed<sup>10</sup> (January 2021) States to upload all data of plantations on E-Green Watch portal for efficient monitoring of work. The status of CA carried out during the period 2010-11 to 2020-21 and the number of CA sites for which polygons were uploaded in the nine test-checked Divisions is given in Table 6.2.

Table 6.2: Status of CA sites and Polygons

Sr. No.	Name of Division	No. of sites	Area	(Area in hectare)	
				No. of sites for which polygons uploaded	Area
1	Kunihar	77	798	29 (38)	300 (38)
2	Bharmour	54	570	49 (91)	508 (89)
3	Chamba	49	566	30 (61)	352 (62)
4	Dharamshala	8	157	7 (88)	156 (99)
5	Kullu	36	569	9 (25)	30 (5)
6	Seraj	29	284	12 (41)	87 (31)
7	Kinnaur	174	705	0	0
8	Chopal	39	359	2 (5)	20 (6)
9	Nachan	8	246	1 (13)	15 (6)
<b>Total</b>		<b>474</b>	<b>4,254</b>	<b>139 (29)</b>	<b>1,468 (35)</b>

Source: E- green watch and divisional records; Figures in bracket show per cent

From Table 6.2, it is evident that CA was carried out in 474 sites over an area of 4,254 hectare during the period 2010-11 to 2020-21, against which polygons of only

<sup>10</sup> Vide Notification No. FC-11/79/2020 – FC dated 11 January 2021.

139 CA sites (29 per cent) having area 1,468 (35 per cent) were uploaded in E-Green Watch portal. No polygons were uploaded by Kinnaur division and the two<sup>11</sup> polygons uploaded by Chopal Division were found to be incorrect.

Thus, the Department failed to upload the majority (71 per cent) of polygons of CA sites on E-Green Watch portal, which resulted in lack of effective monitoring of CA work.

The Department during the proceedings of PAC held in August 2019 to discuss the report of the Comptroller and Auditor General of India on Social, General and Economic Sectors for the year ended 31 March 2013 (Government of Himachal Pradesh), stated that data is being uploaded on the E-Green Watch for concurrent monitoring and evaluation. However, it was noticed that the Department failed to upload 71 per cent of the polygons on the E-Green Watch portal.

The DFOs Kullu and Nachan stated that remaining/ balance polygons would be uploaded on E-Green Watch portal shortly.

Further reply is awaited (February 2024).

#### **6.2.2.2 Irregular/ Wasteful carrying out of Compensatory Afforestation outside Open Degraded Forest**

As per Para 2.3 of the Handbook of guidelines of FCA, any degraded forest land for the purpose of CA, selected by the State Government may be accepted by MoEF&CC only if the crown density of the area is below 40 per cent (open degraded forest). Further, MoEF&CC has directed States to upload all data of plantations on E-Green Watch portal for efficient monitoring of work.

The results of Geospatial study and visual interpretation on 22 CA sites/polygons across seven Divisions are as per succeeding paragraphs.

**Table 6.3: CA in different Classes of Forests**

(Area in hectare)

Name of Division	No. of sites	Total area	Area under VDF	Area under MDF	Area under NF	Area under ODF
Bharmour	4	42.89	2.84	1.36	24.69	14.00
Chamba	4	63.03	20.98	6.23	35.38	0.44
Kullu	3	18.32	0	6.88	9.16	2.28
Kunihar	4	70.29	10.29	40.92	9.5	9.58
Seraj	4	25.42	9.46	5.01	6.13	4.82
Dharamshala	2	53.24	17.11	15.35	19.64	1.14
Nachan	1	16.56	0.09	0.58	0.13	15.76
<b>Total</b>	<b>22</b>	<b>289.75</b>	<b>60.77</b>	<b>76.33</b>	<b>104.63</b>	<b>48.02</b>
<b>Per cent</b>		<b>100</b>	<b>21</b>	<b>26</b>	<b>36</b>	<b>17</b>

Source: Geospatial analysis of CA sites

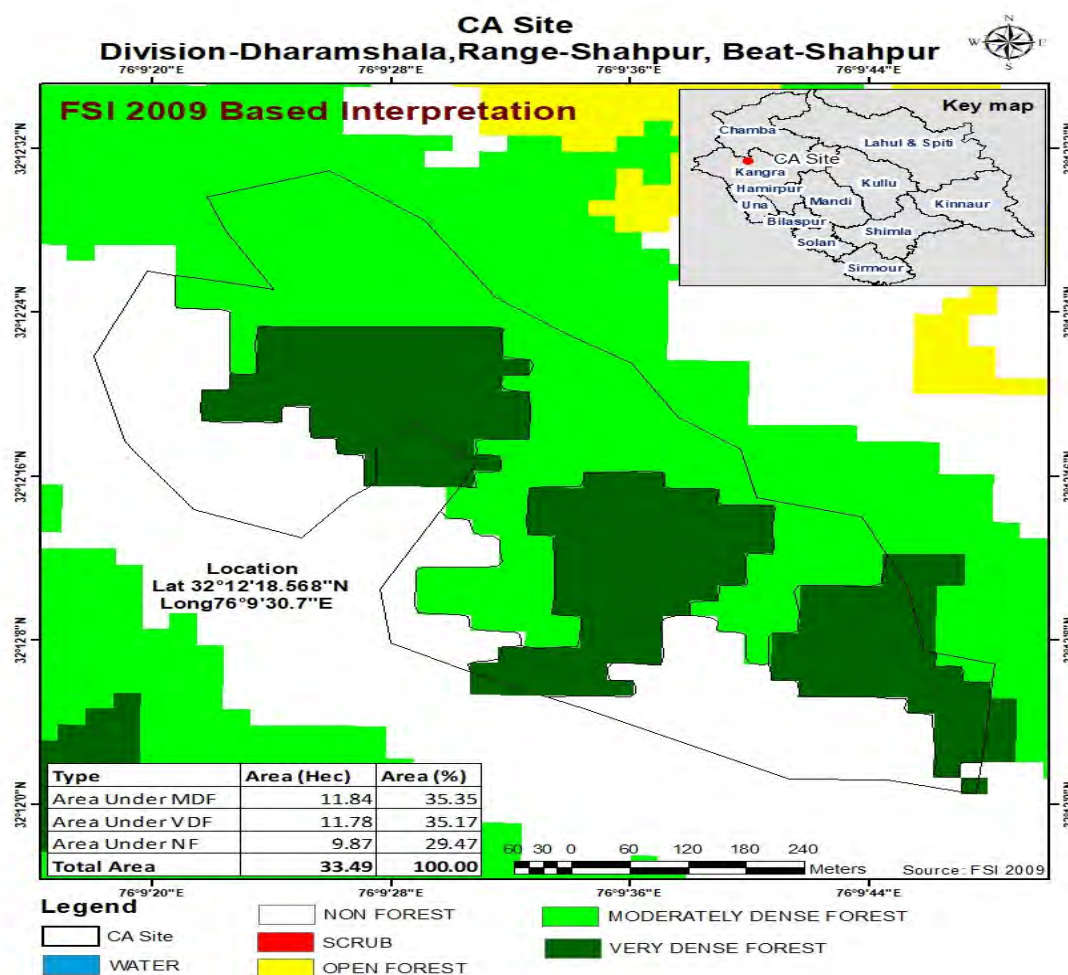
Analysis of 22 CA sites<sup>12</sup> (290 Ha) as detailed in **Appendix 6.1** revealed that plantation over an area of only 48 Ha (17 per cent) was done in Open Degraded Forest and the

<sup>11</sup> One polygon was located in Uttar Pradesh and one polygon was having area of 0.1 hectare against CA of 10 hectare.

<sup>12</sup> Out of total 22 sites, plantations in four CA sites (Kullu Division – three; Banjar Division - one) were carried out after 2019 and in these cases, polygons were superimposed on 2019 FSI data. In remaining 18 cases, polygons were superimposed on 2009 FSI data.

remaining plantation of 242 Ha (83 per cent) was carried out in VDF (21 per cent), MDF (26 per cent) and NF (36 per cent). In nine CA sites<sup>13</sup> (41 per cent) having 124 ha area (43 per cent), 100 per cent of CA was carried outside Open Degraded Forest (one case shown in **Image 1**). For raising CA and maintenance of plantation in these areas, an expenditure of ₹ 2.64 crore<sup>14</sup> was incurred by the Department. Out of the above, ₹ 1.22 crore (46 per cent) was spent on carrying out CA in VDF/MDF and ₹ 0.95 crore (36 per cent) was spent on CA in NF. Thus, funds amounting to ₹ 2.16 crore (82 per cent) were spent on the plantations carried outside Open Degraded Forest. Execution of CA outside Open Degraded Forest land over an area of 242 Ha was contrary to the guidelines issued by MoEF&CC under FCA. This also resulted in irregular/ wasteful expenditure of ₹ 1.22 crore in carrying out CA in MDF/VDF (where density of forest is already greater than 40 per cent) and also raises doubts over carrying out of CA in these areas (as dense forest already existed there).

Image No. 1



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009

<sup>13</sup> Chuhar, Manglun, Jagat, Katwad, ChharuGarh, Bandhal, CFSShahpur, Baragarh III, Chadyar across six divisions

<sup>14</sup> Expenditure calculated for 22 sites as per norms prevalent during the year of plantation and maintenance.

Image No. 2

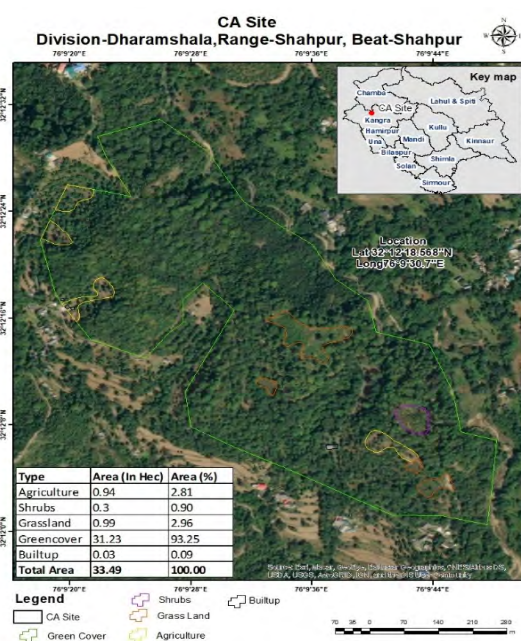
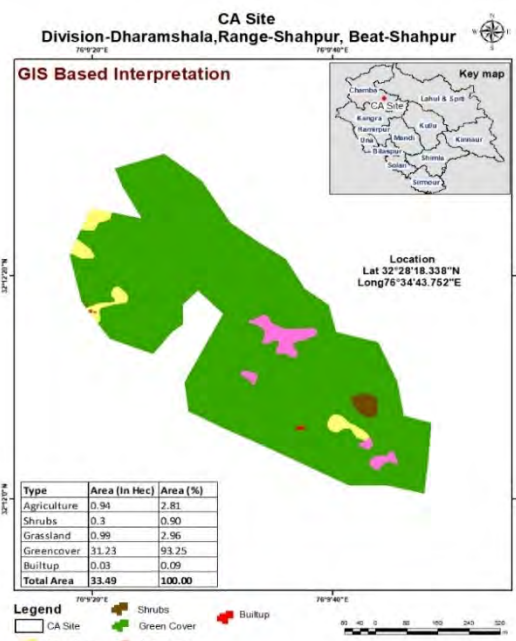


Image No. 3



Source: ESRI, Maxar, GeoEye-2020, Earthstar

Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

The FSI 2009 **Image 1** of the CA Site in the Division Dharamshala, Range-Shahpur, Beat-Shahpur confirms that 70.52 per cent of CA site falls under MDF/VDF. The Satellite **Image 2** of the above site shows 93.25 per cent green cover in the year 2020.

It was also noticed that against all the 22 CA site polygons that were uploaded on the E-Green Watch portal by Divisions, the land type of CA site was stated as notified degraded forest. This points to the fact that incorrect/misleading information was being uploaded on E-Green Watch as 83 per cent of CA was carried out outside Open Degraded Forest and no mechanism existed at the Department and MoEF&CC level to verify/validate the authenticity of implementation of CA scheme.

It is pertinent to mention here that the FSI data regarding the extent of forest cover under various types was available with the GIS Cell of the Department up to the year 2019. However, the Department failed to utilise this data to identify land banks/ suitable CA sites in Open Degraded Forest areas of the State, as is evident from the fact that 83 per cent of CA was carried out outside Open Degraded Forest.

The DFO Kullu stated that the factual position will be ascertained after carrying out field inspection of sites. No replies were received from other Divisions.

While accepting the audit observations during the exit conference, the PCCF stated that forest areas having dense lantana probably would have been treated as Very Dense Forest/Moderately Dense Forest by FSI while studying satellite images. It was also stated that in many instances, KML files provided by the field staff did not match with the actual location/site of the plantation. The reply was speculative in nature as the FSI publishes biennial India State of Forest Report for the whole country, which is based on regular nation-wide mapping of forest cover and is accessed by a wall-to-wall mapping exercise



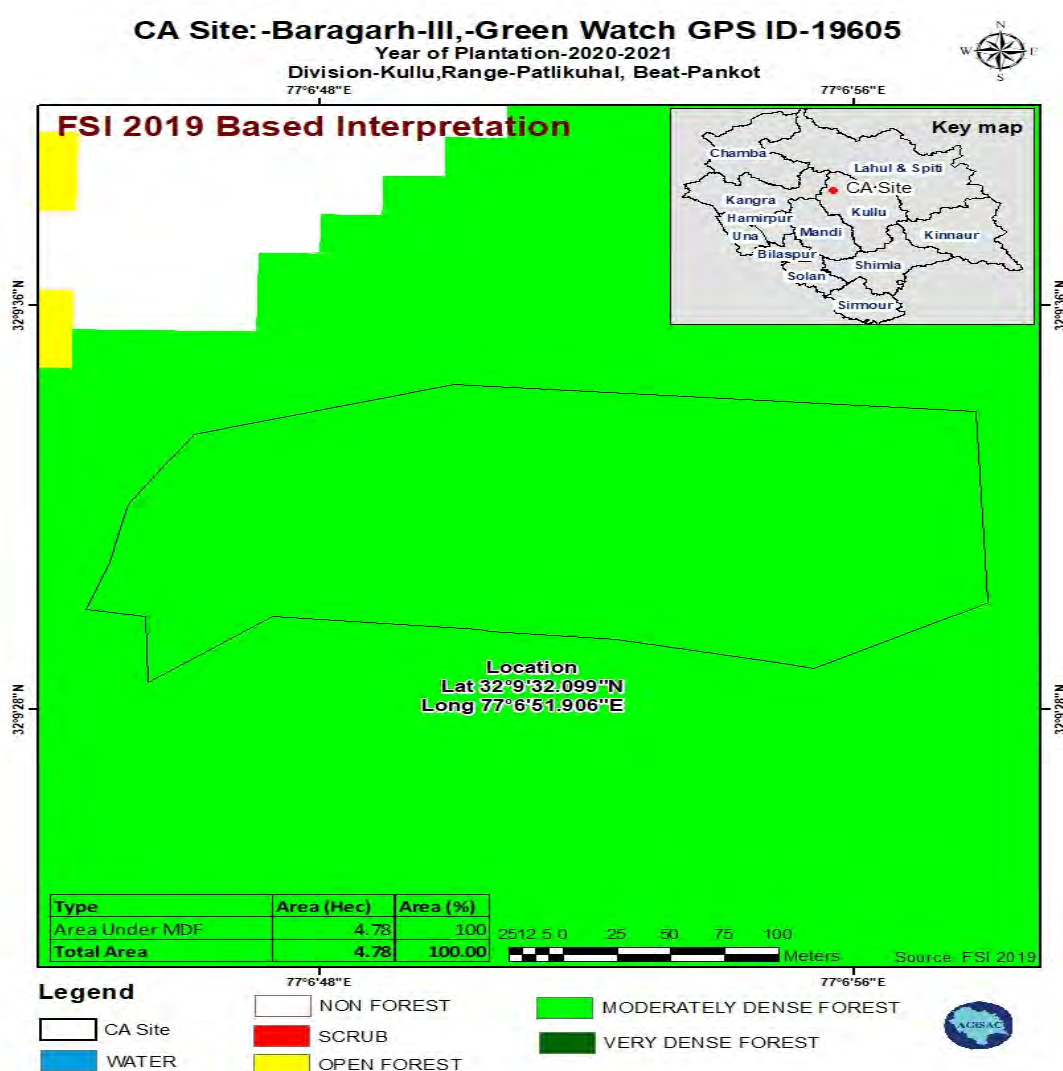
using remote sensing followed by extensive ground trothing. Further, the KML files were called from the respective divisions and cross-checked with E-Green Watch for verifying their authenticity.

Further reply is awaited (February 2024).

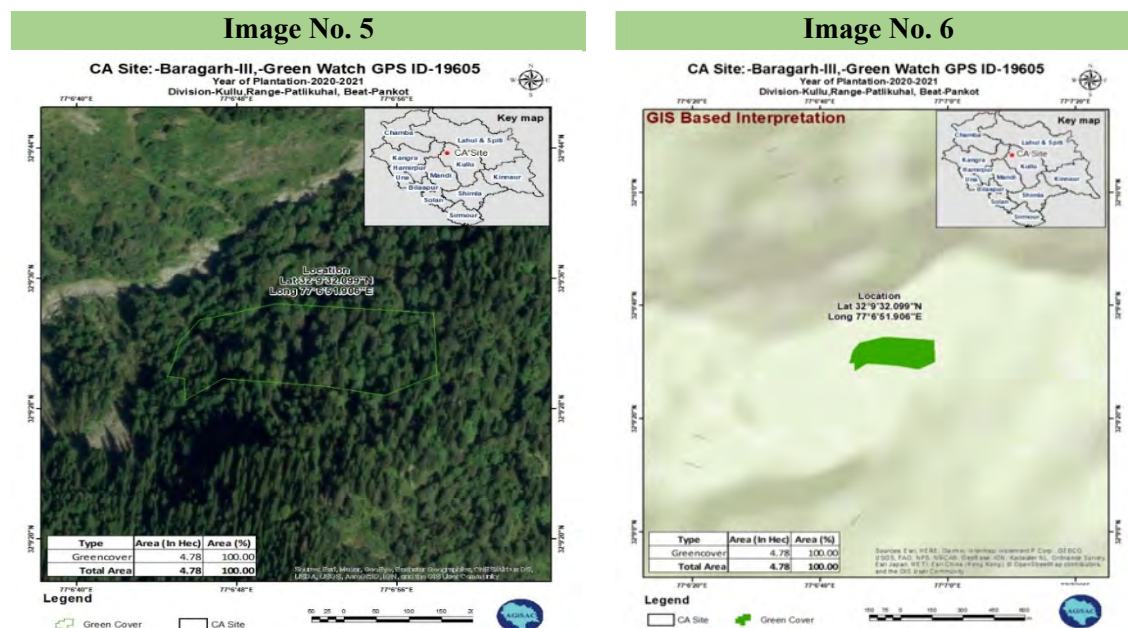
### 6.2.2.3 Selection of Compensatory Afforestation sites and change in location of Compensatory Afforestation sites

CA has to be carried out in the designated CA site, for which a comprehensive CA scheme is formulated, approved and submitted to MoEF&CC. Based on the geospatial analysis, Audit noticed that out of 22 CA sites, location of 15 (68 *per cent*) sites having area 184 ha (63 *per cent*) was different from the approved CA scheme sites.

Image No. 4



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009



Source: ESRI, Maxar, GeoEye-2021, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

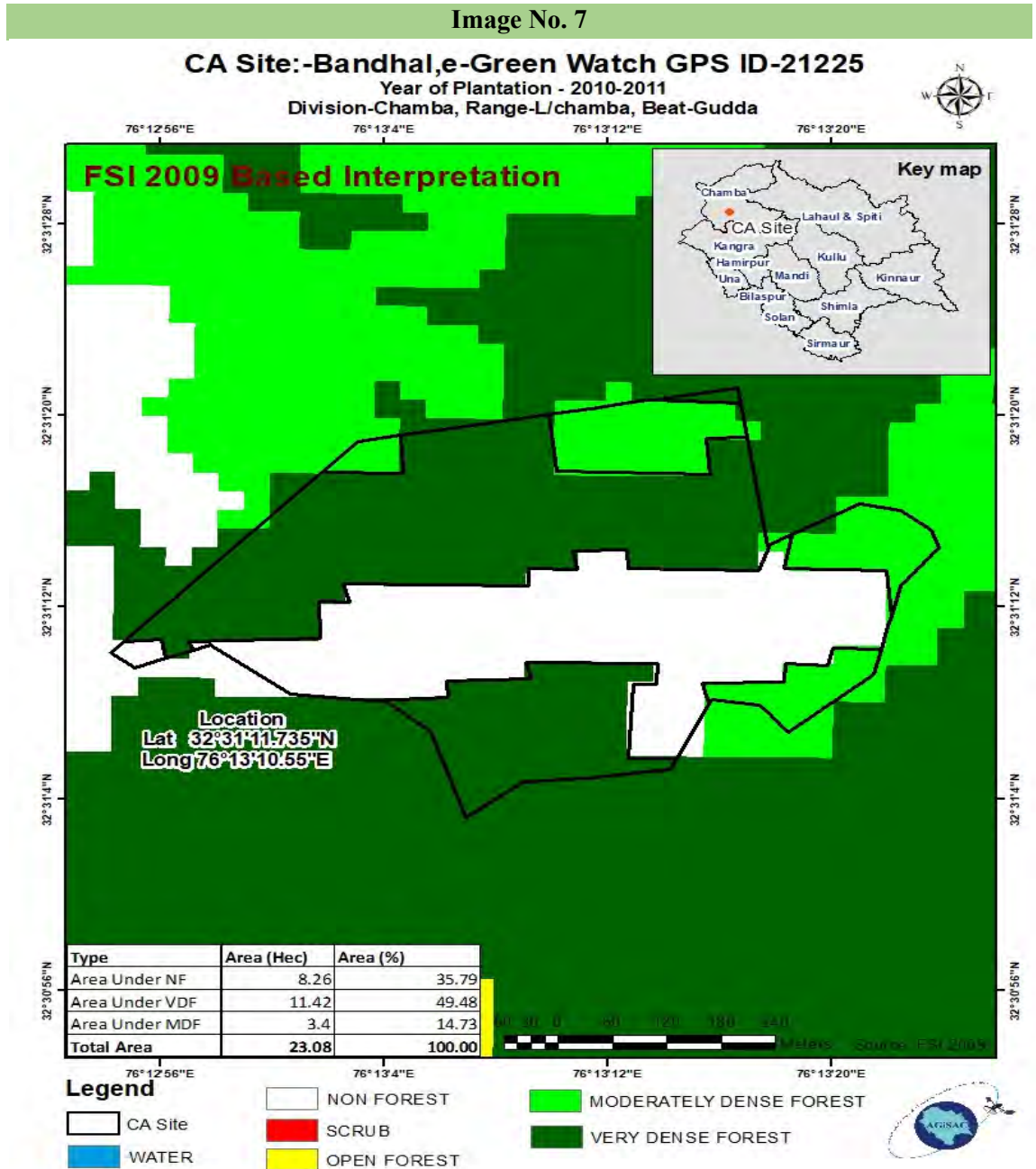
### CA site as per approved CA scheme: Baragarh II. CA carried out at Baragarh III (Image 5)

The FSI 2009 **Image 4** of the CA Site in the Division Kullu, Range-Patlikuhl, Beat-Pankot confirms that 100 *per cent* of the CA site falls under MDF. The satellite **Image 5** of the above site also shows 100 *per cent* green cover in the year 2020.

It was also noticed that in the above 15 sites, CA in 147 ha area (80 *per cent*) was carried outside Open Degraded Forest. The same issue was also commented upon in **Para 3.8** and is corroborated by geospatial studies.

It was further noticed that in the remaining seven cases (32 *per cent*), where CA in 106 ha area was carried out as per the comprehensive CA scheme, CA in 95 ha area (90 *per cent*) was carried out outside the Open Degraded Forest.

Image No. 7



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009



Image No. 8

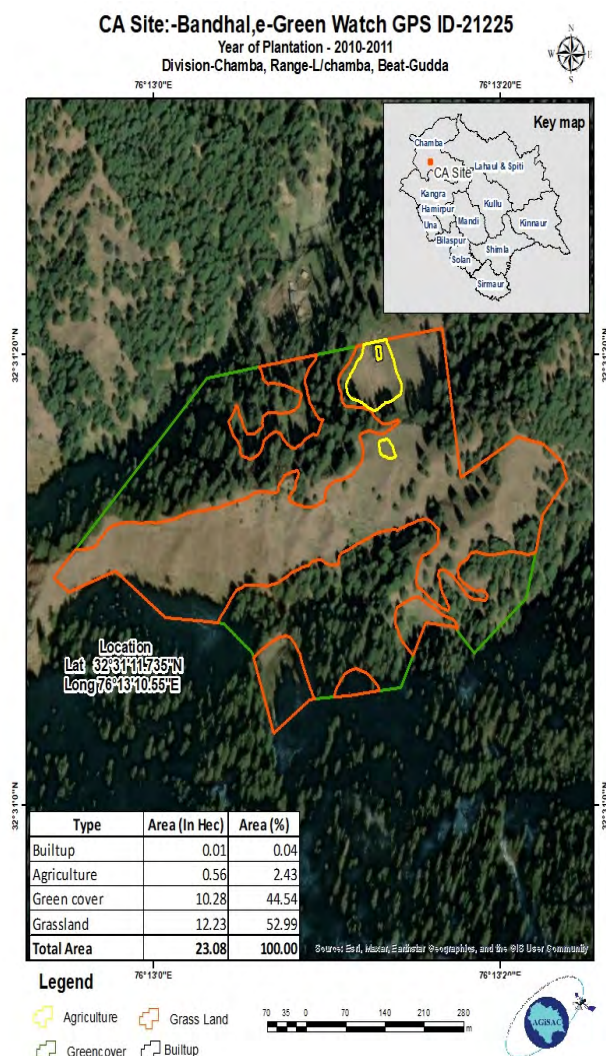
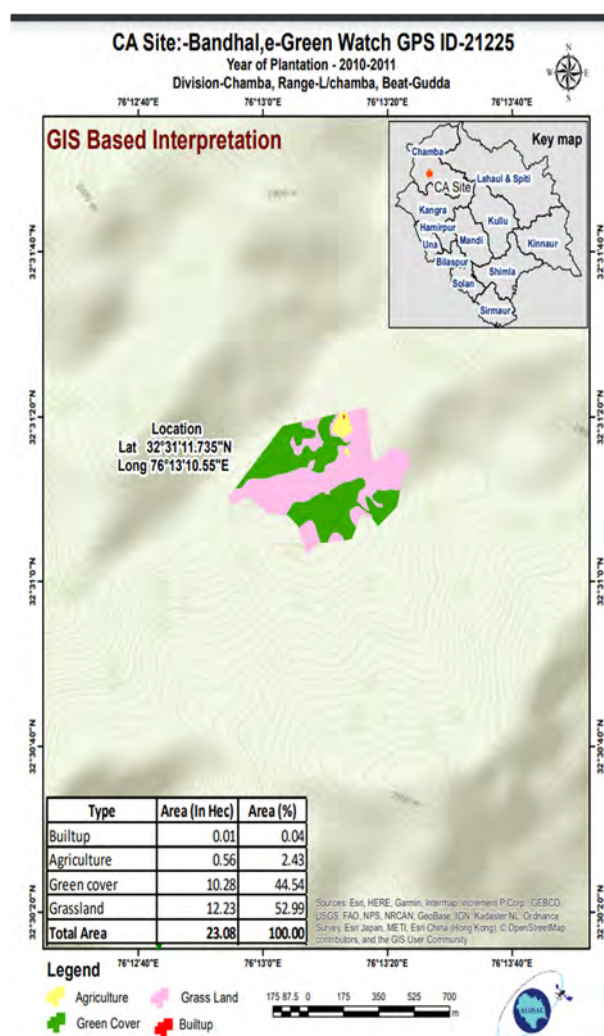


Image No. 9



Source: ESRI, Maxar, GeoEye-2020, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero GRID, IGN, and the GIS User Community

The FSI 2009 **Image 7** of the CA Site in the Division Chamba, Range-L/Chamba, Beat-Gudda confirms that 64.21 *per cent* of CA site falls under MDF/VDF. The satellite **Image 8** of the above site shows 44.54 *per cent* green cover and 52.99 *per cent* grasslands in the year 2020.

This clearly indicates that formulation of a comprehensive CA scheme appears to be a mere formality and no mechanism exists for selection of CA sites based on scientific data, as is evident from the fact that firstly, CA was being carried out outside Open Degraded Forest irrespective of whether the CA site was changed or not and secondly the CA site which was included in the scheme while seeking approval was not actually adhered to while executing the scheme. This shows that selection /change of CA sites (and the fact that it is being carried out outside Open Degraded Forest was not being monitored at PCCF (HoFF)/ MoEF&CC level.



The DFO Kullu stated that the factual position will be ascertained after carrying out field inspection of sites. No replies were received from other divisions.

Further reply is awaited (February 2024).

#### 6.2.2.4 Difference in areas of polygons

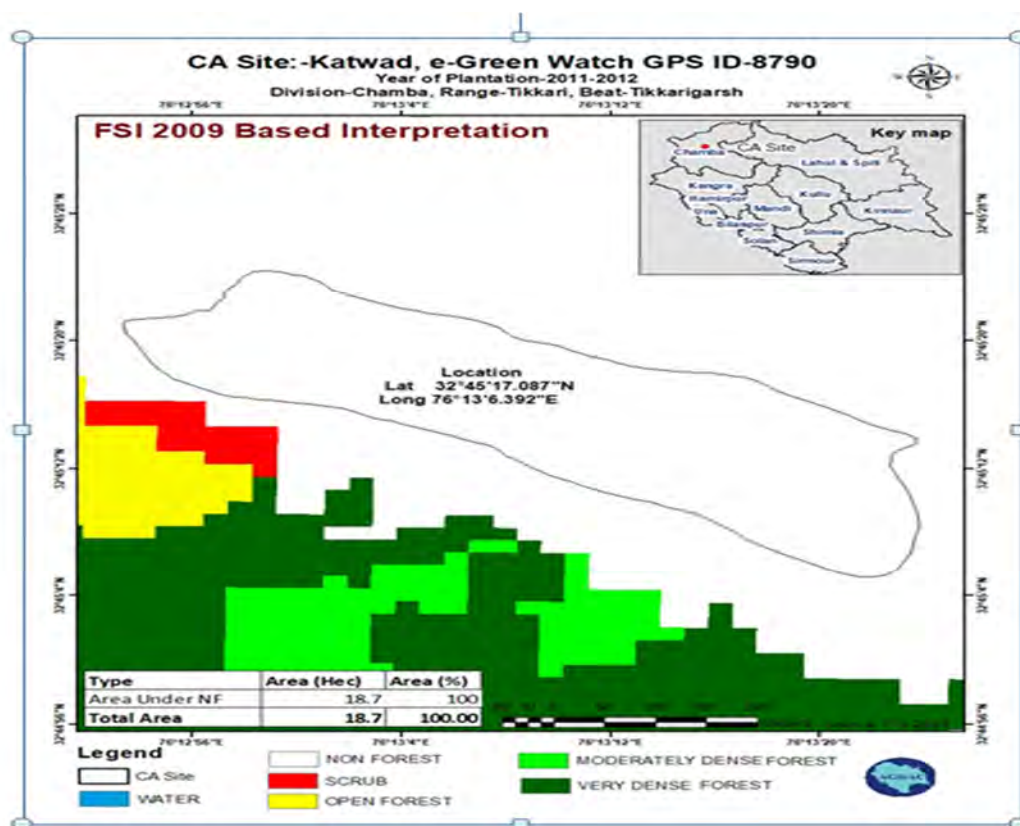
The area of polygons provided by the Divisions/ downloaded from E-Green Watch portal was compared with the area measured through geospatial study. Audit noticed that in two CA sites in Chamba Division, the area of CA site as per divisional records was significantly higher than the area measured through geospatial study as per details given below:

**Table 6.4 Difference in areas of polygons as per divisional records and geospatial study**

Name of the CA site	Year of Plantation	Area as per divisional records (APO) (in ha)	Area as per geospatial study (in ha)	Difference in area (in ha)	Expenditure on plantation on area as per divisional record (APO) (₹ in lakh)	Expenditure on plantation as per area measured in geospatial study (₹ in lakh)	Excess expenditure (₹ in lakh)
Kalwara	2013-14	15	11.27	3.73 (25)	13.73	10.32	3.41 (25)
Katwad	2011-12	42	18.70	23.30 (55)	29.25	13.02	16.23 (55)
<b>Total</b>		<b>57</b>	<b>29.97</b>		<b>42.98</b>	<b>23.34</b>	<b>19.64 (46)</b>

Source: Divisional records and Geospatial analysis of CA sites; Figures in bracket show per cent

**Image No. 10**



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009

Image No. 11

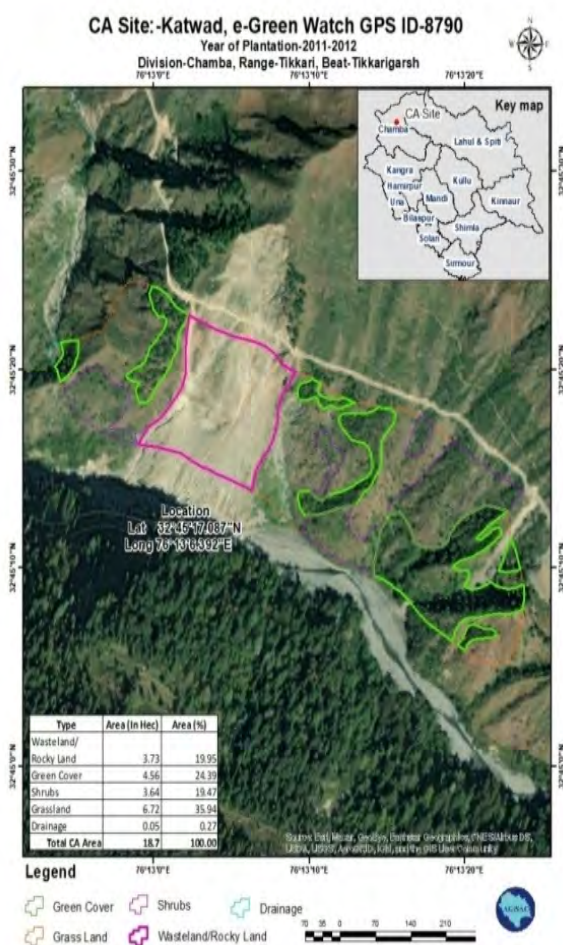
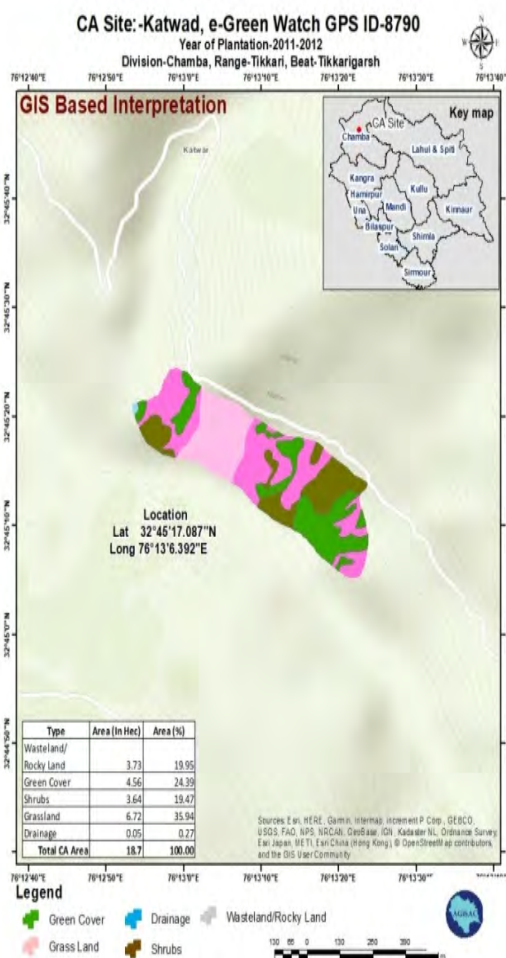


Image No. 12



Source: ESRI, Maxar, GeoEye-2020, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero GRID, IGN, and the GIS User Community

**Images 11 and 12** confirm that the area of the CA site at Katwad, Division Chamba, Range Tikkari, Beat Tikkarigarsh was 18.70 hectare, whereas the same was 42 hectares in the divisional records.

As is evident from the above, the area of the two CA sites measured through geospatial study was 25 per cent and 55 per cent less than the area in which plantation was shown to be carried out. Further, it was also noticed that in both the above mentioned CA sites, the expenditure incurred on carrying out CA was as per the area mentioned in the divisional records. This resulted in excess expenditure of 25 per cent and 55 per cent on plantation in these sites, besides creating doubts on the actual carrying out of afforestation at these CA sites.

Response from the Government is awaited (February 2024).

#### 6.2.2.5 Cases of possible encroachments under Compensatory Afforestation site

The CA sites were further superimposed on the satellite data of 2021 for the purpose of land use land cover classification. The results of visual interpretation are given in **Table 6.5**.

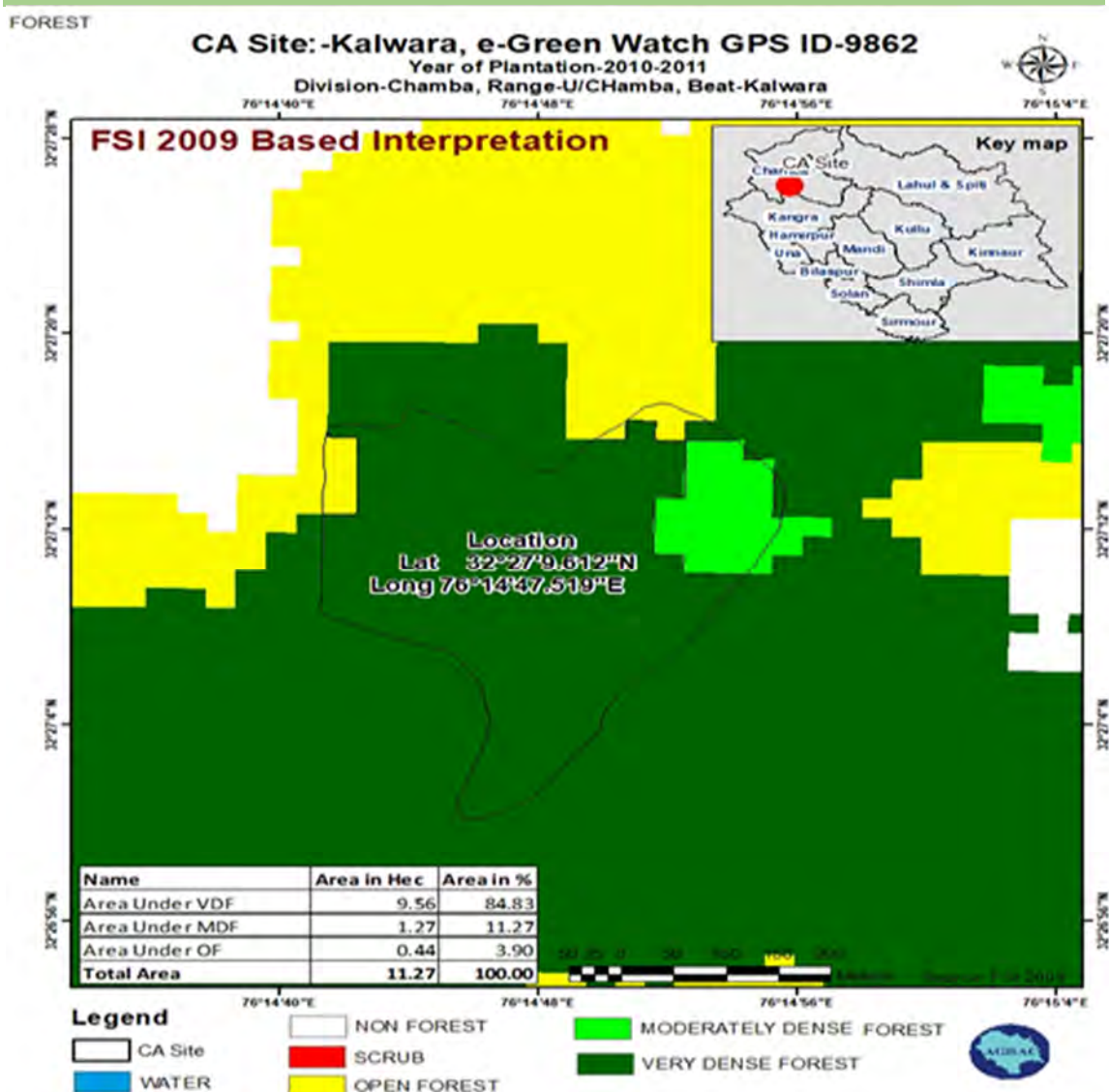
Table 6.5 Encroachments in CA sites

(Area in Ha.)

Name of division	No. of sites	Total area	Area under built up		Area under agriculture	
			No. of sites	Area	No. of sites	Area
Bharmour	4	42.89	2	0.06	3	7.28
Chamba	4	63.03	2	0.02	3	1.85
Kullu	3	18.32	0	0.00	1	1.29
Kunihar	4	70.29	1	0.01	2	0.93
Seraj	4	25.42	0	0.00	1	1.30
Dharamshala	2	53.24	1	0.03	1	0.94
Nachan	1	16.56	0	0.00	0	0.00
<b>Total</b>	<b>22</b>	<b>289.75</b>	<b>6</b>	<b>0.12</b>	<b>11</b>	<b>13.59</b>
<b>Per cent</b>		<b>100</b>	<b>0.03</b>		<b>5</b>	

Source: Geospatial analysis of CA sites

Image No. 13



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009



Image No. 14

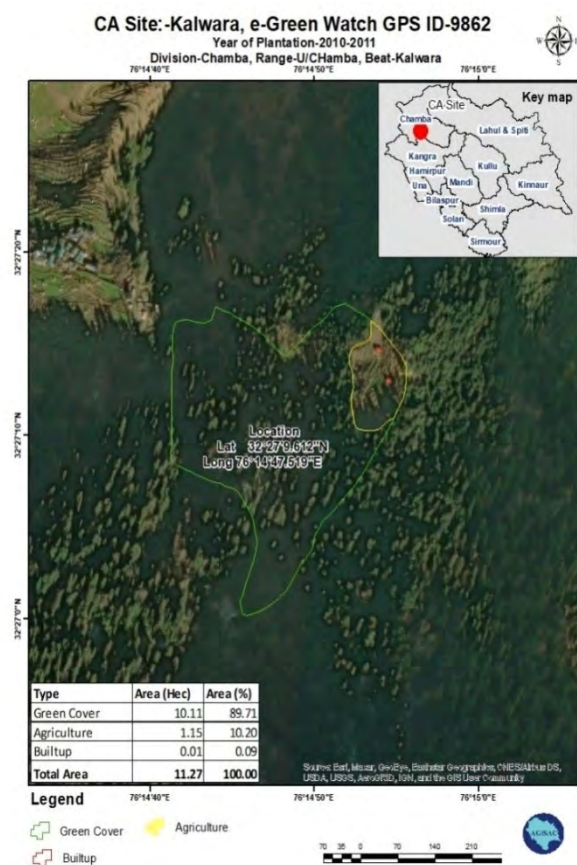
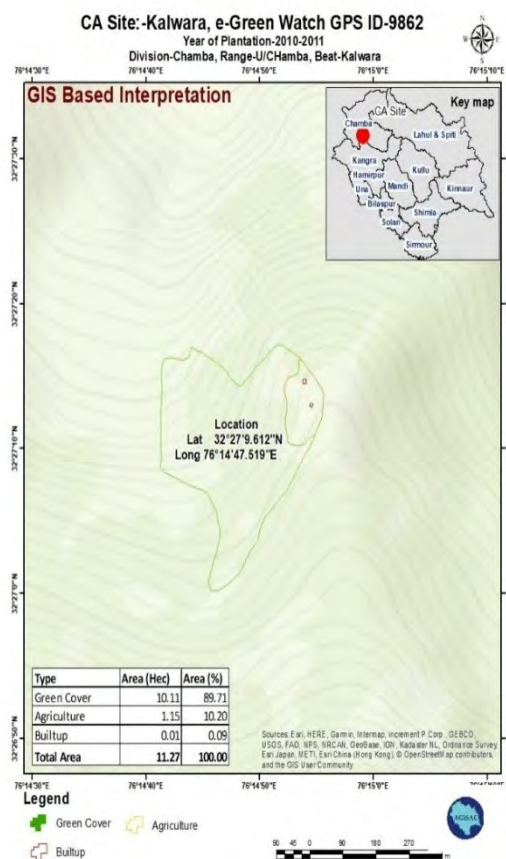


Image No.15



Source: ESRI, Maxar, GeoEye-2020, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Image No. 16



Google Earth Image-2021: -Close Up view of encroachment in the above CA site.

The satellite image of CA site (**Image 14**) in Division Chamba, Range U/Chamba, Beat Kalwara shows encroachments in 10.29 per cent (Agriculture in 10.20 per cent and

built-up area in 0.09 *per cent* of CA site) of CA site. The close-up view of the above CA site as shown in **Image 16** confirms the above fact.

During geospatial study, construction (built up area) was noticed in six CA sites and practise of agriculture was noticed in 11 CA sites as detailed in **Appendix 6.2**. This shows that there is lack of fencing to protect CA sites from encroachment and also points to failure of field staff to carry out regular inspections to detect and prevent encroachments.

The DFO Kullu stated that the factual position will be intimated after carrying out field inspections. No reply was received from other divisions.

Further reply is awaited (February 2024).

### 6.3 Geospatial studies on Land Use Land Cover in DPFs/ RFs

There are 183 RFs spread over an area of 19,033 ha and 3,067 DPFs<sup>15</sup> spread over an area of 2,31,745 ha in the eight<sup>16</sup> test-checked divisions in the State as per information given by the GIS cell<sup>17</sup> of the Forest Department.

The results of visual interpretations of geospatial studies on Land Use Land Cover in RFs/DPFs carried out by AGiSAC in 10 RFs<sup>18</sup> (one)/ DPFs (nine) across five divisions are given below:

**Table 6.6 Encroachments in DPFs/RFs**

(Area in Ha.)				
Name of division	No. of DPFs/RFs	Total area	Area under built up	Area under agriculture
Chopal	4	180.43	0.06	8.14
Bharmour	2	125.54	0.02	1.97
Nachan	2	69.21	0	4.85
Kullu	1	38.94	0.05	2.19
Kunihar	1	23.79	0	0.32
<b>Total</b>	<b>10</b>	<b>437.91</b>	<b>0.13</b>	<b>17.47</b>
<b>Per cent</b>		<b>100</b>	<b>0.03</b>	<b>4</b>

Source: Geospatial analysis of DPFs/RFs

During geospatial study, construction (built up area) was noticed in seven<sup>19</sup> RFs/ DPFs and practise of agriculture was noticed in all 10 RFs/ DPFs as detailed in **Appendix 6.3**. This shows that there is lack of boundary pillars to protect RFs/ DPFs from encroachment

<sup>15</sup> This also includes Protected Forests (PFs).

<sup>16</sup> Except Kinnaur.

<sup>17</sup> The GIS Cell of the Forest Department is geo-referencing and digitising the forest area boundary on Survey of India toposheets of the scale 1:15,000. Till date forest boundary of 35 divisions has been digitised. However, ground validation of this digitised forest area is yet to be initiated. Further, since the digitised revenue record of the State is not available, the same has not been incorporated in the process of digitising.

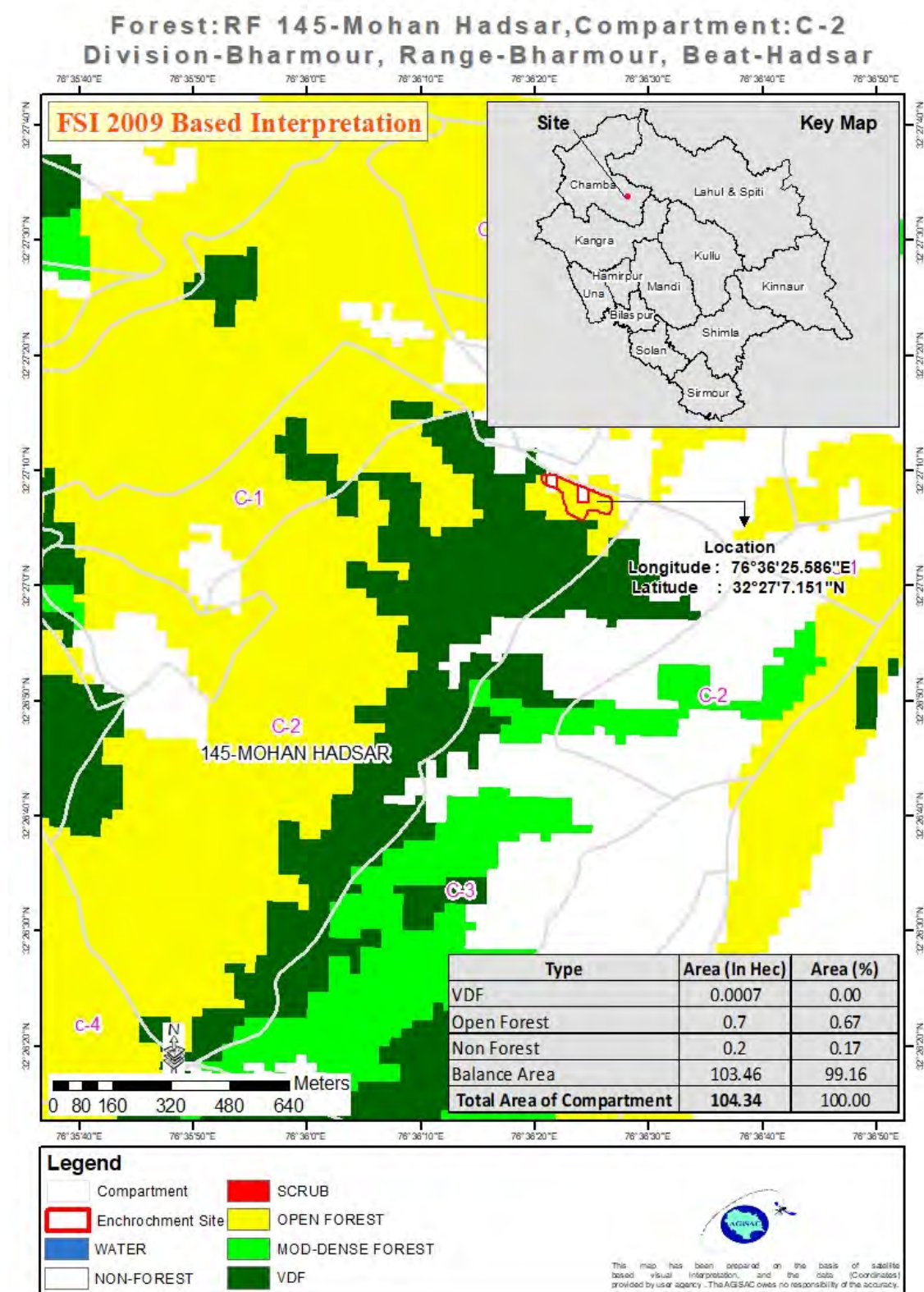
<sup>18</sup> RF – One and DPFs – Nine.

<sup>19</sup> Bharmour – two; Chopal – four and Kullu – one.



and also points to failure of field staff to carry out regular inspections to detect and prevent encroachments.

Image No. 17 (RF)

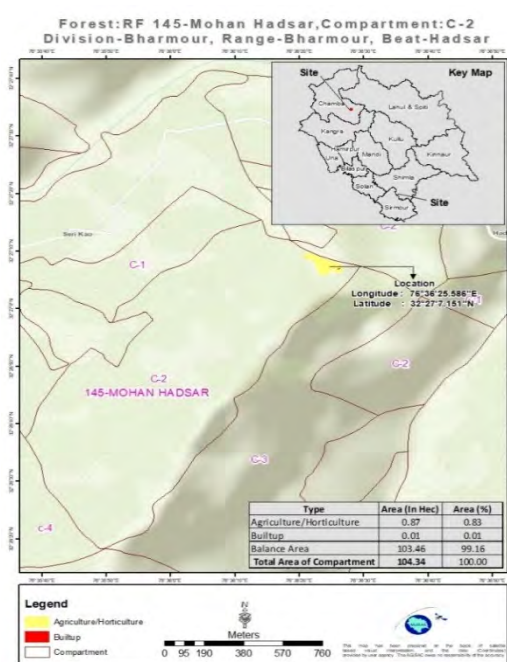


Source: Forest Survey of India (FSI) assessment of Forest Cover-2009

Image No.18



Image No. 19



Source: ESRI, Maxar, GeoEye-2020, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Image No. 20

### Forest:RF145- MohanHadsar,Compartment:C-2

#### Division-Bharmour,Range-Bharmour,Beat-Hadsar



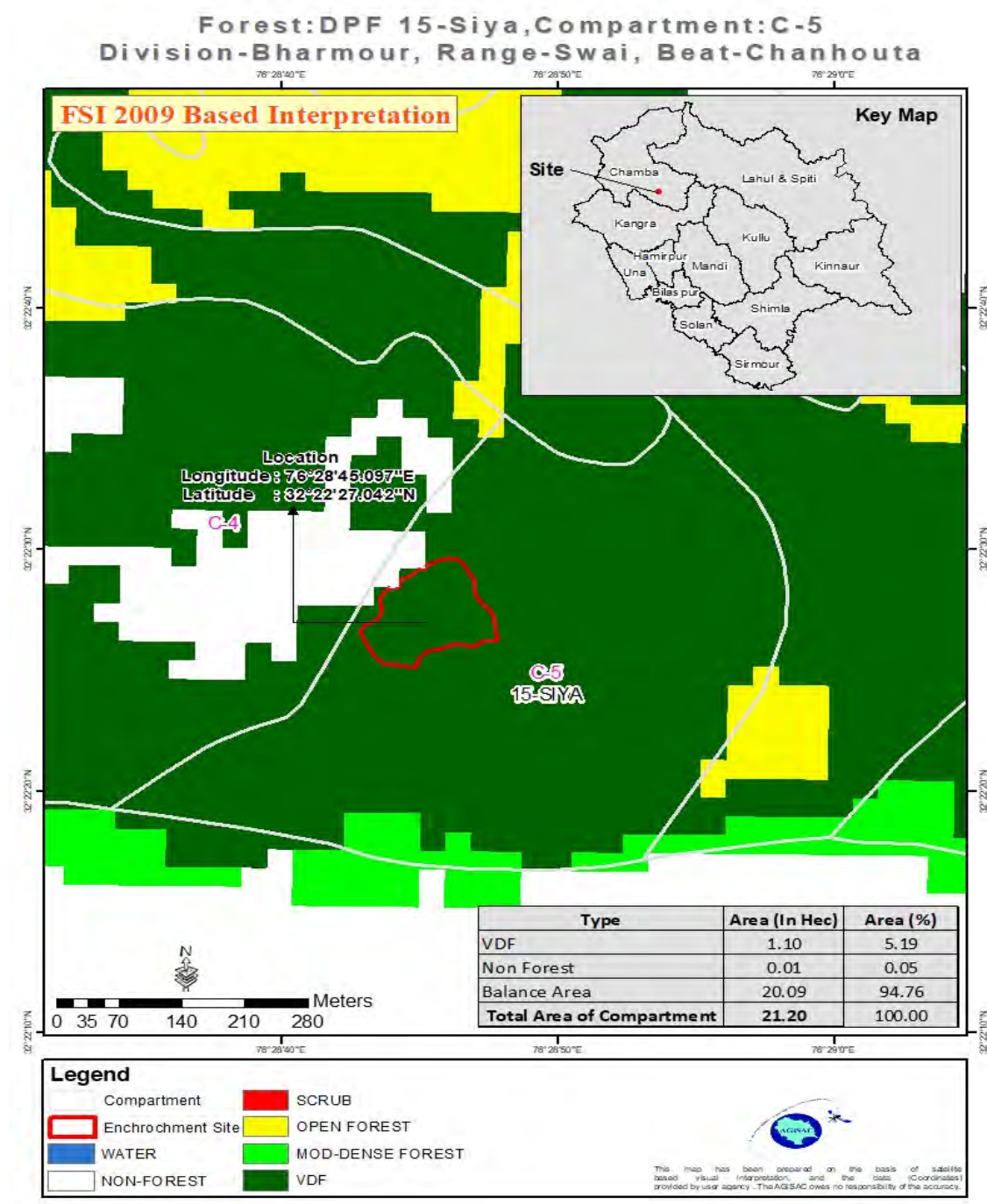
Source: Google Earth Image 2022

Description of zoomed Image: Building and Agriculture/Horticulture activities are noticed in the compartment: C-2 Mohanhadsar



The satellite **Image 18** of compartment C-2 Mohanhadsar in RF 145 in Division Bharmour, Range Bharmour, Beat Hadsar shows encroachments in 0.84 *per cent* (Agriculture in 0.83 *per cent* and built-up area in 0.01 *per cent* of RF) of the above compartment. The close-up view of the compartment as shown in **Image 20** corroborates the above fact.

Image No. 21 (DPF)



Source: Forest Survey of India (FSI) assessment of Forest Cover-2009



Image No. 22

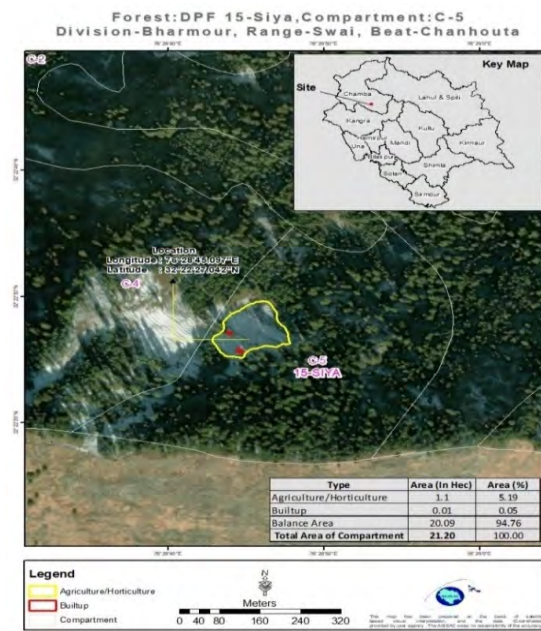
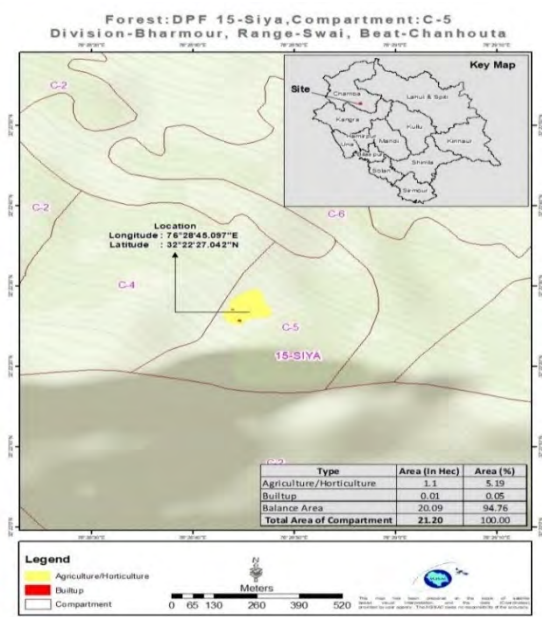


Image No. 23



Source: ESRI, Maxar, GeoEye-2020, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Image No. 24

### Forest:DPF15-Siya,Compartment:C-5

#### Division-Bharmour,Range-Swai,Beat-Chanhouta



Source: Google Earth Image 2022

Description of zoomed Image: Buildings and Agriculture/Horticulture activities are noticed in the compartment: C-5 DPF 15 Siya

The satellite **Image 22** of compartment C-5 in DPF Siya in Division Bharmour, Range Swai, Beat Chanhouta shows encroachments in 5.24 *per cent* (Agriculture in 5.19 *per cent* and built-up area in 0.05 *per cent* of RF) of the above compartment. The close-up view of the compartment as shown in **Image 24** corroborates the above fact.

The DFO Nachan stated that field inspection will be carried out and action taken accordingly. No reply was received from other divisions.

Further reply is awaited (February 2024).

#### **6.4 Conclusion**

CA is one of the most important requirements under FCA to compensate loss of land and trees. On a test check of CA sites using geospatial techniques, it was observed that the Department failed to carry out CA in Open Degraded Forest and in fact 47 *per cent* was done in VDF/MDF, which was a waste of public money and defeated the purpose of CA besides raising doubts over the actual CA carried out. It was also noticed that incorrect/inaccurate information regarding CA sites was being uploaded on E-Green Watch portal. Further, instances of difference in areas of CA sites as per E-Green Watch portal and as measured through geospatial analysis were noticed. Cases of possible encroachments in some of the CA sites were also noticed. To summarise, there was total lack of internal controls in the Department in implementation of the CA scheme in letter and spirit as per the provisions of the FCA, which raises concerns on the authenticity of the efforts of carrying out CA.

Further, there is a possibility of encroachments in RFs/DPFs which needs to be verified by the Department by carrying out ground validation.

#### **6.5 Recommendations**

*The Department may consider:*

- *Utilising data available with their GIS cell to identify land banks/suitable CA sites under Open and Degraded Forest to ensure that CA is carried out as per the provisions of FCA.*
- *Strengthening of the internal control mechanisms to ensure that*
  - *Suitable CA sites based on scientific data are selected at the time of formulation of the CA scheme and CA is carried out only at the designated selected site; and*
  - *Uploading correct/accurate information regarding the details of CA carried out on the E-Green Watch portal.*
- *Investigating the cases where there was doubtful execution in MDF/ VDF areas and fixing of responsibility where required.*

- *Analysing the process of selection of CA sites and reasons for the subsequent change in location during execution. Responsibility may be fixed in cases where locations of CA sites were changed unauthorisedly.*
- *Regular patrolling to ensure that CA sites and RFs/DPFs are kept free from encroachments and investigation of cases of encroachments and prosecution of defaulters as per the provisions of the Indian Forest Act, 1927.*



**(CHANDA MADHUKAR PANDIT)**

Principal Accountant General (Audit)

Himachal Pradesh

Shimla

Dated: 27 August 2024

**Countersigned**



**(GIRISH CHANDRA MURMU)**

Comptroller and Auditor General of India

New Delhi

Dated: 6 September 2024

