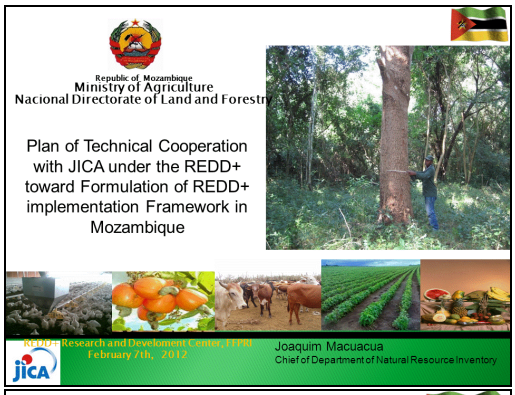
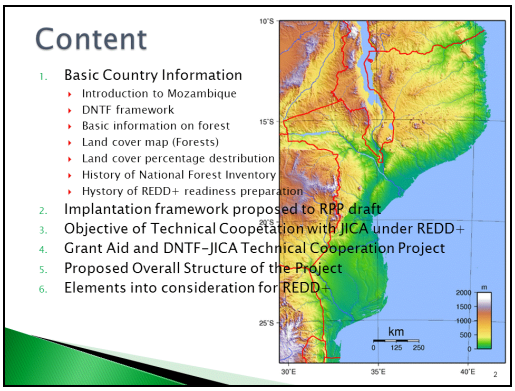
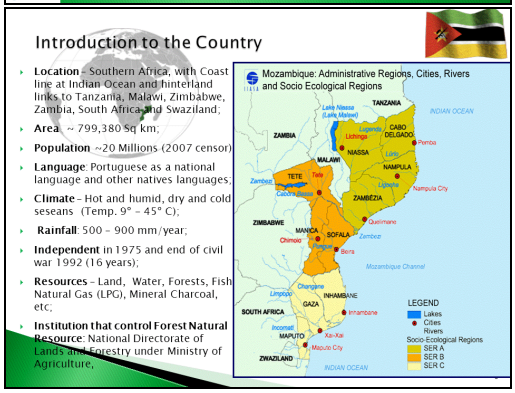
モデレーター：Eduardo Mansur (ITTO[1])

Plan of Technical Cooperation with JICA under the REDD+ toward Formulation of REDD+ Implementation Framework in Mozambique

Joaquim Armando Macuacua (Ministry of Agriculture, Mozambique)

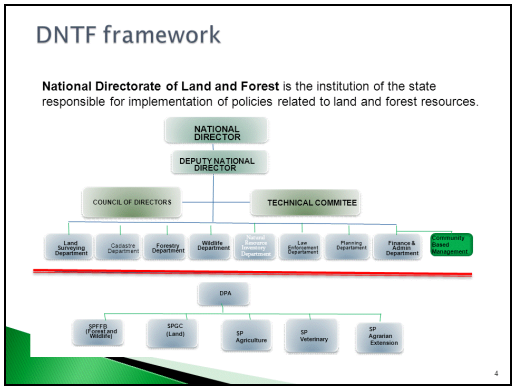




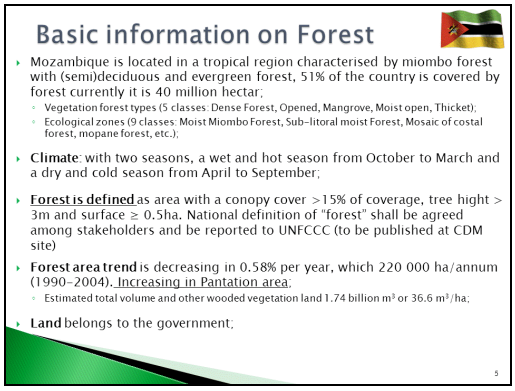


Mozambique is a Southern African country with Indian Ocean as the coastline and the hinterland links to Tanzania, Malawi, Zambia, Zimbabwe, South Africa and Swaziland. Our area is 799,380 square kilometers. We run about 20 million in terms of population. Our national language is Portuguese and we do have native languages. The climate is hot and humid, dry and cold, which varies within the country from 9 to 45 degrees, depending on the region of the country. Our rainfall, it varies from 500 to 900 millimeters per year. We got independence in 1975, but we have been involved in civil war, which ended in 1992. Our main resource is land, water, forest, fish, natural gas, mineral charcoal, and so on. The institution that controls the forest natural resources is called National Directorate of Lands and Forestry under the Ministry of Agriculture.

[1] International Tropical Timber Organization: http://www.itto.int/



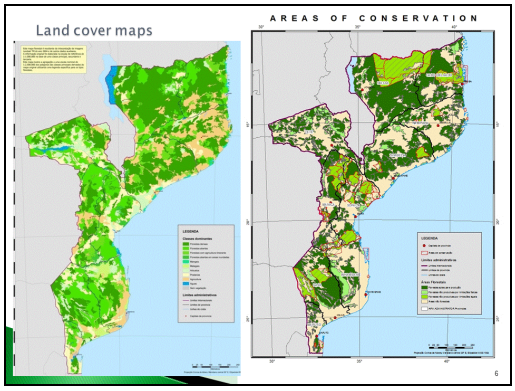
This is the framework of the National Directorate of Lands and Forest, which is the institution of the state responsible for implementation of the policies related to the land and forestry. In our framework, we got the national directorate, the national director deputy, and we got eight departments and one unit. Our national directorate can respond to the council of directors and the departments. They can also have a meeting at the heads of technical committee. But below that, there is a provincial level as well, where we do have two provincial sectors; one is for forest and wildlife; another is for geographic character of land. Beside that, there are other provincial services which are not related to our national directorate.

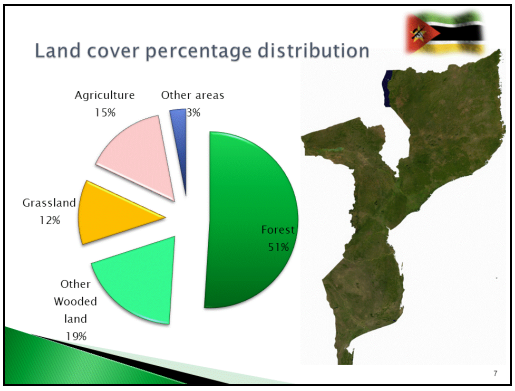


The basic information of forestry; Mozambique is located in the tropical forest characterized by a miombo forest, semi-deciduous and deciduous forest, evergreen forest which covers 51% of the country. The statistic says 40 million hectares cover the whole country. The vegetation types mainly are five types of forest from dense up to the thicket. The ecological zones we can find nine. Just to cite some examples, we got moist miombo forest, mosaic forest, including mopane forest. We have two seasons are wet and hot season from October to March, and the dry and cold season from April to September.

Forest is defined as an area which canopy cover, greater than 15% of coverage, tree height greater than 3 meters, and surface greater or equal to 0.5 hectares. National definition of "forest" shall be

agreed among the stakeholders and reported to the UNFCCC[2] to be published at the CDM[3] site. Forest area trends are decreasing. It is about 0.58% (220,000 hectares) per year. This was found in the study done in 1990 comparing to 2004. But there is some increase in the last 5 years in terms of the forest plantation. Land belongs to the government, but the community has the right to use the land and the natural resources and get benefits from that.





This is land cover map using satellite image; the left-side map is the land cover maps and the right-hand one is the same map but with the conservation area highlighted. These conservation areas are due to law limitations and ecological limitations.

In terms of percentage distribution, we can see forest with 51%. The others are less than 51% like other wooded land with 19%, grassland 12%, agriculture 15%, and other 3%. Here, we include bury soils and water.

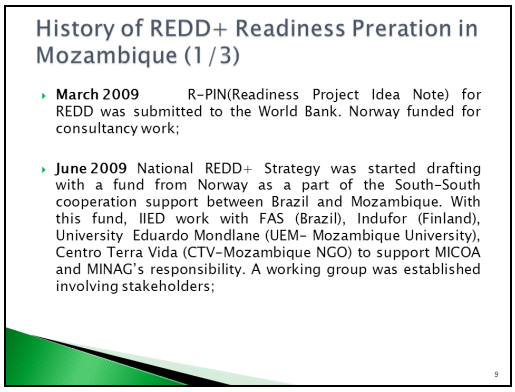
The history of the national forest inventory; we have started to do the forest inventory in 1980 with

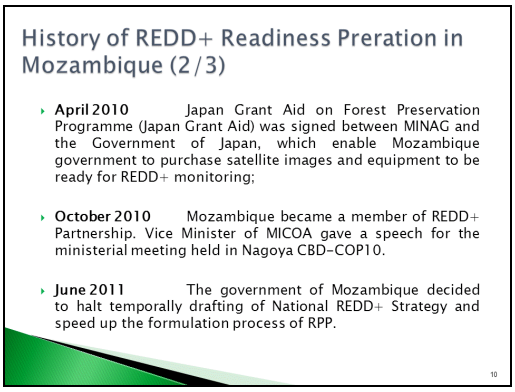
---

[2] United Nations Framework Convention on Climate Change http://unfccc.int/

[3] Clean Development Mechanism: Mechanism which allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. http://cdm.unfccc.int/

the forest national inventory conducted by experts funded by FAO[4]. In 1994, we had a second national forest inventory, again financially supported by FAO. In 2007, we got third national inventory funded by Italian government and Mozambique. Beside those ones, we also got a provincial forest inventory in those following years since 1983 up to 2007. Those provincial inventories have been taking place in different provinces and in different years. In 2012, the provincial forest inventory will be carried out in the following provinces: Cabo Delgado, Nampula, and so on. Here, the Mozambique government will sponsor all of those inventories and partially with Italian government. The main purpose of this forest inventory was and is the timber production and biomass assessment. I would like to scale the work that was done. At the national level, it was done in the 1 per 1 million scale, and for the provincial level, it was done in the scale of 1 per 250,000.





Coming to the history of the REDD+, readiness preparation in Mozambique, we have started these in 2009 March where the R-PIN[5] for REDD was submitted to the World Bank and Norway funded for the consultancy work. In 2009 June, National REDD+ strategy was started, drafting with the fund of Norway as a part of the South-South cooperation between Brazil and Mozambique. With this fund, the IIED[6] worked with FAS[7] (Brazil), University Eduardo Mondlane, Centro Terra Viva[8] (Mozambique NGO) to support MICOA[9], and MINAG[10]'s responsibility. Also, a working group was established including stakeholders.

In April 2010, Japan Grant Aid for the Forest Preservation Program was signed between the Ministry

[4] Food and Agriculture Organization: http://www.fao.org/

[5] Readiness Project Idea Note

[6] International Institute for Environment and Development: http://www.iied.org/

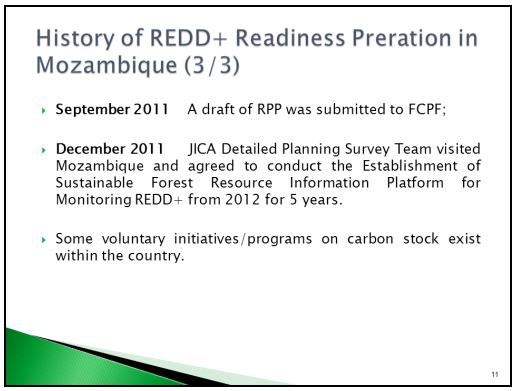
[7] Foreign Agricultural Service: http://www.fas.usda.gov/

[8] http://www.ctv.org.mz/

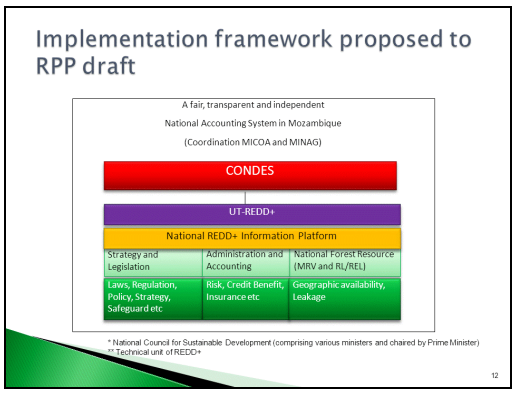
[9] Ministry of Environmental Affairs

[10] Ministry of Agriculture

of Agriculture and the Government of Japan, which enabled Mozambique government to purchase satellite images and equipment to be ready for REDD+ monitoring. In 2010 October, Mozambique became a member of REDD+ partnership, where His Excellency-Vice Minister of the Ministry of Environmental Affair gave a speech for the ministerial meeting held in Nagoya COP10. In 2011 June, the Government of Mozambique decided to halt temporarily drafting the national strategy and speed up with formulation of the process of RPP[11].



In September 2011, a draft of RPP was submitted to FCPF[12]. In 2011 December, JICA Detailed Planning Survey Team visited Mozambique and agreed to conduct the establishment of sustainable forest resource information platform for monitoring REDD+ from 2012 for 5 years. Last but not least, I would like also to say some voluntary initiative program of carbon stocks exists in the country.

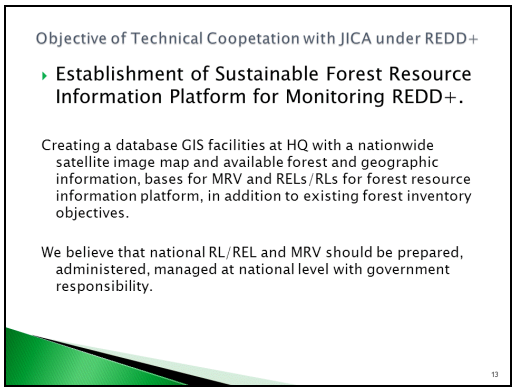


This is the implementation framework proposed in the RPP draft where the main board is the National Council for Sustainable Development which we call CONDES. This is composed of various ministers and chaired by our prime minister. Below that comes the UT-REDD+ (Technical

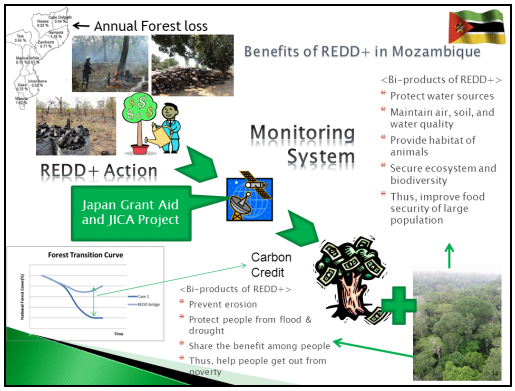
[11] Readiness Preparation Proposal: a roadmap toward achieving REDD Readiness. It indicates what activities could be undertaken and provides a guide to how these activities can be undertaken and what resources will be needed.

[12] Forest Carbon Partnership Facility: http://www.forestcarbonpartnership.org/

REDD+ Unit). Here, we are thinking on building a national REDD+ information platform. We got three components to look. One is the strategy and legislation, to deal with law, regulation, policy, strategy, safeguard, and so on. Second is the administration and accounting, so to deal with the risk, credit benefit, insurance, and so on. Third is the national forest resource for MRV[13] and reference level and reference emission level. Here, the geographic availability and leakage will also be considered.



The objective of the technical cooperation with the JICA under REDD is to establish a sustainable forest resource information platform for monitoring REDD+. With that, we are going to create database GIS[14] facilities at headquarters with a nationwide satellite image map and available forest geographic information, bases for MRV and RELs/RLs for forest resource information platform, in addition to the existing forest inventory objectives. We believe that the national reference level and MRV should be prepared, administered, managed at national level with government responsibility.

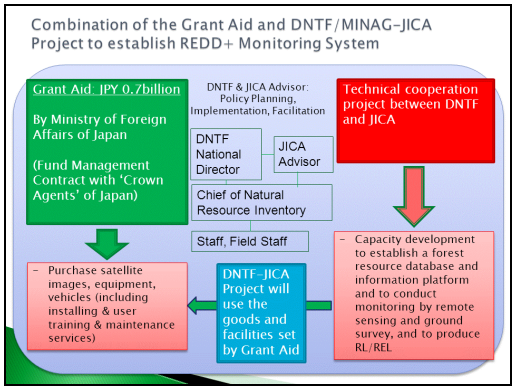


This picture here is what started to shake our heads to think about REDD+ because we started to see our annual forest loss, which runs about 0.58% per year due to the activities such as the charcoal making, the shifting cultivation, slash and burning, the illegal logging. By the support of the

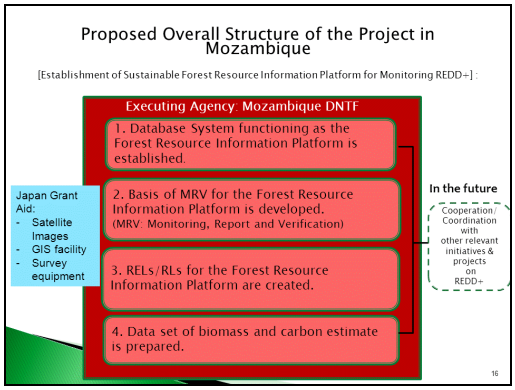
[13] Measurement, Reporting and Verification

[14] Geographic Information System: a system of hardware and software used for storage, retrieval, mapping, and analysis of geographic data.

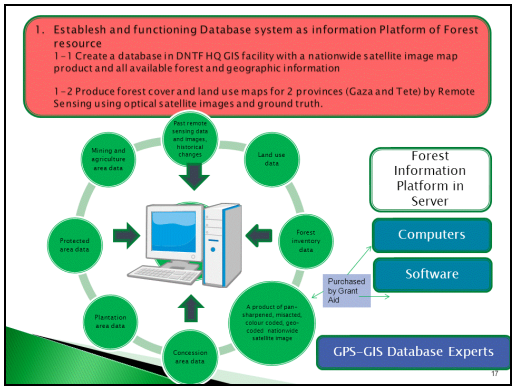
Japanese government by the Grant Aid and JICA project, we started to think about the monitoring system because if you see our forest transition curve, it is going down. We have to lift it in order to get some carbon credit. But for that, there is a huge work to be done within the country. If we can have at least the last picture in the bottom right, we can be sure that okay, we are going to prevent erosion, protect the people from the flood, share the benefits among the people, protect water source, maintain soil, and so on. As you know, our country is one of the vulnerable countries for the cyclic cyclones, drought, and so on in the southern region of Africa.



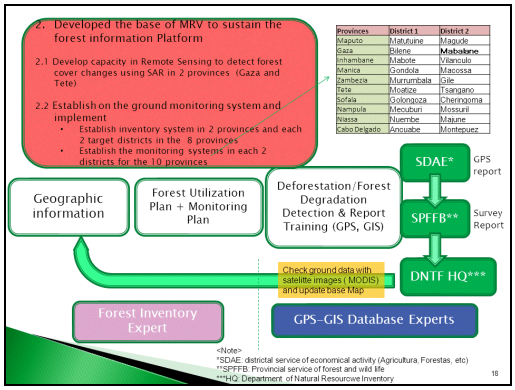
This slide shows the combination between the Grant Aid and DNTF and JICA project to establish the REDD+ monitoring system. Everything has started by the Grant Aid of ¥0.7 billion Japanese by Ministry of Foreign Affairs of Japan. Here, funds management contract with Crown Agents of Japan to purchase the equipment. DNTF and JICA advisor have activities for policy planning, implementation and facilitation. Our national director, he will be the coordinator of all the activities with the assistance of our JICA advisors. But the activities by itself will be implemented by the Department of Natural Resources Inventory and the staff of the provincial level and field staff. The technical cooperation project between DNTF and JICA is more to bring the capacity development and establish the forest resource database and information platform, and to conduct monitoring by remote sensing and ground survey, and to produce reference level. Here again, JICA and DNTF will use all the equipment that will be purchased by the Grant Aid. Equipment means the satellite image, computer software, vehicles, and so on.



The proposed overall structure of the project in Mozambique is composed by four components. The first component is the database system functioning as the forest resource information platform. This has to be established. Second, basis of MRV for forest resource information platform is developed. Third, the reference level for forest resource information platform is going to be created. Fourth, data set of biomass and carbon estimation is to be prepared so that in the future, we can be able, for cooperation, coordination with other relevant institutions and project on the REDD+.



In the first component, we have the forest information platform in server surrounded by different information. We have to update this kind of information that we have, so we do not mean that we are going to produce this information, all of it. Some of the information is our duty, but others, we collect from different institutions to have a central database where the main activity that you will see here is the product of pan-sharpened, misacted, color-coded, geo-coded nationwide satellite image. We are going to purchase including the computer and software using the Grant Aid in order to create the database at the headquarters with the GIS facility using satellite image map product and available forest and geographic information. Also, we are going to produce forest cover, land use maps for two provinces. We got two provinces as our pilot provinces where we are going to use the remote sensing, optical satellite image, and ground truth.



In the second component, we are going to develop a capacity in remote sensing to detect forest cover change using SAR[15] in the two provinces already mentioned. Also, we are going to establish on the ground monitoring system and implementation to establish inventory system in two provinces in each two target selected district of the eight provinces. At our top right, we can see the provinces selected and the districts selected. Here, we have got a small chart that all the activities are going to be identified. We are going to start with the deforestation and forest degradation detection and reporting using GPS and GIS technology. Where it is written as SDAE[16] is a district level where the GPS reporting will be conducted. Then, the SPFFB[17] is the provincial level where the survey activity report will be conducted. All of these results from activities will be sent to the headquarters, DNTF. The DNTF will do the check ground data with the satellite image like the MODIS[18] and update the database map, using the geographic information. There, we will say that the forest utilization plan plus monitoring will be already available. But to do that, we need actually a very strong support of the GIS and the GPS database experts including the forest inventory experts.

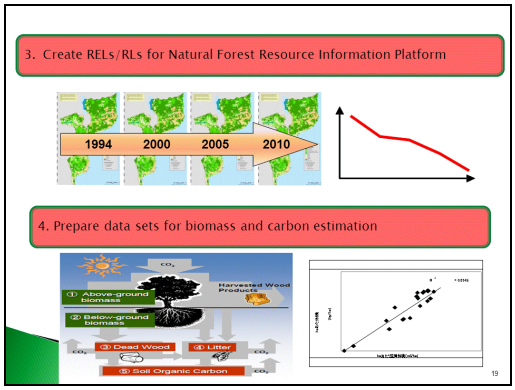
---

[15] Synthetic Aperture Radar: a coherent mostly airborne or spaceborne sidelooking radar system which utilizes the flight path of the platform to simulate an extremely large antenna or aperture electronically, and that generates high-resolution remote sensing imagery.

[16] District Service of Economical Activities: districtal service of economical activity

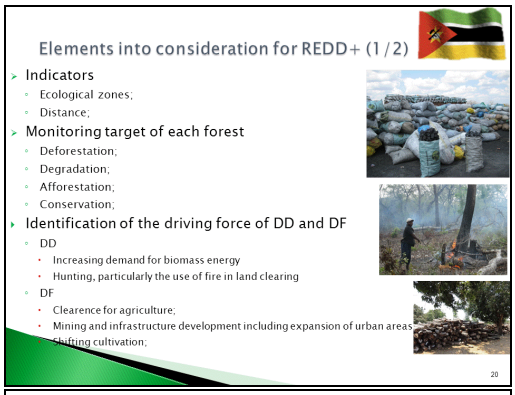
[17] National and Provincial Services for Forestry and Wildlife: provincial service of forest and wild life

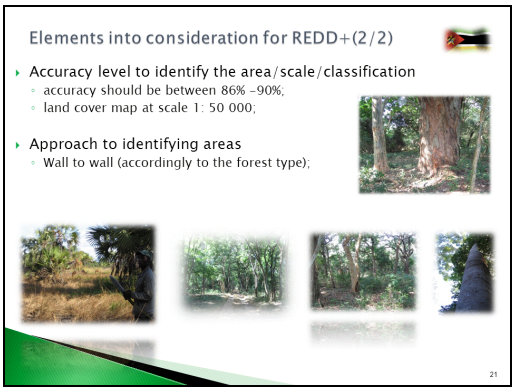
[18] Moderate-resolution Imaging Spectroradiometer: http://modis.gsfc.nasa.gov/



In the third component, we think on create the reference level for the natural forest resource information platform. These are the four years that we are thinking to design as our reference level in order to produce our reference level.

In the fourth component, we are going to prepare the data sets for biomass and carbon estimation. There, all of the methodologies are known and if possible, we are going to use like above-ground biomass assessment, and so on.





I would like to talk about the elements into consideration for REDD+. We have got indicator factors like environmental factors and social and economical factors. Also, we have got the target of each forest, deforestation, afforestation, and conservation. In the degradation, we have to see the increase in demand of the biomass energy, the hunting particularly the use of fire in land clearing. Deforestation will include the clearance of agriculture, mining, infrastructure development including

expansion of urban area, shifting cultivation. Also, the accuracy level, identification of the area, scale, and classification should be between 86% and 90%. The land cover map, it will be at scale 1 per 50,000 at national and sub-national level. Last and not least, wall-to-wall approach to identify areas will be used according to the forest type.