

Forestation

I. Operation Indicator

Category	Name	Policy and method of establishing the indicator	Target	Purpose	Remarks
Basic	Forestation Area (ha), Quantity of Planting (Number)	Area (ha) and number of trees in the forestation project area by kinds of tree	To be discussed with the executing agency referring to the result of F/S etc.	To assess if the forestation is properly conducted	A project in a dry area may possibly include planting grass. It is acceptable to check the number of planted trees by sampling method.
Basic	Survival Rate (%)	Survival rate of seedlings after a certain length of time in the project area (%) (Usually around 5 years after planting)	Around 70 - 100%	To assess the extent that seedlings are surviving after planting	This is adopted as a basic indicator because it is important in properly assessing how the project is operated. This is worked out by sampling method. Targets vary depending on forestation area, number of trees, kinds of trees, and purposes for forestation.
Basic	Quantity of Complementary Planting / replanting (Number)	Number of trees planted in order to complement loss due to death in the project area	To be discussed with the executing agency referring to the result of F/S etc.	To assess if loss due to death, etc., is properly complemented	
Auxiliary	Quantity of Benefited Forest Owners (Households)	Number of households of forest owners that earn income from forest products in the forest established in the project	To be discussed with the executing agency referring to the result of F/S etc.	To assess if economic effect is properly yielded by the execution of the project	This is adopted as an auxiliary indicator because targets that are benefited by the project are not always limited to the forest owners that earn income from forestry products.
Auxiliary	Area of Nursery (ha), Production Capacity of Seedlings (Number)	Area of nursery field established or improved by the project (ha), number of seedlings that has become producible in that nursery field	To be discussed with the executing agency referring to the result of F/S etc.	To assess if nursery field is newly constructed or improved properly	This is adopted as an auxiliary indicator because it is necessary only when the contents of the project include establishment and improvement of nursery field.
Auxiliary	Production of Seedlings (Number)	Number of seedlings shipped from nursery field that is established or improved by the project	To be discussed with the executing agency referring to the result of F/S etc.	To assess if seedlings are shipped properly	This is adopted as an auxiliary indicator because it is necessary only when the contents of the project include establishment and improvement of nursery field.
Auxiliary	Activity of Community	Number of communities that take charge of creation and management of forest, number of community members, and contents of community activity	To be discussed with the executing agency referring to the result of F/S etc.	To assess if the communities that take charge of project execution are properly functioning	This may be adopted as a basic indicator when social forestry is involved.

II. Effect Indicator

Category	Name	Policy and method of establishing the indicator	Target	Purpose	Remarks
Basic	Rate of Forest Cover (Rate of Tree Crown) (%)	Rate of forest cover after a certain length of time in the project area (%) (First assessment should be conducted within 7 years after the completion of the project, and later on, assessment should be conducted regularly.)	10 - 20 % or over (Definition of forest by FAO: 20% and over in developed countries; 10% and over in developing countries)	To assess if established forests are properly having effect	This is an important indicator in judging the effect of the project including the environmental perspective. It is the density that indicates the degree of growth of forest trees in a certain area of a forest. Usually, the density is worked out by setting about 20 m ³ of sample area and dividing the shaded area with crowns by the total sample area. In projects in dry lands, cover rate (%) of vegetation including not only forest but also herbage is sometimes measured.
Basic	Amount of Products Volume (m ³), Monetary Value (\$)	Volume (m ³) and value (\$) of forest products produced in the project area by product	To be discussed with the executing agency referring to the result of F/S etc.	To assess if established forests are properly having economic effect	It takes a long time until a forest (especially timber forest) comes to have economic value, there may be cases in which assessment within 7 years after completion of the project is impossible. In such a case, efforts should be made, such as establishing EIRR by predicting the amount of future growth based on the amount of growth at that time. (However, it should be noted that credibility of the predicted values varies depending on the degree of accumulation of basic data concerning growth rate by kinds of tree.)
Auxiliary	Average Annual Income per Household Regarding Benefited Forest Owners (\$)	Average annual income per household of benefited forest owners (\$)	To be discussed with the executing agency referring to the result of F/S etc.		This may be adopted as a basic indicator when social forestry is involved.
Auxiliary	Number of Employees (Persons)	Number of workers employed in the project (persons)	To be discussed with the executing agency referring to the result of F/S etc.	To assess if local people are directly and properly employed through execution of the project	
Auxiliary	Membership in Training Class (Persons)	Participants in the training provided in the project area (persons)	To be discussed with the executing agency referring to the result of F/S etc.	To assess if forest skills are properly disseminated to local people	It is necessary only when training is carried out in projects concerning social forestry.

* In the case of forestation projects, it takes a long time until established forests grow adequately. Accordingly, it is desirable to carry out a post project assessment a certain length of time after the project completion in order to confirm the project effect.

III. Environment Indicator (Future examination is required for measuring method.)

Category	Name	Policy and method of establishing the indicator	Target	Purpose	Remarks
Auxiliary	Amount of Forest Resources	Total volume (m ³), total weight (t), and carbon content (tC) of forest in the project area	To be discussed with the executing agency referring to the result of F/S etc.	To assess the economic effect and environment conservation effect (CO ₂ fixation volume, etc.) of the project	This will probably be an inevitable indicator in the future, as it is associated with the activities of the Conference of Parties to the U.N. Framework Convention on Climate Change (COP). CO ₂ fixation volume can be worked out by multiplying the total weight of the forest by a certain modulus. The condition for adopting this indicator is that the executing local agency has the human resources and techniques required for measurement. When the measurement is difficult, this indicator should be excluded from the assessment.
Auxiliary	Quantity of Water Outflow	Water outflow of rivers and ground water in the project area	To be discussed with the executing agency referring to the result of F/S etc.	To assess flood alleviation and water conservation effects that forests have	This indicator should be adopted in assessing the project effect only when it is inevitable and when it is possible to measure. The condition for adopting this indicator is that the executing local agency has the human resources and techniques required for measurement. When the measurement is difficult, this indicator should be excluded from the assessment. For example, when trees are going to be planted in a certain catchment area, verifying the effect of forestation to a certain degree is possible by continuously measuring water outflow at a fixed point in the downstream. (However, in many cases, grasping the cause and effect relationship and degree of contribution is difficult. It is necessary to deal with this indicator carefully.)

Category	Name	Policy and method of establishing the indicator	Target	Purpose	Remarks
Auxiliary	Quantity of Erosion	Volume of erosion in the project area	To be discussed with the executing agency referring to the result of F/S etc.	To assess landslide prevention effect of forest	This indicator should be adopted in assessing the project effect only when it is inevitable and when it is possible to measure. The condition for adopting this indicator is that the executing local agency has the human resources and techniques required for measurement. When the measurement is difficult, this indicator should be excluded from the assessment. For example, when trees are going to be planted in a certain catchment area and a dam, etc., is placed in the downstream, verifying the effect of forestation to a certain degree is possible by continuously measuring the volume of sediment deposit.
Auxiliary	Situation of Wild Animals	Number of wild animals inhabiting the project area, etc.	To be discussed with the executing agency referring to the result of F/S etc.	To assess the ecological conservation effect of the forest	When wildlife conservation is one of the objectives of the project, adoption of this indicator should be compulsory.