

2.1.4. Logical framework matrix

Project elements	Measurable indicators	Means of verification	Key assumptions
<p><u>Development Objective</u> To increase contribution of the forest sector to renewable energy supply and regional economic development through increased supply of wood-based biomass energy</p> <p><u>Specific Objective</u> To improve enabling conditions for building up capacity to supply wood-based biomass energy in North Sumatra region</p> <p><u>Outputs</u> Output 1: Development of sustainable supply of energy wood initiated</p>	<p><u>3 years after project completion:</u></p> <ul style="list-style-type: none"> - At least 100 villages in 10 districts engaged in energy forest development activities - 2-3 companies realized investment in wood-based biomass energy <p><u>By end of project:</u></p> <ul style="list-style-type: none"> - Approximately 36 Ha of energy forest established and used for demonstration and training - At least 100 farmers leaders trained on skills for energy forest development and 50 leaders on community cooperative management - 2-3 companies indicated interest in making investment on wood-based energy industry <p>- Available suitable lands for energy forest development identified and mapped in year 1</p> <p>- Lands for energy forests formally designated in year 1</p> <p>- 36 Ha of energy forests trial planted using 3 species in years 1-2</p> <p>- Estimates of sustainable energy wood supply planted on degraded lands available in year 4</p> <p>- Potential supply of energy wood from non-forest sources assessed in year 3</p>	<ul style="list-style-type: none"> - Field check - Annual report of district government <ul style="list-style-type: none"> - Project completion report - Field check - Technical report <ul style="list-style-type: none"> - Consultant's reports - Joint decision of Governor and Heads of Districts - Field check, contractor's report 	<p>The enabling conditions improved</p> <ul style="list-style-type: none"> - Supportive government authorities - Private sector interested in wood-based energy business <ul style="list-style-type: none"> - Supportive government authorities

<p>Output 2:</p> <p>Skillful manpower for development of wood-based biomass energy available</p>	<ul style="list-style-type: none"> - Dialogue with local communities of 50 villages in 25 districts conducted in year 1 - 100 farmer leaders trained on energy forest development techniques in years 2-4 - 50 farmer leaders trained on community cooperative management - 2 comparative studies on wood-based energy development conducted in years 2-3 - 3 technical manuals on energy forest development using suitable species formulated in year 4 	<ul style="list-style-type: none"> - Contractor's report - Training reports - Training reports - Study reports - Manual documents 	<ul style="list-style-type: none"> - Cooperative local community - Farmers interested in energy forest development - Cooperative wood-based energy industries
<p>Output 3:</p> <p>Investment in wood-based energy industry development promoted</p>	<ul style="list-style-type: none"> - Website of wood-based energy operational since year 1 - One national workshop on wood-based energy development organized in Medan in year 1 - Data on caloric properties of 3 planted tree species available in year 4 - Feasibility studies on investment in wood-based energy industry completed in year 4 - Existing policy on wood-based energy development reviewed and enhanced in year 2 - A stakeholder consultation forum operational since year 2 	<ul style="list-style-type: none"> - Field check, consultant's report - Workshop proceedings - Research report - Study reports - Consultant's report - Consultant's report 	<ul style="list-style-type: none"> - Competent professionals available in time - Supportive government authorities - Cooperative local stakeholders