

Evaluation and Mapping of The Use of Technology in The Pulp and Paper Agro Industry

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Abstract— The execution and the implementation of the revitalization program and the growth of pulp and paper agro industry require evaluation activities. For that, we need a study that will provide evaluation and mapping of the implementation of policies and programs so that the analysis, assessment and weighting can be more transparent and measurable. The main objective of this activity is, there are an evaluation and mapping policy as well as output-based programs to the use of technology in the pulp and paper agro industry in 2010-2012 and the functioning of the evaluation program results and policies as a policy formulation and program for 2015-2019. Generally, the data analysis methods used are Descriptive Analysis Method, Assessment Technology, Counting Technology Index, Technology Mapping: Importance Performance Analysis, Benchmarking, SWOT Analysis, RIA (Regulatory Impact Analysis). The technology used in the pulp and paper agro industries in Indonesia has generally been good in the downstream sector. The results of the overall analysis show that the type of technology used is still dominant with ‘semi-mechanical technology’. The status of the use of technology in pulp industry is good, while the status of the use of technology in paper industry is very good.

Keywords— evaluation, use, mapping, pulp, and paper.

I. INTRODUCTION

A. Background

The execution and the implementation of the revitalization program and the growth of agro industry require an evaluation activity. The evaluation of policy and the program of technology used in agro industry are important activities to determine the level of success that has been achieved, to realize that the program targets have not been achieved by identifying the existing problems, and to prepare formulation materials, recommendation of policies and better programs in the future. For that, we need a study that will provide evaluation and mapping of the implementation of policies and programs so that the analysis, assessment and weighting can be more transparent and measurable.



Fig.1. Distribution of Paper Industry in Sumatra and Kalimantan Islands

B. Purposes of Research

The main purpose of this activity is, there are evaluation and policy mapping as well as output-based programs to the use of technology in the pulp and paper agro industry in 2010-2012 and the functioning of the results of the program evaluation and policy as a policy formulation and program for 2015 – 2019. More to be shown in Fig. 1 and 2.



Fig.2. Distribution of Paper Industry in Java Island

II. RESEARCH METHODOLOGY

A. Framework of Activities

B. Concept Approach

- 1. Basic Technology Assessment Principles
- 2. Technology Adoption

C. Methodology

Generally, the data analysis methods used are descriptive analysis, Assessment Technology, Counting technology Index, Technology Mapping: Importance Performance Analysis, Benchmarking, SWOT Analysis, RIA (Regulatory Impact Analysis).

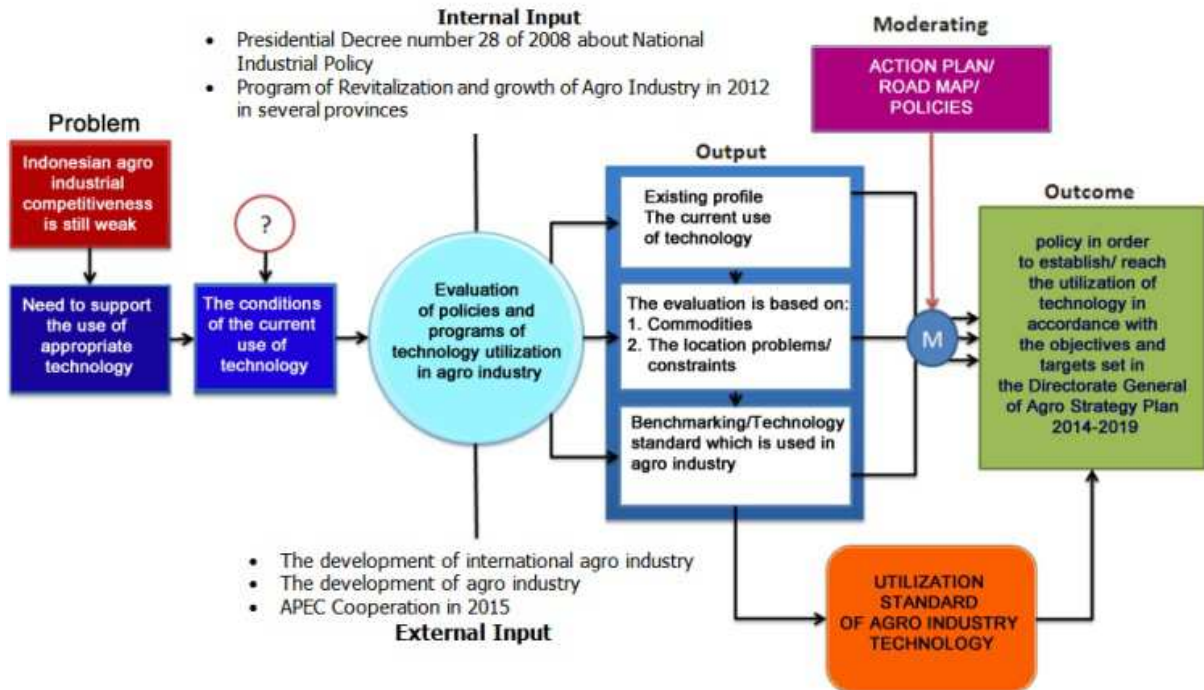


Fig 3. Framework of Evaluation Policy Activity and Technology Utilization Program in Agro Industry

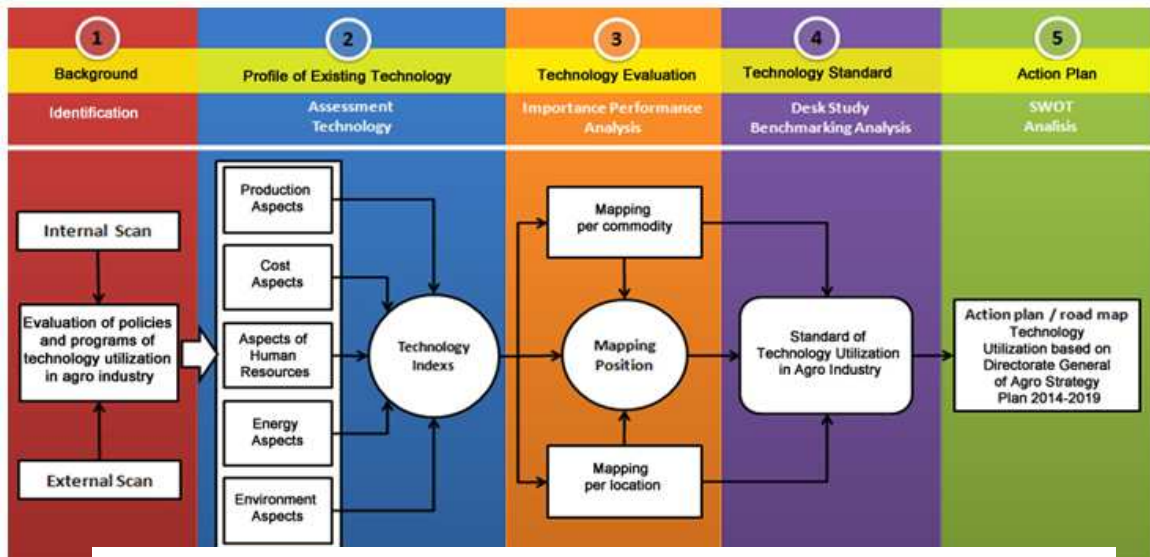


Fig 4. Analysis Framework of Agro Industrial Technology Evaluation Assessment

III. RESULTS AND DISCUSSIONS

A. Map of Industrial Technology

Indonesia is one of the major producers of pulp and paper world. In 2011, Indonesia is the largest paper producer 12th world with a share of 2.2 percent of total world production which reached 350 million tons. As for the pulp production, Indonesia was ranked 9th world with a share of 2.5 percent of the total world production of 200 million tonnes

TABLE I
STREAM DEVELOPMENT OF PULP AND PAPER INDUSTRY IN INDONESIA

Stream	Industry Groups	Commercial Products
Up Stream	Pulp Mill	Kraft Pulp Soda Pulp
Mid Stream	Paperboard Mills	Medium Liner Paper Kraft Liner Paper
Down Stream	Paper Mills	Corrugated board box paper Tissue Paper HVS Paper Book Paper Cigarette Paper Valuable Paper Art Paper News Print Specialty Paper

Technology Evaluation of Pulp Up Stream Industry

TABLE II
INDEX OF TECHNOLOGY UTILIZATION IN PULP UP STREAM INDUSTRY

Aspect of Assessment	Assessment Index	Information
Production Technology	6.3158	
Energy	2.1053	
Environment	1.2895	
Human Resources	1.9737	
Costs of Production	2.9474	
Research	0.8421	
Final Index	15.4737	
Utilization Status	Medium Level	More than 15

TABLE III
INDEX OF TECHNOLOGY UTILIZATION IN MEDIUM CARTON INDUSTRY

Aspect of Assessment	Assessment Index	Information
Production Technology	8.4211	
Energy	2.1053	
Environment	2.3947	
Human Resources	1.9737	
Costs of Production	4.4211	
Research	1.2632	
Final Index	20.5789	
Utilization Status	High Level	More than 20

Technology Evaluation of Paper Down Stream Industry

TABLE IV
INDEX OF TECHNOLOGY UTILIZATION IN PAPER DOWN STREAM INDUSTRY

Aspect of Assessment	Assessment Index	Information
Production Technology	8.9474	
Energy	2.1053	
Environment	2.5789	
Human Resources	1.9737	
Costs of Production	4.4211	
Research	1.2632	
Final Index	21.2895	
Utilization Status	High Level	More than 20

The Development Strategy of Agro Industrial Technology of Pulp and Paper

TABLE V
DETAILS OF OPERATIONAL STRATEGY OF AGRO INDUSTRIAL TECHNOLOGY DEVELOPMENT IN THE PULP AND PAPER

Operational Strategy	Action Plan
Strengthening Industry and Industry Performance	<ol style="list-style-type: none"> 1. Increasing the mastery of technology in the pulp and paper industry, especially in the field of engineering 2. Increasing the mastery of the engineering machinery in the pulp and paper industry, especially in the term of purification
Diversification of Derivative Products / New Commercial Products	<ol style="list-style-type: none"> 1. Technology development of manufacturing pulp products, especially hardwood kraft pulp 2. Technology Development of advanced paper as plastic replacement 3. Technology Development of pulp and paper waste utilization production, especially waste water treatment plant (IPAL) <i>oreffluent treatment plant</i> (ETP) with <i>integrated clarifier</i> and <i>aeration basin</i> as the development of the latest technology for waste treatment
Improvement of Human Resources	<ol style="list-style-type: none"> 1. Improving the engineering mastery of treatment technology 2. Technology training
Government Policies	<ol style="list-style-type: none"> 1. The implementation of Origine et Legalite des Bois (OLB), PEFC COC, Hongkong Green Label Certificate, Timber Legality Verification System (SVLK), OHSAS 18001:2007 (Safety System), ISO 14001:2004 (Environmental Management System), and ISO 9001:2008 (Quality Management System). ISO 14025 (green label) 2. Providing education and training 3. Incentives for the procurement of technology / machinery and equipment 4. Incentives for taxation in the form of <i>tax allowance</i> and <i>tax holiday</i> for pulp and paper industry
Strengthening Research and Development Roles	<ol style="list-style-type: none"> 1. Increasing the research funding especially more modern and efficient pulp and paper processing 2. Encouraging industrial research institute
Financing	Facilitating the procurement of machinery and equipment loans

IV. CONCLUSION

Technologies used in Agro Industries of pulp and paper industry in Indonesia has generally been good in the downstream sector.

Overall analysis results indicate that the type of technology used is still dominant with 'semi-mechanical

technology. The status of pulp industrial technology use has been good, while the status of the utilization of paper industrial technology is very good.

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