

TABLE OF CONTENTS

1. Introduction-----	1
(1) Objective	(1)
a. Target Areas - Tropical Coastal Cities and Inland Cities	(1)
b. Goals to be Achieved	(2)
(2) Method	(2)
a. System Boundary of Housing and Urban Development	(2)
b. Time Scale and Change of Stock	(3)
c. Data Source and Analysis	(4)
d. Designing and Evaluation	(5)
2. Historical Overview of Indonesian Housing and Urban Development-----	6
(1) From Timber to Brick	(6)
(2) Toward Permanent Houses	(6)
(3) Housing Policy and Statistics	(7)
3. Survey of Existing Planned Housing Complexes-----	10
(1) Basic Attributes of Respondents	(11)
(2) Transportation	(12)
(3) Domestic Consumption of Fuels and Energy	(13)
a. Electricity	(14)
b. Fuels	(15)
(4) Consumption of Building Material	(15)
a. Method	(15)
b. Result of Survey	(16)
c. Stock Effect	(18)
d. Survey of Distribution Routes of Building Materials	(19)
(5) Green Coverage Ratio	(22)
a. Land use Classification	(22)
b. Analysis of Teacher Data	(22)
c. Judgment of Each Dot in Target Area	(23)
d. Comparison with the Result from Visual Identification	(23)
(6) Land Shape	(24)
a. Control Points and Tie Points	(24)
b. Image Matching	(25)
4. Planning Alternative Future-----	27
(1) "Gunning" District in Cirebon City	(27)
a. Existing Condition of the Area	(27)

b. Alternative Planning for Future	(27)
c. Estimation of CO ₂ Emission	(34)
(2) "Sarijadi" District in Bandung City	(34)
a. Existing Condition of the Area	(34)
b. Alternative Planning for Future	(36)
c. Estimation of CO ₂ Emission	(44)
5. Evaluation and Discussions through Workshops	-----45
(1) Presentation and Discussions	(45)
a. On the Whole Activities	(46)
b. On the Design	(46)
c. Open Green Space	(47)
d. Building Materials	(48)
(2) Evaluation by Non-engineer Participants	(50)
a. "Gunung" District in Cirebon city	(50)
b. "Sarijadi" District in Bandung city	(52)
6. Conclusion	-----53
(1) Summary	(53)
(2) Outputs	(55)
Literature	-----56
-	
List of Tables	
Table 1: Classification of Houses in Population Statistics (1961)	7
Table 2: Building Material for Walls (1992)	8
Table 3: Macro Change of National Housing Stock after 1992	8
Table 4: List of Complexes Surveyed	10
Table 5: Summary of Emission from Households in Each City Surveyed	11
Table 6: Occupation of Respondents	11
Table 7: Average Monthly Income of Households	12
Table 8: Number of Family Members	12
Table 9: Number of Automobile Owned (4 Wheels)	12
Table 10: Number of Motor Bicycle owned (2 Wheels)	12
Table 11: Choice of Transportation Within Complex	12
Table 12: Choice of Transportation for Each Purpose	13
Table 13: Consumption of Fuel for Transportation	13
Table 14: National Consumption of Electricity, Each Sector	13
Table 15: National Demand of Electricity and CO ₂ Emission	14

Table 16: Income and Consumption of Electricity	14
Table 17: Types of Fuels and Related Emission (Bandung and Cirebon Cities)	14
Table 18: Share of Building Materials for Floor	17
Table 19: Share of Building Materials for Wall	18
Table 20: Share of Building Materials for Roof	18
Table 21: Statistic of Each Category of Greenery	22
Table 22: Errors of Classification as for the Teacher Data	24
Table 23: Number of Control Points and Tie Points	25
Table 24: Optimal Parameters for Matching	25
Table 25: Existing Condition of the District including the Target Area of Model Planning	27
Table 26: Concept of Planning Each Alternative for Gunung District in Cirebon City	28
Table 27: Estimation of CO ₂ Emissions for Each Alternative Plan, Gunung District in Cirebon City	34
Table 28: Basic Concepts of Each Alternative Planning for Sarijadi District in Bandung City	36
Table 29: Estimation of CO ₂ Emissions for Each Alternative Plan, Sarijadi District in Bandung City	44
Table 30: Address	51
Table 31: Sex	51
Table 32: Age	51
Table 33: Education	51
Table 34: Presentation	51
Table 35: Explanation of Concept	51
Table 36: Explanation of Design	51
Table 37: Transportation	51
Table 38: Domestic Energy Consumption	51
Table 39: Building Material	51
Table 40: Greenery	51
Table 41: Daily Life	51
Table 42: Feasibility	52
Table 43: Free Comments	52
Table 44: Understanding of Global Warming	52
Table 45: Address	52
Table 46: Sex	52

Table 47: Age	52
Table 48: Education	52
Table 49: Presentation	52
Table 50: Explanation of Concept	52
Table 51: Explanation of Design	52
Table 52: Transportation	52
Table 53: Domestic Energy Consumption	53
Table 54: Building Material	53
Table 55: Greenery	53
Table 56: Daily Life	53
Table 57: Feasibility	53
Table 58: Free Comments	53
Table 59: Understanding of Global Warming	53

List of Figures

Fig.1: An Example of Negative Stock Effect, with Zero Emission	3
Fig.2: An Example of Positive Stock, Effect, with Zero Emission	4
Fig.3: Flow Chart of the Research	5
Fig.4: Surveyed 7 Cities	10
Fig.5: Original Average Floor Area and Current Average Floor Area	18
Fig.6: Distribution Route of Major Building Materials in Bandung City	19
Fig.7: Distribution Route of Major Building Materials in Cirebon City	20
Fig.8: Building Material Shops nearby Surveyed Complex in Cirebon City	21
Fig.9: Identification of 6 Categories of Greenery in the Target Area (Bandung-Sarijadi)	23
Fig.10: The Obtained DEM Data for Bandung	25
Fig.11: Comparison of DEM from PRISM & Geographical Map 1:25,000	25
Fig.12: DEM around the Target Area	25
Fig.13: Photo of the Target Area	26
Fig.14: DEM obtained for Cirebon	26
Fig.15: Site Plan of Existing Area	27
Fig.16: Site Plan	28
Fig.17, 18: Dwelling Unit of Maisonette	28
Fig.19: Apartments in the Center	29
Fig.20: Landscape from the Ground	29
Fig.21: Cross Section showing the Concept	29

Fig.22: Birds Eye View	30
Fig.23: Landscape from Street, showing the Greenery on the Top	30
Fig.24: Description of the Concept	31
Fig.25: Birds Eye View	31
Fig.26: 3D Images of the Environment	32
Fig.27: Landscape	32
Fig.28: Rearrangement of the Site Plan	33
Fig.29: Birds Eye View of the Plan	33
Fig.30: Site Map of the Area from Design Drawing	35
Fig.31: Site Plan	36
Fig.32: Birds Eye View	37
Fig.33: Dwelling Unit that was Originally Planned for Existing Complex	37
Fig.34: Maisonette Type Dwelling Unit Proposed	38
Fig.35: Three Dimensional Regulation of Land Use	39
Fig.36: Shape of Houses related to the Regulation (Envelope)	39
Fig.37: Townscape that will be Created by the Regulation	40
Fig.38: Example of Dwelling Unit	40
Fig.39: Timber Structure	41
Fig.40: Site Plan	41
Fig.41: Birds Eye View	42
Fig.42: Dwelling Unit	42
Fig.43: Site Plan	43
Fig.44: Birds Eye View	43
Fig.45: Image of Greenery on the Buildings	43