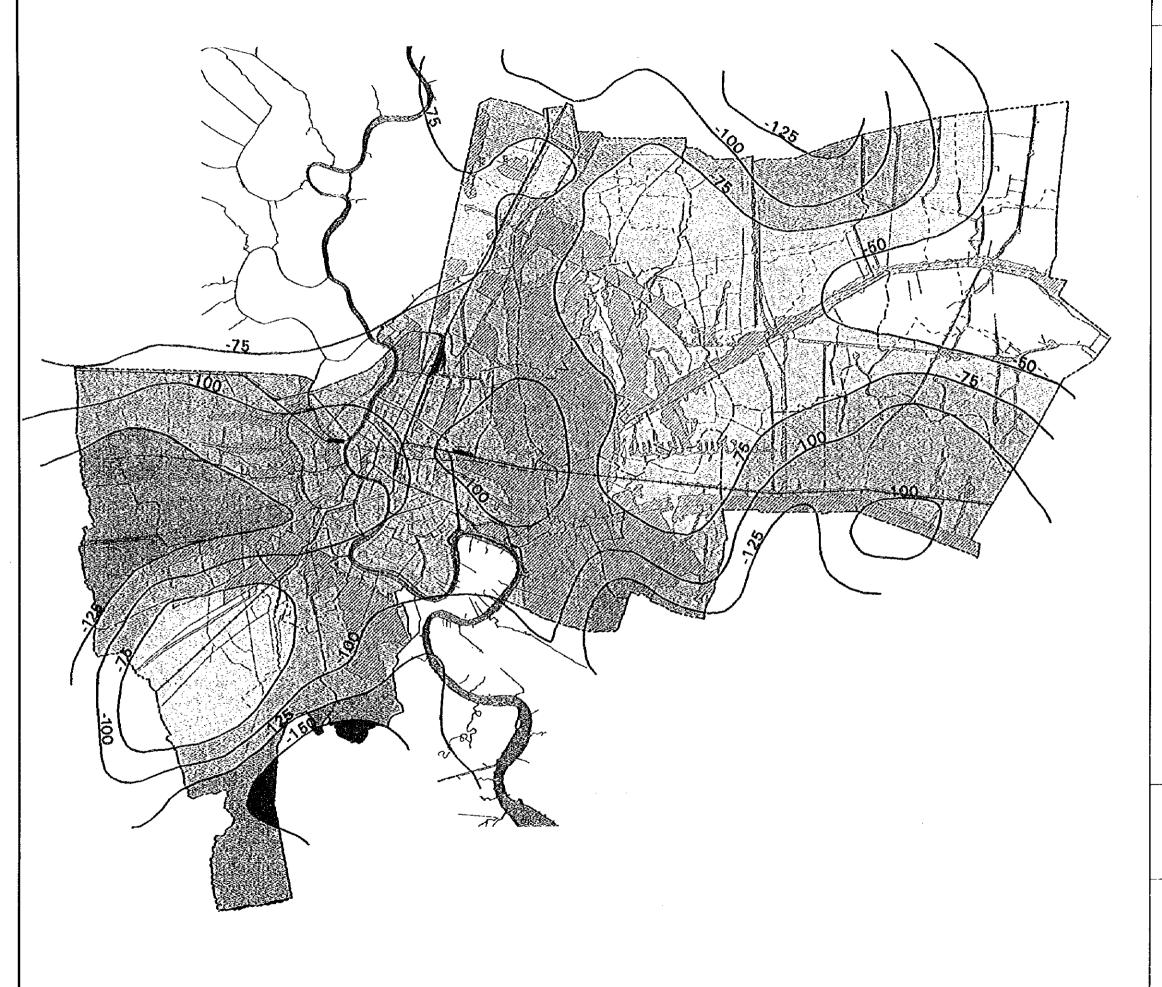
BEIPGIS

URBAN ENVIRONMENTAL PROBLEM ANALYSIS

PACIFIC CONSULTANTS INTERNATIONAL SUURI-KEIKAKU CO., LTD.



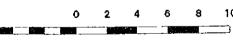
Problem Areas on Natural Constraints

Legend

- Less than -50 cm
- -50 to -75 cm
- -75 to -100 cm
- -100 to -125 cm
- -125 to -150 cm
- More than -150 cm
- Flooded Area in 1983
- Chaopraya River
- Railways

 BMA Boundary
- District Boundary
 Subdistrict Boundary





KILOMETERS

THE STUDY

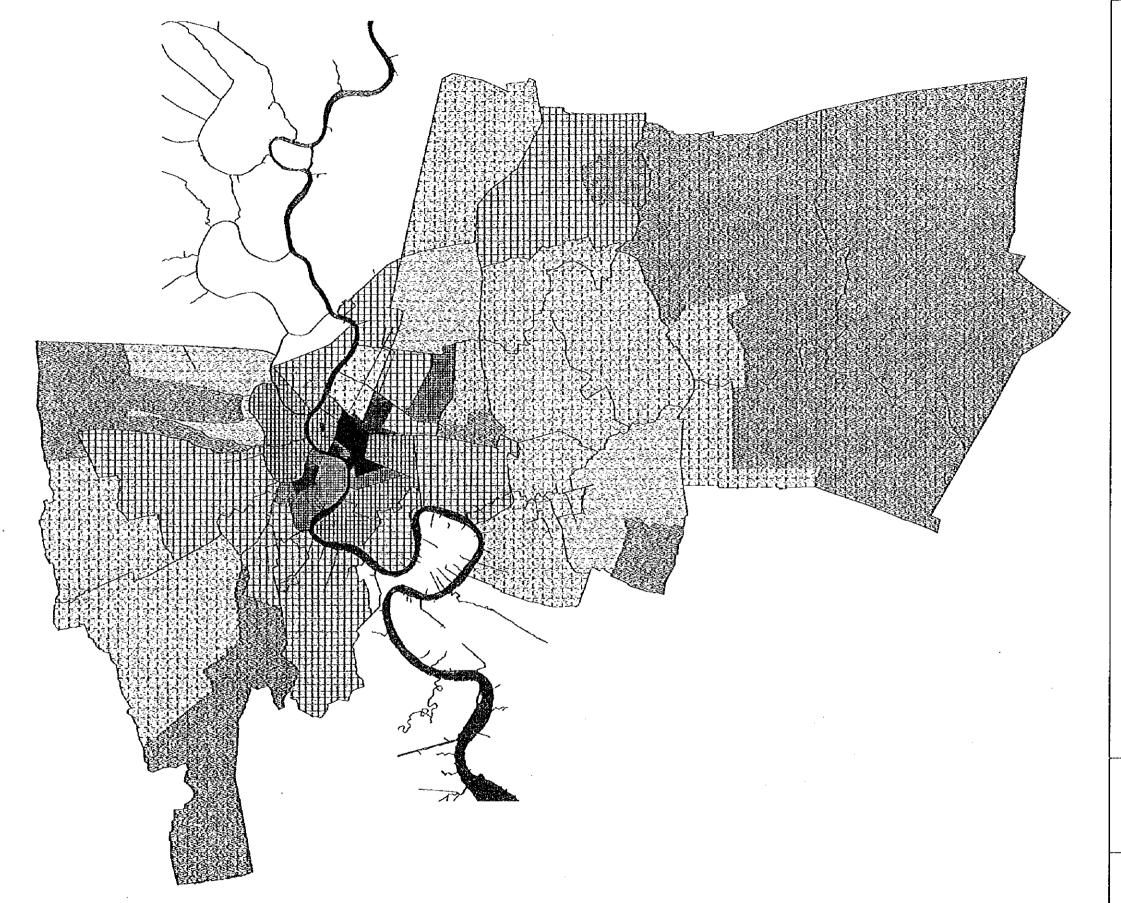
URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM

IN BANGKOK METROPOLITAN AREA (BEIP)



GANGKOK METROPOLITAH ADMINISTRATION(BMA) THE GOVERNMENT OF THE KINGDOM OF THAILAND





Densely Inhabited Area

Legend

- 0 to 20 persons/ha
- 20 to 60 persons/ha
- 60 to 100 persons/ha
- 100 to 200 persons/ha 200 to 300 persons/ha
- 300 to 400 persons/ha
- **400** to 500 persons/ha
- 500 to 700 persons/ha
- More than 700 persons/ha
- Less than 20 house/ha
- 20 to 30 house/ha
- 30 to 40 house/ha
- ## 40 to 50 house/ha
- More than 50 house/ha
- Chaopraya River





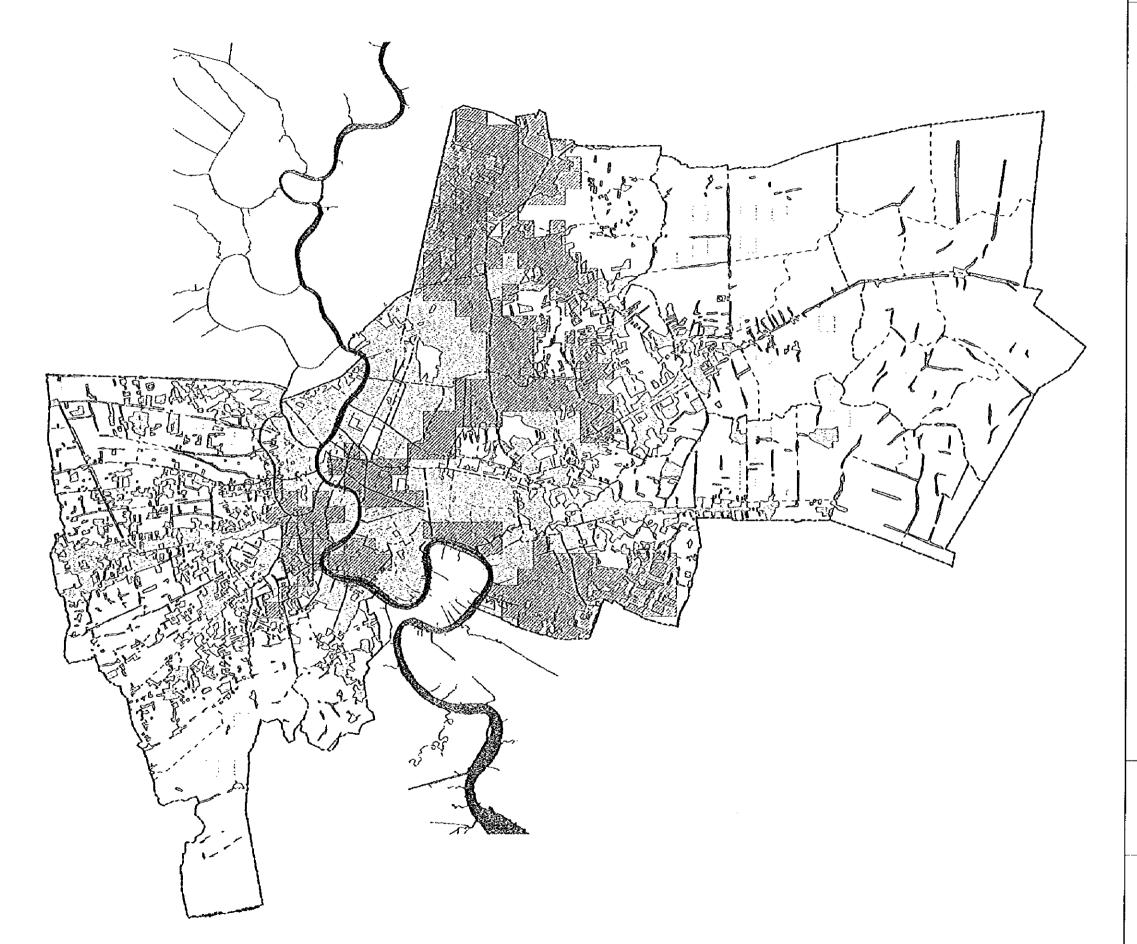
KILOMETERS

THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND

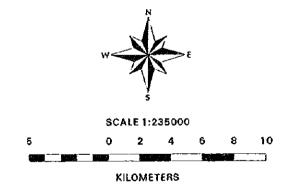




Problem Areas on Living Environment

Legend

- Buildup Area
- Densely Inhabited Area
- Slum Problem Area
- ☐ Urban Sprawl Area
- Insufficient Park Accessibility Area
- Chaopraya River
- M BMA Boundary
- ☑ District Boundary☑ Subdistrict Boundary

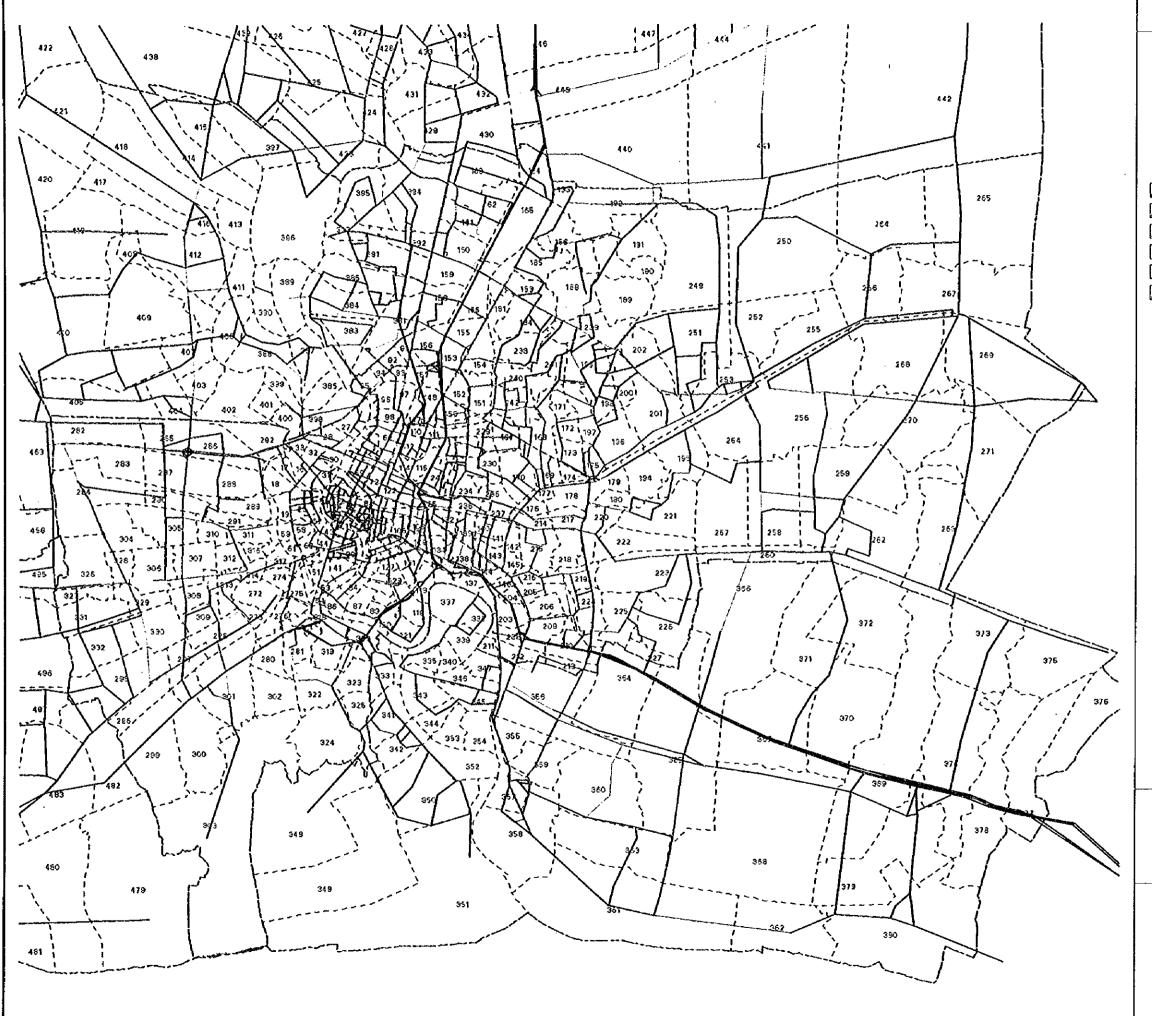


THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





Level of Road Traffic Congestion (1995)

Legend

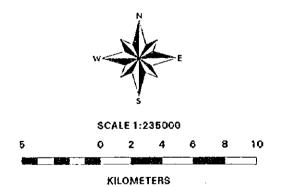
Provincial Boundary

■ Saturated

M Heavily Congested

Congested

M Acceptable

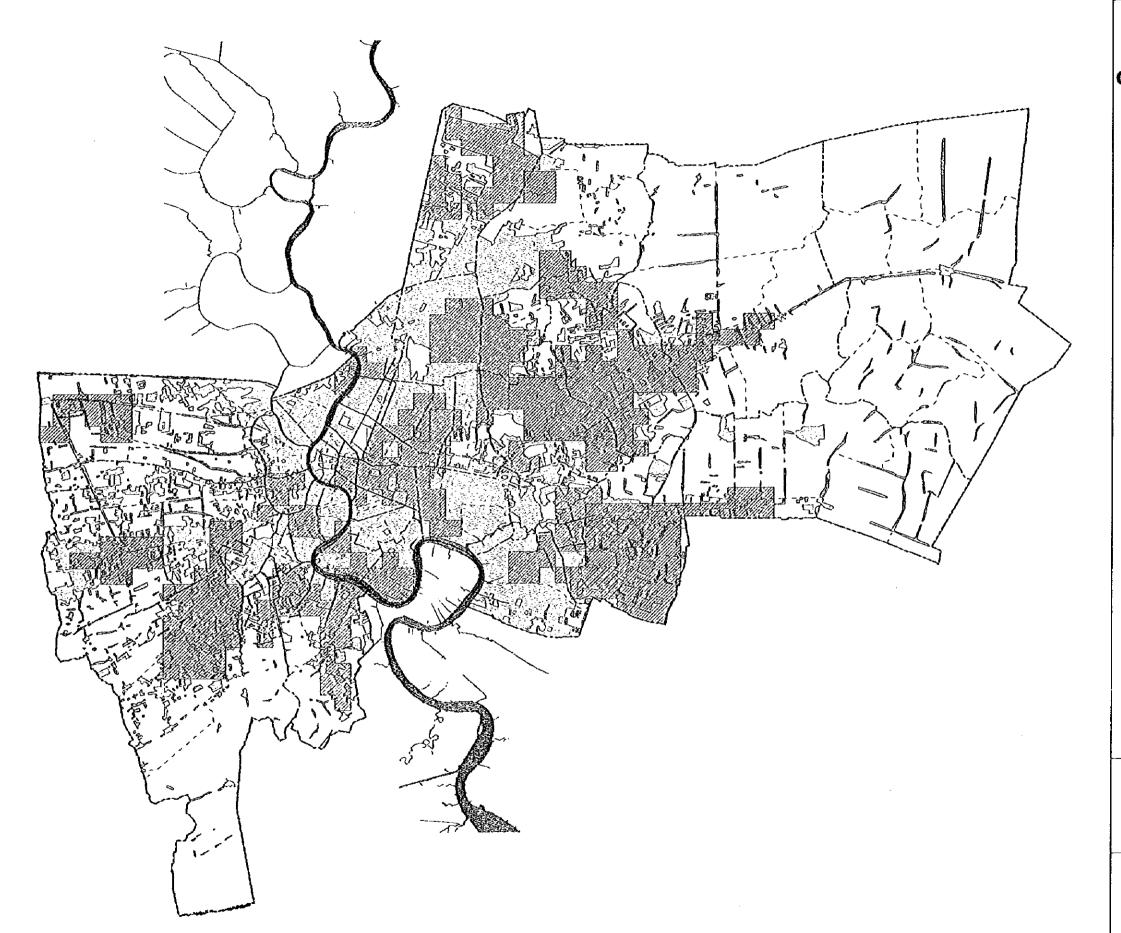


THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGOOM OF THAILAND





Problem Areas on Transport Environment

Legend

- Buildup Area
- Low Road Density Area
- Traffic demand-Road Supply Gap Area
- Time Loss Area by Traffic Congestion

- Chaopraya River

 BMA Boundary

 District Boundary
- Subdistrict Boundary



KILOMETERS

THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM IN BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA) THE GOVERNMENT OF THE KINGDOM OF THAILAND



Legend(erithmetric annual mean) Legend(arithmetric annual mean) Legend(anthmetric annual mean) Much Lower than the Standard (< = 20 micro g/m3) Lower than the Standard (< = 40 micro g/m3) Possibly Lower than the Standard (< = 52 micro g/m3) Results Higher than the Standard (< = 98 micro g/m3) Higher than the Standard (< = 98 micro g/m3) Extremely Higher than the Standard (> 177 micro g/m3) Extremely Higher than the Standard (> 177 micro g/m3) BMA Boundary District Boundary Subdistrict Boundary Much Lower than the Standard (< = 0.72 ppm) Lower than the Standard (< = 1.45 ppm) Possibly Lower than the Standard (< = 2.13 ppm) Possibly Higher than the Standard (< = 4.75 ppm) Higher than the Standard (< = 4.75 ppm) Higher than the Standard (< = 9.50 ppm) Extremely Higher than the Standard (> 9.50 ppm) Chaopraya River BMA Boundary District Boundary Subdistrict Boundary

Legend(arithmetric annual mean)

iegend(enthmetric ennual mean)

Much Lower then the Standard (< ≈ 9 ppb)

Lower then the Standard (< ≈ 19 ppb)

Possibly Lower than the Standard (< = 24 ppb)

Possibly Higher than the Standard (< = 36 ppb)

Higher than the Standard (< = 72 ppb)

Extremely Higher than the Standard (> 72 ppb)

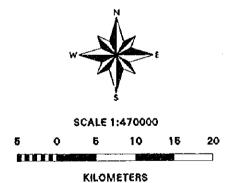
Chaoprays River

MA Boundary

District Boundary

Subdistrict Boundary

A Simulation on Ambient Air Quality (1995)



THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



Legend(erithmetric annual mean)

gend(erithmetric annual mean)

Much Lower than the Standard (< = 9 ppb)

Lower than the Standard (< = 17 ppb)

Possibly Lower than the Standard (< = 21 ppb)

Possibly Higher than the Standard (< = 30 ppb)

Higher than the Standard (< = 60 ppb)

Extremely Higher than the Standard (> 60 ppb)

Chaopraya River

BMA Boundary

District Boundary

Subdistrict Boundary

BANGKOK METROPOLITAN ADMINISTRATION(SMA) THE GOVERNMENT OF THE KINGDOM OF THAILAND

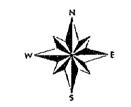


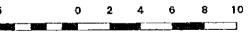


Problem Areas on Sanitary Environment

Legend

- Buildup Area
 Air Polluted Area(PM-10)
- Millian Water Polluted Area
- Solid Waste Collection Problem Area
- Chaopraya River
- ☑ BMA Boundary☑ District Boundary
- Subdistrict Boundary





KILOMETERS

THE STUDY

URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM

BANGKOK METROPOLITAN AREA (BEIP)



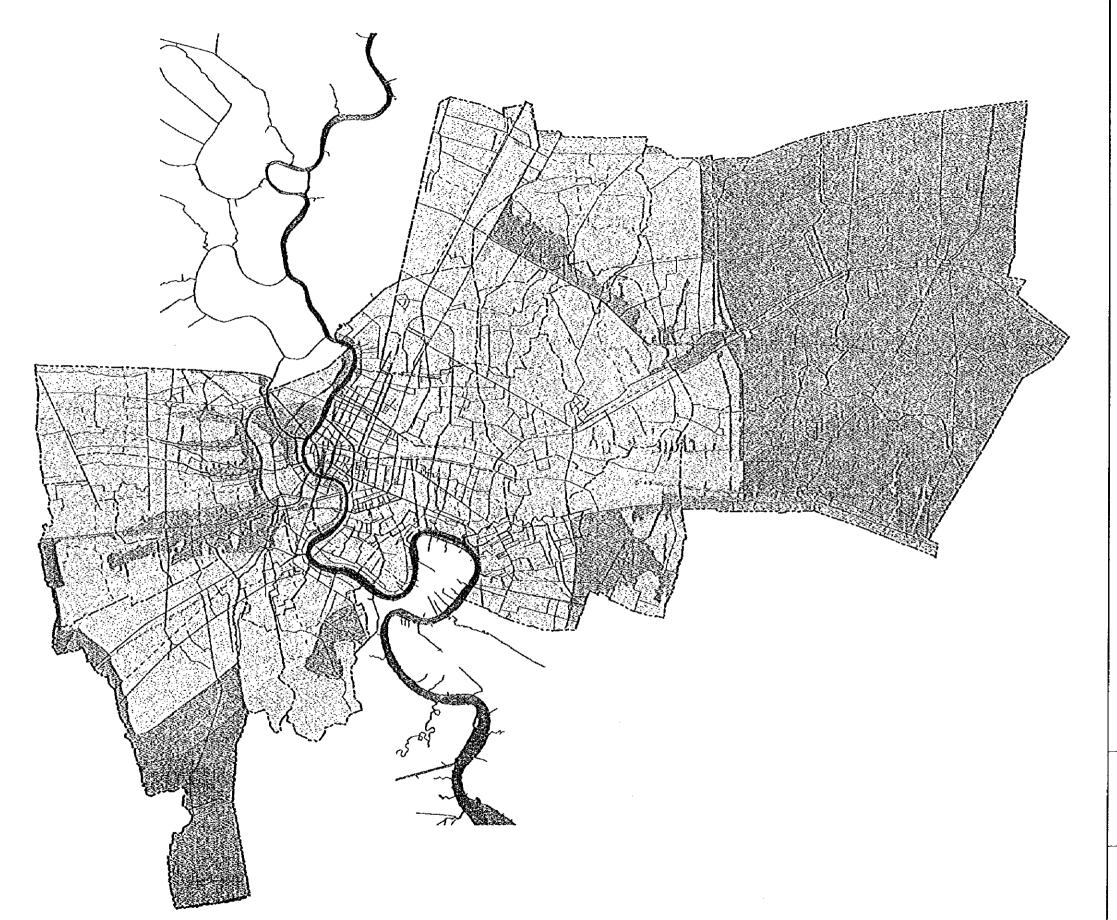
BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND



BEIP-GIS

SECONDARY DATA ANALYSIS (LAND SUITABILITY ANALYSIS)

PACIFIC CONSULTANTS INTERNATIONAL SUURI-KEIKAKU CO., LTD.



Assessment on Natural Conditions

Legend

☐ -11 ~ -10 (High Constraints)☐ -9 ~ -8

□ -7 ~ -6 (Medium Constraints)

□ -5 ~ -3

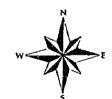
☐ -2 ~ 0 (Low Constraints)

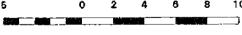
Main Road

M BMA Boundary

District Boundary
Subdistrict Boundary

Chaopraya River





KILOMETERS

THE STUDY ON URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





Assessment on **Urban Services**

Legend

1 ~ 2 (Low)

3 ~ 4

7~8

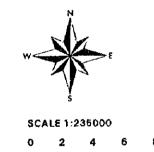
9 ~ 10 (High)

Main Road

M BMA Boundary

M District Boundary Subdistrict Boundary

Chaopraya River



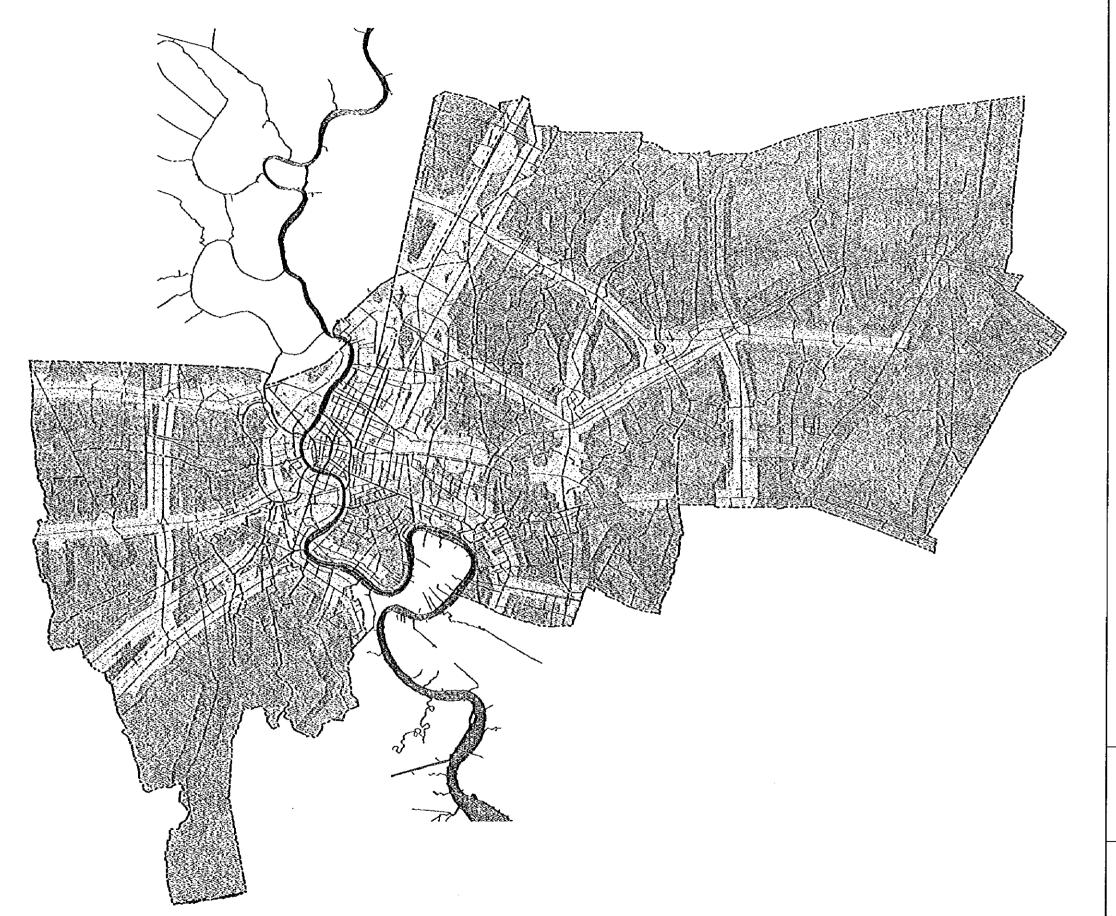
KILOMETERS

THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





Assessment on Transport Services

Legend

1 ~ 3 (Low)

□ 4 ~ 6

3 7 ~ 9 (Medium)

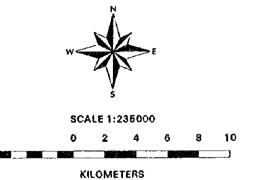
10 ~ 12 13 ~ 15 (High)

Main Road

M BMA Boundary

☑ District Boundary☑ Subdistrict Boundary

Chaopraya River



THE STUDY ON URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM IN BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





Assessment on Urban Sanitary Services

Legend

0 (Low)
1 (Medium)

2 (High)

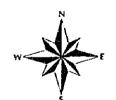
Main Road

M BMA Boundary

District Boundary

Subdistrict Boundary

Chaopraya River





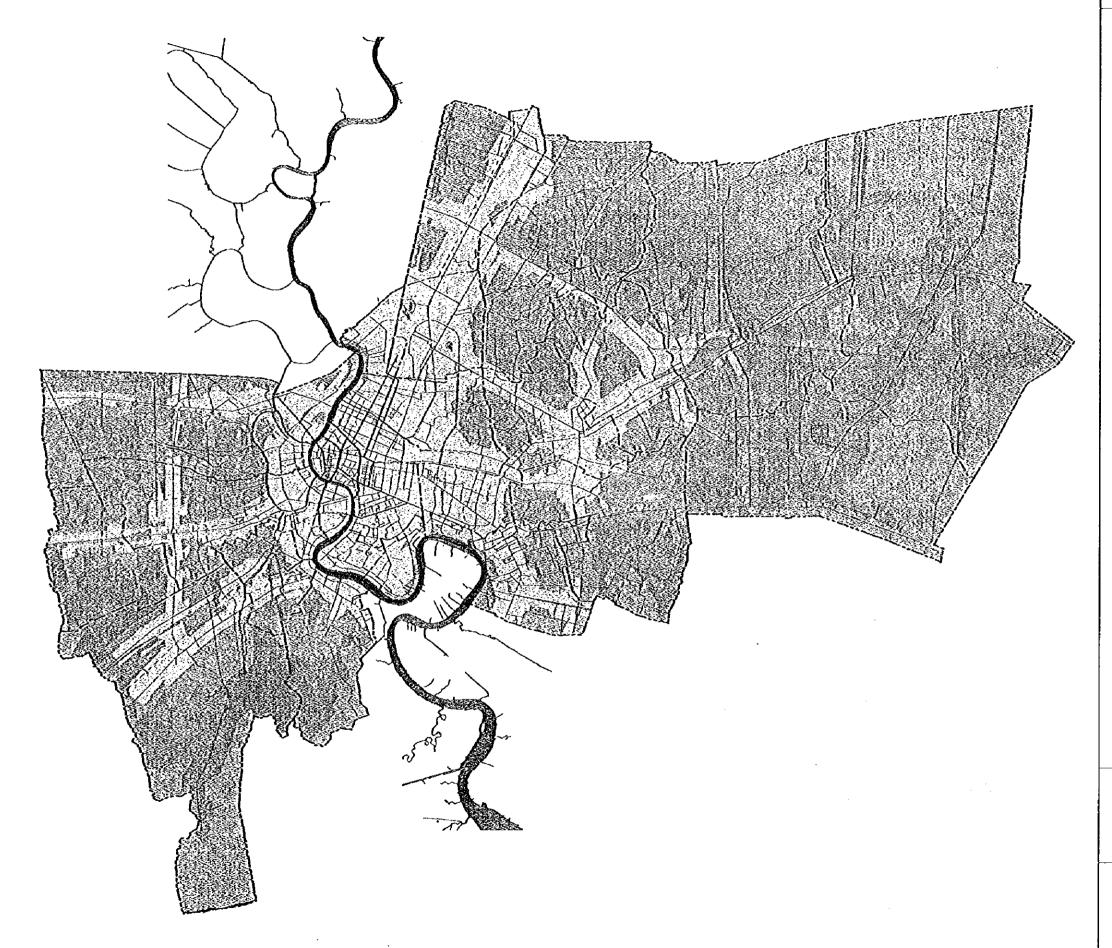
KILOMETERS

THE STUDY ON URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(8MA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





An overall Evaluation on Urbanization Suitability (1995)

Legend

∅ ~ 0 (Low)∅ 1 ~ 7

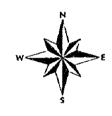
8 ~ 13 (Medium)

14 ~ 20

☐ 21 ~ (High) ☐ Roads

☑ BMA Boundary☑ District Boundary

Subdistrict Boundary Chaopraya River





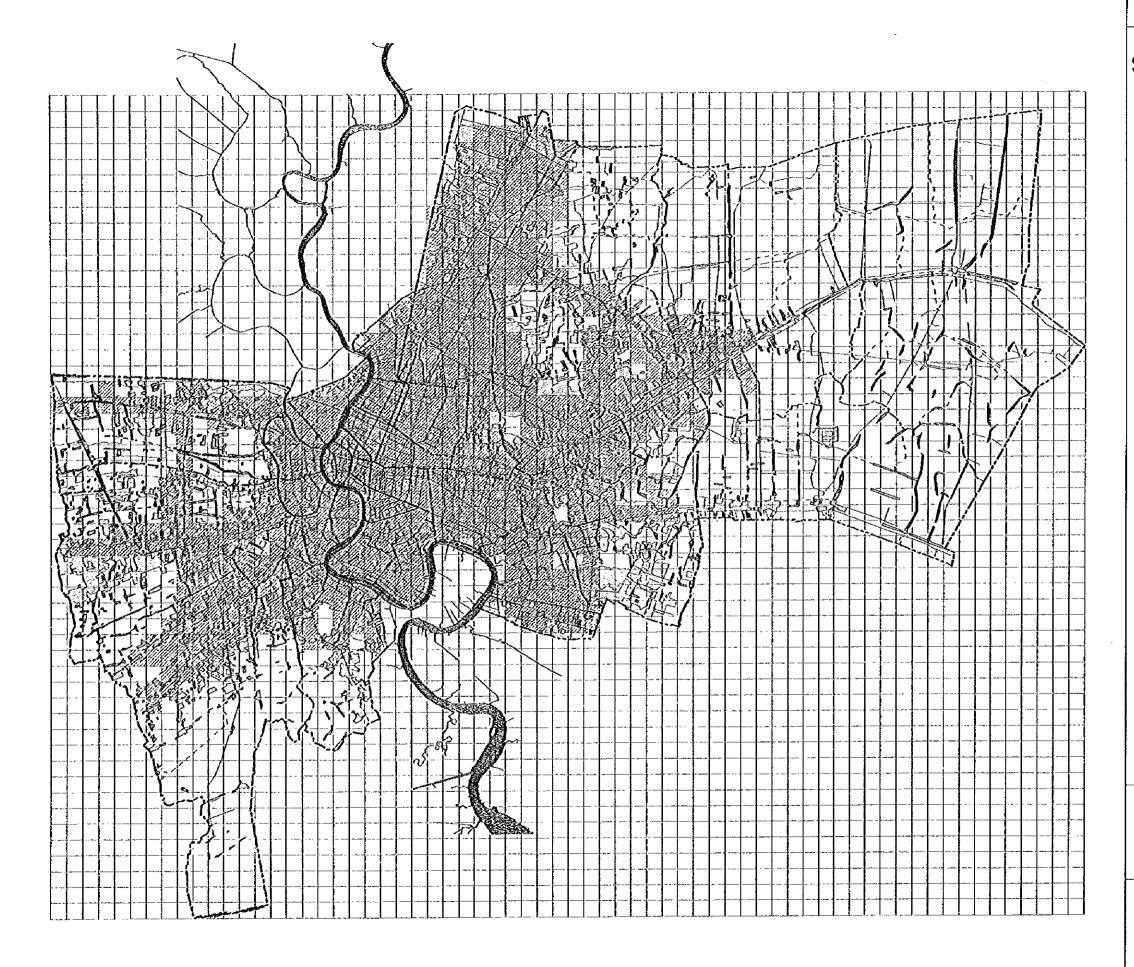
KILOMETERS

THE STUDY ON
URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA) THE GOVERNMENT OF THE KINSOOM OF THAILAND





Simulated Urbanized Area (1995)

Legend

Chaopraya River

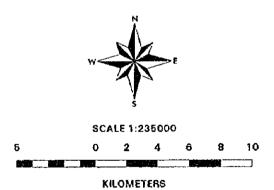
Buildup Area

Simulated Urbanized Area

M BMA Boundary

District Boundary

Subdistrict Boundary

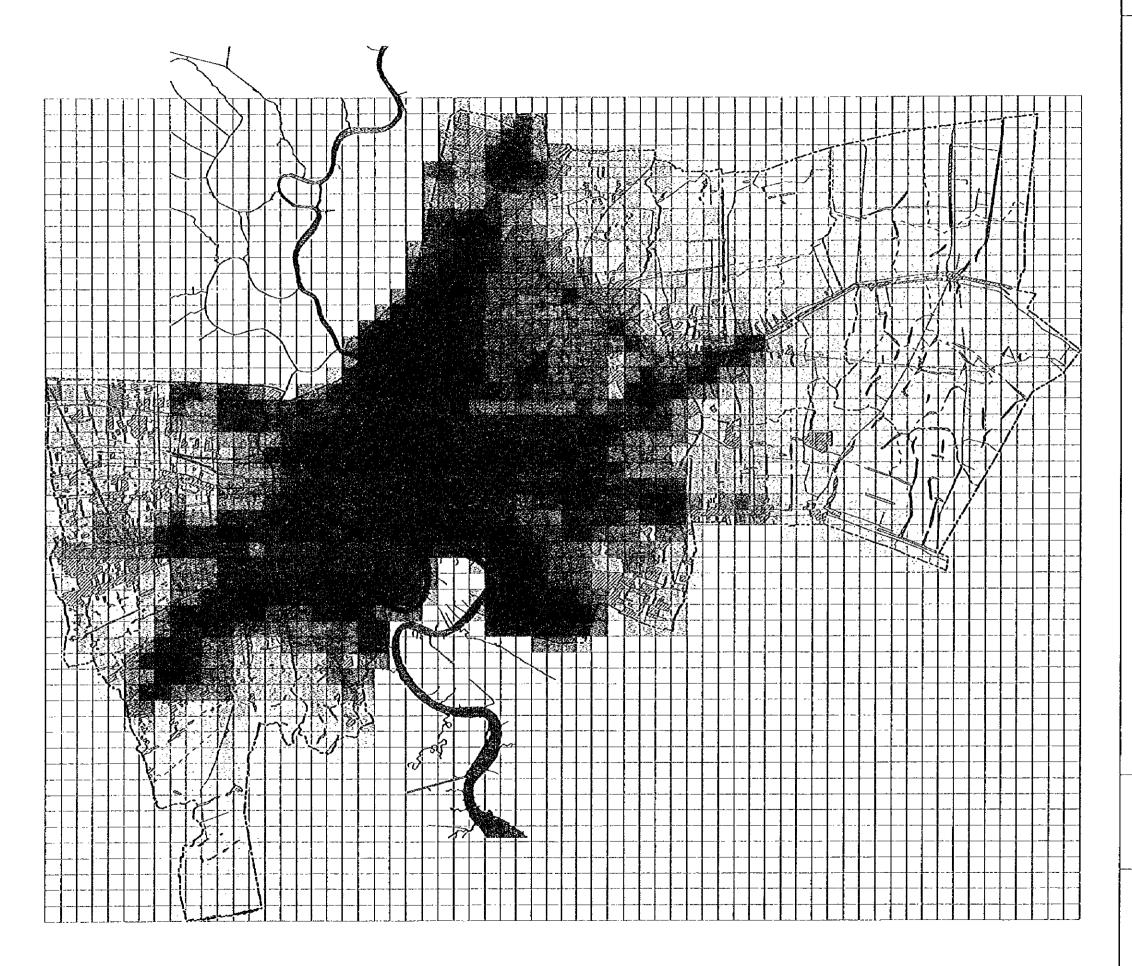


THE STUDY ON URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITATI ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGDOM OF THAILAND





Future Urbanization Potential(2011)

Legend

1: Highest Potential Area
2

3

□ 6

7

8: Lowest Potential Area

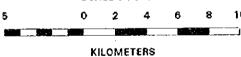
Build-up Area

Chaopraya River

☑ BMA Boundary☑ District Boundary

Subdistrict Boundary





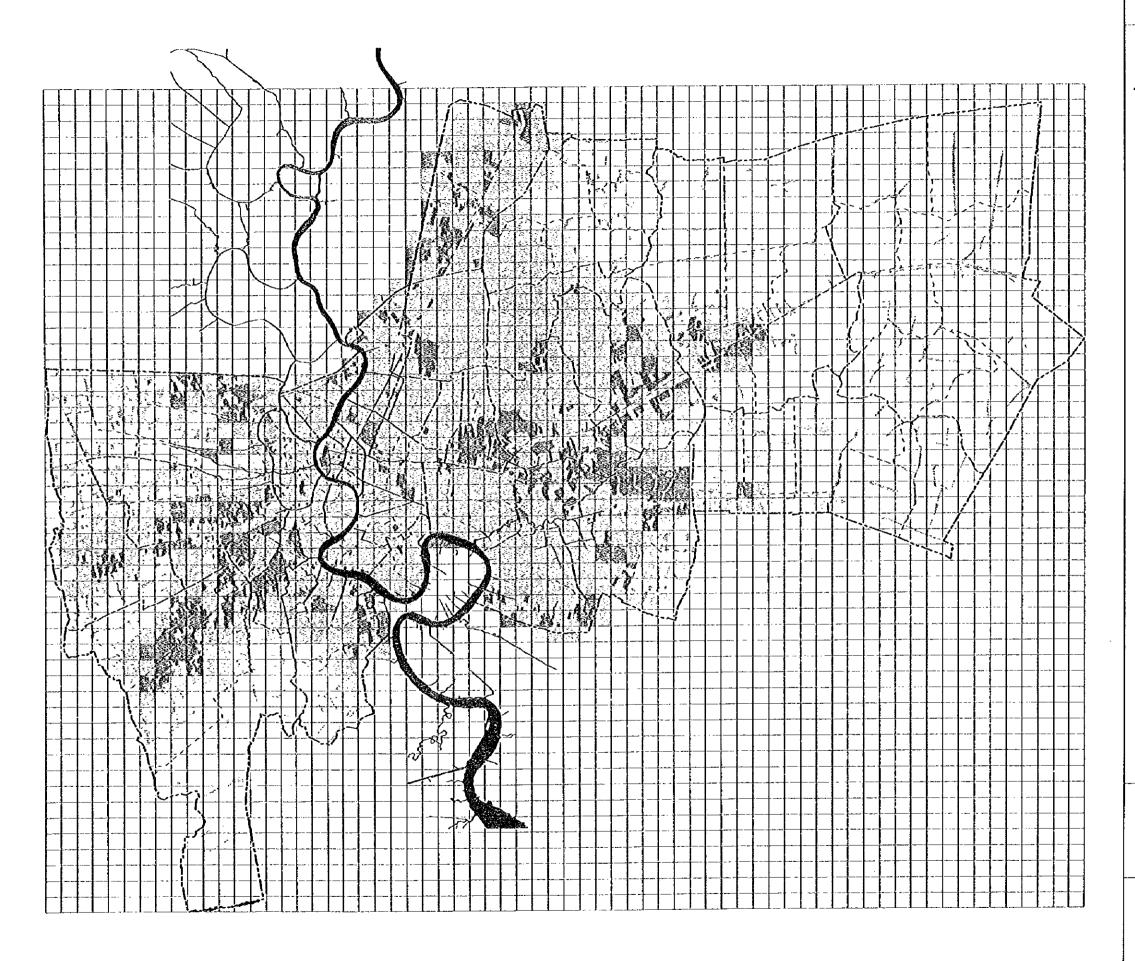
THE STUDY ON
URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM

IN BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA) THE GOVERNMENT OF THE KINGDOM OF THAILAND

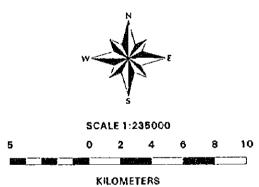




Future Land Use Simulation Trend Based Policy Free Case-1

Legend

- Build-up Area
- Urbanized Area in 2001
- Urbanized Area in 2006
- ☐ Urbanized Area in 2011
- Chaopraya River
- M BMA Boundary
- ☑ District Boundary
- Subdistrict Boundary

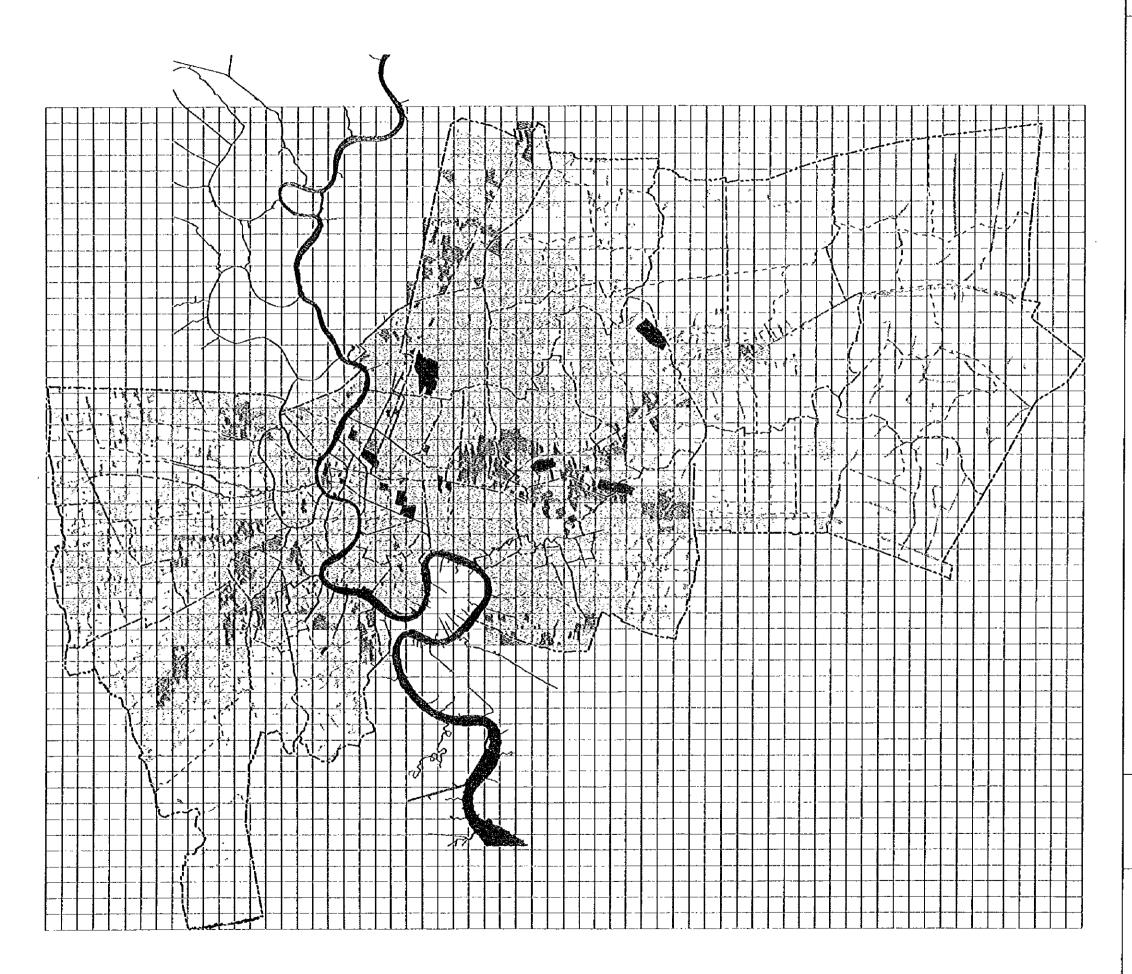


THE STUDY URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA) THE GOVERNMENT OF THE KRIGDOM OF THAILAND



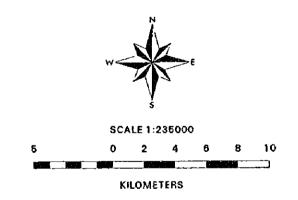


Future Land Use Simulation Trend Based Policy Free Case-2

Legend

- Build-up Area
- Urbanized Area in 2001
- Urbanized Area in 2006
 - Urbanized Area in 2011
- Park
- Chaopraya River
 BMA Boundary

- Subdistrict Boundary



THE STUDY ON URBAN ENVIRONMENTAL IMPROVEMENT PROGRAM BANGKOK METROPOLITAN AREA (BEIP)



BANGKOK METROPOLITAN ADMINISTRATION(BMA)
THE GOVERNMENT OF THE KINGOOM OF THAILAND

