

# 해외 출장보고

- 파라과이 도로체계 개선사업 국제 컨퍼런스 초청 -

- 출장기간 : 2008. 11.7(금)~ 11.13(목) 【6박7일】
- 대상국가/도시 : 파라과이(아순시온)

국토연구원 교통연구실  
선임연구위원 류재영

# I 출장개요

## □ 목적 및 배경

- 한국의 해외협력사업인 파라과이 농촌도로개발 프로그램 기술지원
- 한국의 대 남미 자원외교와 사업진출 교두보 마련을 위한 연구지원사업의 일환이며 두 번째로 지원하는 ‘도로 및 지역 개발 연구사업’에 포함된 국제회의에 한국전문가를 초청
- 이번 해외출장은 2007년도 미주개발은행(IDB)의 ‘콜롬비아 농촌도로개선국제세미나’에서의 주제발표와 현지 지원활동이 모범사례로 평가되어 금번 파라과이 회의에 IDB측이 지명 초청
- 파라과이 도로체계개선사업 국제컨퍼런스에서 콜롬비아사업 관련 주제 및 관련된 한국사례 기초발표 수행

□ 기간 : 2008. 11. 7(월) ~ 11.13(토) [6박7일]

□ 지역 : 파라과이(아순시온)

## □ 출장일정

일 정	수 행 사 항
11월 7일(금) 밤 인천 출발	- 인천공항 출국 (KE 61, 21:30)
11월 8일(토) 저녁 현지 도착	- 미국 L.A., 브라질 Sao Paulo 경유: 공항청사시설, 주변지역개발 조사 - 파라과이 Asuncion 도착 (PZ707, 17:10)
11월 9일(일), 전 일	- 아순시온 및 대상 지역 자료수집 (Itapua주, Alto Parana주) - 발표준비 회의, 관계자 회의 참석
11월10일(월), 전 일	- 개회식 참석 - 주제 발표 : 도로개발과 농촌경제발전: 한국의 사례 소개 (60분) - Ministry of Public Works and Communication 기관 방문 - 환영 만찬 참석
11월 11일(화) 출발 11월 12일(수), 기내	- 파라과이 Asuncion 출발 (PZ 710, 05:00) - 브라질 Sao Paulo, 미국 L.A. 경유: 공항 연계교통시설 조사
11월 13일(목) 새벽 인천 도착	- 인천공항 도착 (KE 62, 07 : 20) - 연구원 복귀, 도착보고 - 2008년 한국물류대상 시상식 주관(심사위원장, 인터컨호텔 불룸, 17:00 )

## II 일정별 세부 수행사항

### □ 11월 9일(일) 아순시온 답사 및 발표 준비

- 중심부 및 도시주변부, 농촌지역답사
- 교통 및 대중교통체계, 지속가능교통체계 답사 , 사진 촬영

### □ 11월 10일(월) 국제세미나 참석, 아순시온 (프로그램 별첨)

- 세미나 개최식 및 기조 연설 : 파라과이 건설교통부장관, 주정부 관계자, 지방정부 도로 관계자 200명 참석

- 주제 1 : 도로개발과 지역경제성장과의 연계성  
(Road Infrastructure and its Impact in Regional Development focusion on Socio-economic Impact of Road Improvement Program through Korea's Experience)

- 주제 2 : 저급 도로(low-volume road)와 기초경제 인프라 구축이 농촌지역개발에 미치는 영향 : 한국의 새마을도로 사례 등  
(Low-volume Roads and its Impact in Social and Local Development : Focusing on Korea's experience of rural road development)

- 개최식 및 환영 만찬 참석: Efrain Alegre 건설교통부장관, 아순시온 시, Itapua주, Alto Parana 주 관계자, 미주개발은행 (IDB), 페루, 콜롬비아, 불가리아, 우루과이, 브라질 주제발표자 참석

□ **11월 8일(토) , 12일(화) 경유지의 공항 시설 및 운영실태 조사**

- 대형 국제 공항 시설 및 운영실태 비교 : 인천국제공항, 미국 L.A.국제공항, 브라질 Sao Paulo 국제 공항, 파라과이 Asuncion 국제공항
  
- 조사내용: 공항유형별 여객터미널 시설 내 여객 편의시설, 면세품 판매시설, 안내시설, 공항시설 내외 동선체계와 연계교통체계, 국내선과 국제선 항공노선 연결 등 답사, 사진촬영, 항공 및 교통 관련 자료 구입

# III 발표자료

## La Experience Coreana en Caminos Rurales

Persegiun: Rural Road Project  
... its Impact in Regional Development and Socio-economy

Prepared by  
"Núcleo de Investigaciones y Desarrollos de Caminos Rurales",  
Asociación, 10-11 Noviembre 2008

Organized by  
Instituto del IICA/CIAD, Centro Interamericano de Desarrollo

Korea Research Institute for Human Settlements  
Jai Young, Ryu

### Contents

- I Background
- II Arterial Roads Development
- III Effects of Road Projects
- IV Rural Road Projects and Economic Development
- V Future Directions of Rural Road Projects
- VI Suggestions

### I. Background

### I. Background

- Population : 48,820,000 persons
- Land Area : 99,601 km<sup>2</sup> (89% mountainous)
- Population density : 490 persons/ km<sup>2</sup>
- Urbanization rate : 89.0%
- World's 11th largest economy in 2005 (GNI: 765 billion USD)
- FIFA World Cup 4th in 2002

### I. Background

\*Rural Road Project Promotion (2001)

Year	No. of Roads	Total Length	Total Length of Rural Roads	% Rural Roads	Total Length of Rural Roads	% Rural Roads
2001	1,075,000	102,700 km	102,700 km	100%	102,700 km	100%
2002	1,107,000	103,700 km	103,700 km	93%	96,400 km	93%
2003	1,137,000	104,700 km	104,700 km	92%	96,400 km	92%
2004	1,167,000	105,700 km	105,700 km	91%	96,400 km	91%
2005	1,197,000	106,700 km	106,700 km	90%	96,400 km	90%

\*Rural Road Maintenance Accomplishment

1,000,000 km (2001) to 1,000,000 km (2005) in 5 years

### II. Arterial Roads Development

(1972) (1991) (2001)

### II. Arterial Roads Development

The 1<sup>st</sup> Comprehensive National Development Plan (1972-1981)

- Efficient land use
- Rapid economic growth
- Expansion of the SOC
- Construction of a large-scale industrial base

### II. Arterial Roads Development

The 2<sup>nd</sup> Comprehensive National Development Plan (1982-1991)

- Restricting Capital Growing
- More balanced regional development
- Focus on the standard of living and environmental conservation

### II. Arterial Roads Development

The 3<sup>rd</sup> Comprehensive National Development Plan (1992-1999)

- Decentralized Territorial Structure
- Establishment of the resource-efficient land use system
- Base creation for the unification of the country

### II. Arterial Roads Development

The 4<sup>th</sup> Comprehensive National Development Plan (2000-2020)

- Realization of the integrated Territory
- Balanced Territory
- Green Territory
- Open Territory
- Unified Territory

### Changes of Average Access Time

[Expressway of South Korea]

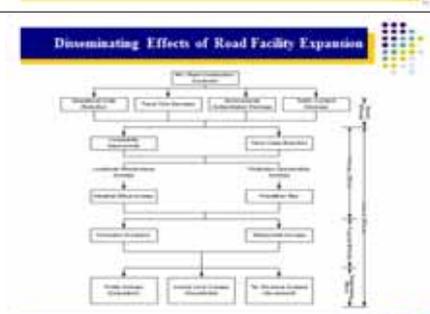
### Roles of Road Pavement & Widening Project

-By concentrating on road projects, South Korea was able to lay the foundation to establish a systematic territorial structure, to expedite regional development, and to develop industries and economy in a short period.

-Road pavement and widening, a major project at the early stage of road policy of Korea, played an important role in constructing a systematic road network.

### III. Effects of Road Projects

- Macro-effect**
  - Change in spatial structure such as urban and regional structure
  - Change in regional developmental potentials: Facilitate tourism and development for tourist
  - Change in industrial location pattern
- Micro-effect**
  - Land use efficiency improves
  - Enhance convenience in daily life of the people (Reduction in travel time)
  - Income increase
  - Increase in tax revenues of local government



### Classification of Road Project Effects

• Effects : Direct and indirect / Macro and micro effects/  
Quantitative and qualitative effects / by stages:  
Planning, construction and operation stage

※ Results of Survey among Transportation Experts  
(Priority Order of Impact Analysis and Evaluation)

- Direct Effects : ① saving time ② operational costs reduction ③ traffic accident decrease ④ traffic volume increase ⑤ accessibility increase
- Indirect Effects : ① regional development promotion ② employment increase ③ business services increase ④ tourism increase in number ⑤ public service facilities increase ⑥ population increase ⑦ Population and households increase in number

### National Economic Development

- Activate existing industrial zones
- Contribute to construct new industrial facilities
- Decentralize the location of industrial facilities from metropolitan cities
- Encourage reallocation industrial facilities of the region concerned
- Increase employment and regional income
- Reduce travel costs and time of passengers
- Reduce production costs following logistics costs reduction/ Sharpen global competitive edge of the product

### Regional Development

#### Enhancement of accessibility and mobility for rural areas

- Encourages development of rural areas and tourist attractions
- Facilitate development of underdeveloped areas
- Increase relationship and communication between urban and rural areas
- Improve the quality of people's daily life
- Support formulation and prosperity of cities, towns, and villages

### IV. Rural Road Projects & Economic Development

#### Functions of Rural Feeder Roads

- Provide vitality to overall rural economy
- Trigger disseminating effects

#### Objectives of Rural Feeder Road Projects

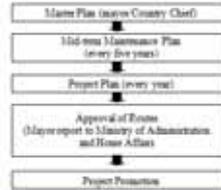
- Create a production base for rural areas; improve living environment
- Increase local residents' income, promote balanced regional development, step up competitiveness of the agricultural, forestry and fishery industry

#### Rural Feeder Roads of Korea categorized into three classes

- Myeon-road : Roads connecting a village to public institutions such as Eup and Myeon Offices
- Village-road : Roads linking one village to another
- Farming-road : Roads connecting a village to farmland

### IV. Rural Road Projects & Economic Development

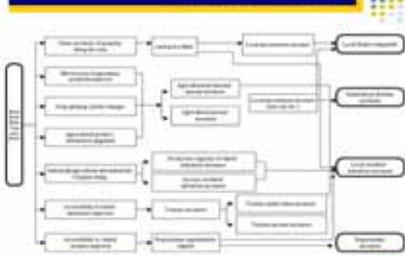
#### Promotion System for Rural Road Development & Maintenance Project



### Effects of Rural Road Projects

- Increase accessibility to rural areas and nature resources from urban areas
- Improve agricultural product distribution
- Increase tourists
- Increase land price
- Increase products
- Encourage influx of industries
- Increase employment
- Improve regional finances

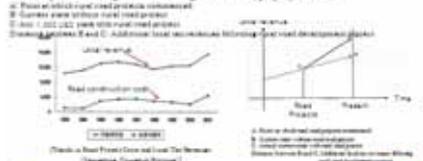
### Effects of Rural Road Projects



### Financial Effects of Rural Road Projects

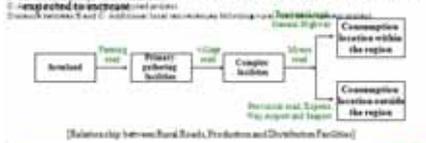
#### Regional finance expansion

- By increase in population, income and consumption in rural areas, potential tax revenue increase (state tax, tobacco consumption tax, etc.)
- By the increase of price of land and real estate property, local tax revenue increase (acquisition tax, registration tax, integrated land tax, property tax, etc.)



### Revitalization of Regional Agriculture

- As efficiency of agricultural production and labor productivity improves, agricultural income increases
- Improvement in transportation conditions enables people to grow new high-income crops, revitalizing regional agricultural industry
- As agricultural product distribution improves, agriculture added value is expected to increase



### Type and Characteristics of Benefits

Type	Material Benefits	Non-Material Benefits
Linear Benefit	Direct financial costs saving	Convenience and accessibility, Public & Social Security Enhancement
Accumulated Benefit (Productive Aspect)	Cost of planning, design, financing, operation and maintenance reduction	Weak infrastructure Enhancement
Accumulated Benefit (Distributive Aspect)	Product damage prevention, Transportation reduction, Transport costs decrease	Transaction cost reduction, Change in available and relative transport mode
Other Benefit	Road maintenance costs saving	Expression of culture and local characteristics, Encouragement of maintenance based rural tourism

### Case Studies

#### Yongtong of Chungbuk, Gochang of Jeonbuk and Milyang of Gyeongnam

Location	Road Name	Road Length (km)	Project type (existing / Current Function)	General Information (area / population)
Shincho, Myeong, Jeonbuk	Shincho (Case 1)	1.2	Farming road / Farming road	Population: 175 - Village: 113 - Garrison area (ha): 117
Milyang, Gyeongnam	Milyang (Case 2)	2.3	Village road / Village road Village road / Farming Road	Population: 204 - Village: 111 - Garrison area (ha): 214
Yongtong, Chungbuk	Yongtong (Case 3)	2.3	Village road / Village road Village road / Farming Road	Population: 140 - Village: 110 - Garrison area (ha): 11

### CASE 1: Shincho



### Case 2: Mokwoo



### CASE 3: Joem



### Benefits of Road Projects in Case Studies

- Benefits per km from the road projects cited in the case study are 17,256 (USD) for Joem, 14,834 (USD) for Mokwoo and 34,825 (USD) for Shincho.
- Benefits of a total of 99 rural roads of the three case study areas are average 92,264 (USD) per route, and 32,183 (USD) per km.

Category	Shincho (USD)	Mokwoo (USD)	Joem (USD)	Average
Total Time & Cost Saving	43,108	103,094	11,250	18,817
Productive Aspect Effect	18,041	22,072	13,932	18,015
Distributive Aspect Effect	280	1,681	828	516
Farming Value & Cost Saving	2,212	2,322	2,208	2,247
People Income	21,287	9,223	6,733	13,748
Revenue	18,892	18,892	1,899	18,892
Local Revenue & Transport Mode	4,263	2,316	1,813	2,797
Transportation Cost	2,511	2,316	709	1,845
Saving	4,892	2,848	1,899	3,213
Total	87,210	183,810	48,881	145,297

### Assessments from Local Residents

- Distributions of use of rural roads: moving products 33.5%, Farming 17.8%, go to the market 14.6%, Commute to work 13.9%, go to hospital 8.9%, Commute to school 3.9%, and visit neighboring cities 5.0%
- Effects of rural roads: time saving 35.9%, agriculture convenience 12.5%, damage reduction of vehicle 9.6%, dust reduction 8.5%, damage reduction of products 7.1%
- Needs of facilities: Road 27.0%, living environmental 13.3%, water supply and sewage 13.3%, social welfare 13.2%, dumping ground 9.6%, medical facilities 9.3%

### V. Future Directions of Rural Road Projects

#### Physical aspect

- Functions: Support integration and communication of the rural areas
  - Connect with the road network within region (rural centers, remote villages, and farmland)
  - Support activities and convenience
  - Increase safety for Residents, road users, and the vulnerable groups (the elderly and children, etc)
  - Consider structure and characteristics of the rural society such as age and occupations
- Preserve existing topography and habitats and Harmonize with a target region environment
- Consider various environment and functions and potentials for rural areas

### V. Future Directions of Rural Road Projects

- Considerations for automobile transport: intersect with relevant upper-level roads, link to traffic flows of different characteristics



[Rural Road Network I]

[Rural Road Network II]

### V. Future Directions of Rural Road Projects



[Rural Road Network III]

[Rural Road Network IV]

#### Socio-economic Aspect

- Identify road user's characteristics and regional characteristics
- Improve safety for pedestrians and bike riders

#### Environment-friendly Transportation system

Consider the use of environment-friendly materials for road landscape, nature and ecosystem

### V. Future Directions of Rural Road Projects

Development body	The past			The present and future			Development body
	Local government	Local residents	Local business	Local government	Local residents	Local business	
Local government	↑	↑	↑	↑	↑	↑	Local government
Local residents	↑	↑	↑	↑	↑	↑	Local residents
Local business	↑	↑	↑	↑	↑	↑	Local business

### VI. Suggestions

- Project Promotion should be Expanded and Accelerated
- Project Promotion Efficiency should be Improved
- Decision-making Process for the Priority Order of Projects should be Enhanced
- Division of Functions should be Clarified among Roads
- Facilities Required by Local Residents should be Preferably Developed ; Their Priority order should be Reflected upon
- Funds for Road Maintenance and Repair Work should be Separately earmarked
- Cooperation between Local Government and Residents / Farmers should be reinforced; Support from the Central and Metropolitan City Governments should be strengthened

### Saemaul Undong Movement

- Basically, Saemaul Undong Movement is a movement seeking community development and modernization.
  - Not working for only myself, but for my village and for my country
- Goals of Saemaul Undong
  - Modern, comfortable and convenient social community
  - Establish cooperative and trusting working environment
  - Sound and healthy society having pleasant and intimate relationships
  - Participation in the construction of proudful nation
- Saemaul Undong's Guiding Spirit
  - Diligence
  - Self-help
  - Cooperation

### Saemaul Undong Movement



### Saemaul Undong Movement



### Achievements of Saemaul Undong Movement



### Achievements of Saemaul Undong Movement



Gracias !!

감사합니다

Thank you



### III. Effects of Road Projects

#### • Macro-effect

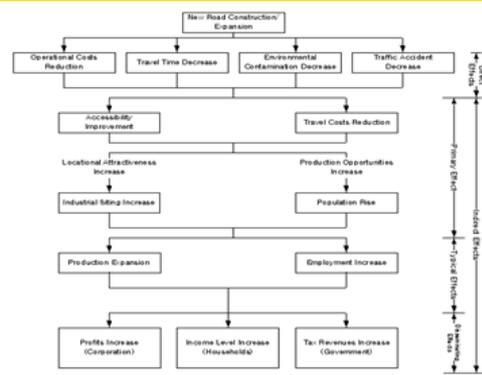
- Change in spatial structure such as urban and regional structure
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- Change in industrial location pattern

#### • Micro-effect

- Land use efficiency improves
- Enhance convenience in daily life of the people (Reduction in travel time)
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- Increase in tax revenues of local governments

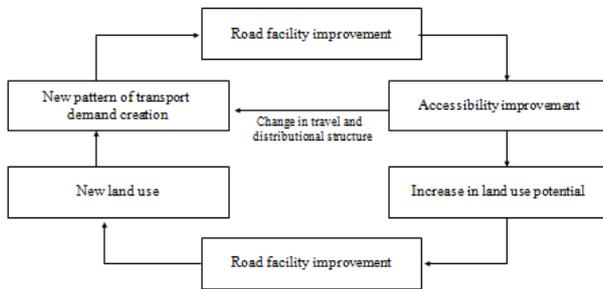
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### Disseminating Effects of Road Facility Expansion



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### Chain Effects of Road Facility Expansion Project



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### Classification of Road Project Effects

- Effects : Direct and indirect / Macro and micro effects/ Quantitative and qualitative effects / by stages: Planning, construction and operation stage

#### ※ Results of Survey among Transportation Experts

(Priority Order of Impact Analysis and Evaluation)

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- Reduce travel costs and time of passengers
- Reduce production costs following logistics costs reduction/ Sharpen global competitive edge of the product

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# IV 참고자료

파라과이 출장보고 자료(2008. 11. 8 ~ 2008. 11. 13)  
 -LA, 상파울로, 아순시온/공항,도로,도시-

○ 2008. 11. 7 ~ 2008. 11. 8



○ 상파울 공항

상파울시 외곽지



상파울 공항 주변 밀집 시가지



상파울 공항



상파울 공항 활주로(27, 09L 방향)



배후지역 여객 청사



여객청사 통로, 여객 브릿지



면세점



휴식시설



도착/출발 항공편(노선, 항공사)



공항주변 도로망



○ 브라질

농촌 경작지, 취락



하천변 경작지 분포와 경계, 제방



농촌 경작지 도로



지방부 도로



○ 파라과이

Itaipu Dam(세계 최대 댐)



농촌 취락지, 지방도로



GUARANI 국제공항 청사



아순시온 교외부 주택지



아순시온 국제공항 활주로



여객기 조업장비



탑승장



아순시온 국제공항 청사 내부 (CIQ 내부)



아순시온 국제공항 청사



아순시온 국제공항 청사 주차장 방향



버스정류장



공항 --> 아순시온 연결도로(4차)



공원 외곽 자전거 도로



파라과이 차량 번호판



아순시온 간선도로(중앙분리녹지)



○ 2008. 11. 9



성당, 부도심 가로



택시 정류장



시외곽부 철도시설



아순시온-LUQUE간 외곽연결도로



아순시온-LUQUE간 외곽연결도로



장터



LUQUE 시내



아순시온 외곽



LUQUE 외곽부 지방도



미술관



노변상가



Aregua 시내(식민지 시대 류양 소도읍)



포장도로



별장주택(1904 건축)



Aregua 교회



Aregua 호수전망



Aregua 공원



Aregua 철도역 미술관, 선로



Aregua 시내도로



Ypacarai 시내 이면도로



공공주택단지 내부 1



공공주택단지 내부 2



공공주택단지 내부 3



유료 자동차 전용도로



San Bernardino 부근 국도2호



목장입구



San Bernardino(여름 휴양도시)  
주택가 도로



San Bernardino(여름 휴양도시)  
주택가 도로



San Bernardino(여름 휴양도시)  
주택가 도로



Lago 호텔(1888년 건립)



Lago 호텔(1888년 건립)





○ 2008. 11. 10

도로 컨퍼런스1



도로 컨퍼런스2



도로 컨퍼런스3



도로 컨퍼런스4



도로 컨퍼런스5



만찬1



만찬2

