

Int. Round Table Meeting of JSCE 2007

# Sustainable Infrastructure Development and Operation Now and for the Future - understanding and efforts in Korea

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Hiroshima University, Japan, Sept. 12, 2007

# Presentation outline

- 1. Understanding about sustainable development**
- 2. Recent efforts in Korea for SD**
- 3. Continuation of discussion on the topic in KSCE annual conference in Daegu on Oct. 11, 2007**

# What is sustainable development?

## The Brundtland report (1987):

- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

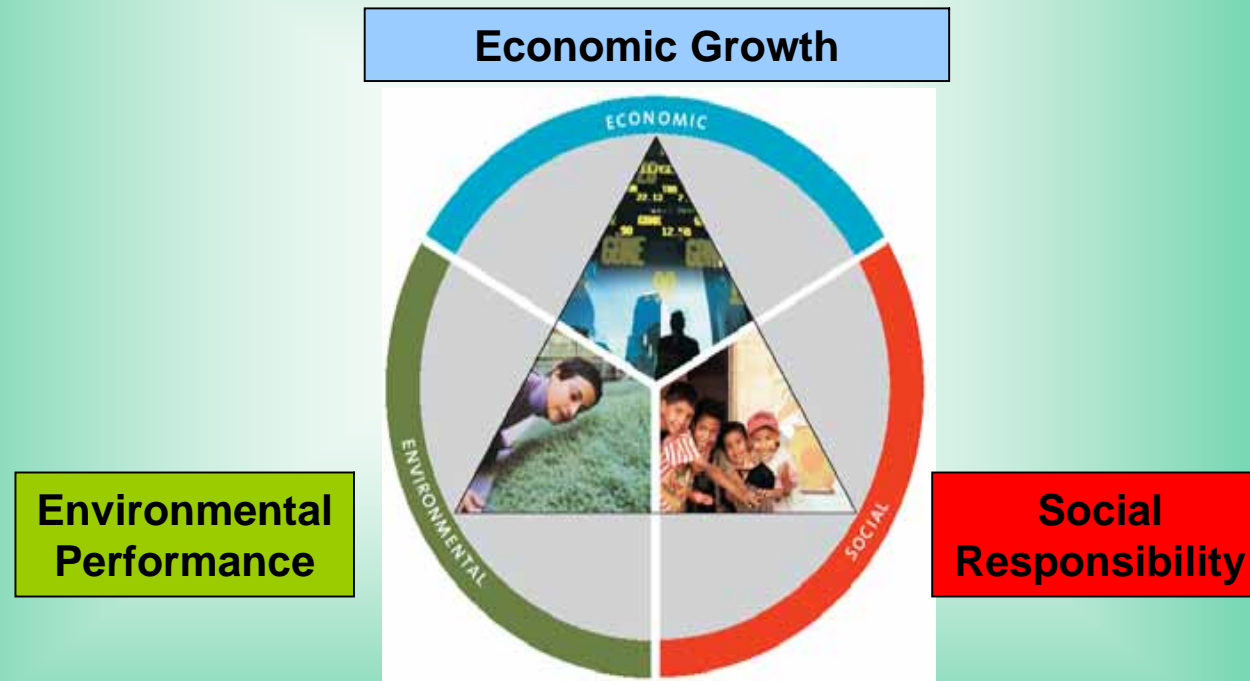
In other words:

“Sustainable development is about ensuring a better quality of life for everyone, now and for generations to come.”



# Sustainable development (SD) – the triple bottom line

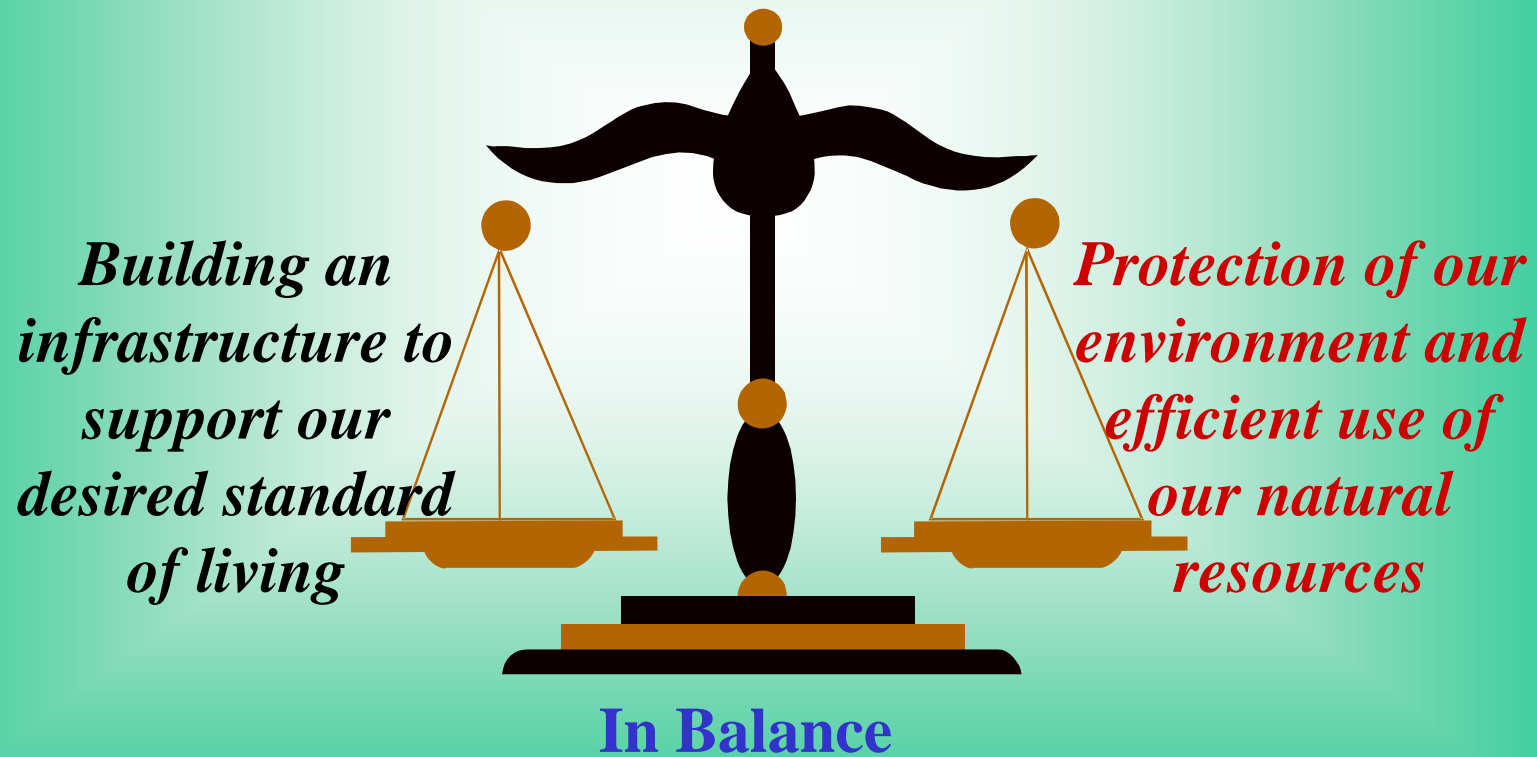
The Brundtland definition implied a shift from an idea of sustainability as primarily environmental, to a framework that also emphasizes economic and social issues.



- The challenge is to link and balance the interdependent economic, social and environmental dimensions.



# Creating a balance in satisfying the two important needs of society



# Recent Korean daily newspapers emphasize lack of sustainable development of infrastructures

중앙일보 2003년 3월 24일 월요일 40판 사회

## 부실공사·난개발로 특하면 헐고 다시 지어 한국은 '콘크리트 공화국'

인천시 서구 수도권 쓰레기 매립지에는 건설폐기물을 가득 실은 15t 트럭이 뚝뚝 먼지를 일으키며 하루 8백여대의 줄을 서서 들어온다. 쓰레기 종량제로 생활쓰레기는 크게 줄었지만 콘크리트 등 건설폐기물은 지난해 수도권 매립지 전체 반입 쓰레기의 53%를 차지했을 정도로 갈수록 늘고 있다.

매립지 앞 내곡의 건설폐기물 중간처리업체마다 잘게 부순 폐콘크리트 가루가 산더미처럼 쌓여 있다. ㈜삼력 환경의 진재홍(陳載洪)상무는 "재활용 골재를 일정 비율 의무적으로 사용토록 해야 하는데도 건설교통부·환경부 등 부처 간 이견으로 이뤄지지 않고 있다"고 말했다.

이곳의 '폐콘크리트 사태(沙汰)'는 앞으로도 계속될 전망이다. 서울시의 계획대로 올 하반기부터 청계천 고가도로와 북계 구조물을 철거하면 당장 15t 트럭 7만여대 분량의 건설폐기물이 발생하게 된다.

인천·환경단체들은 "지은 지 얼마 되지 않은 아파트를 재건축하고 해마다 수해복구 공사가 반복되기 때문에 시멘트 소비량이 많다"고 주장하고 있다.

또 건설폐기물 재활용을 통해 모래·자갈 등 골재 부족을 해결하고 환경 훼손도 줄어지고 제안했다.

한국의 시멘트 소비량은 97년 1천3백43kg까지 증가했다가 외환위기로 99년에는 9백59kg까지 줄었으나 그 후 다시 왕성하게 회복하고 있다. 국가 전체로 따져도 한국의 시멘트 생산·소비량은 모두 세계 5위다.

인하대 서병하(徐炳夏·토목공학과)교수는 "우리나라는 기후변화가 매우 심하기 때문에 목재보다 콘크리트를 쓸 수밖에 없는 경우가 많다"고 말했다.

지난해 1인당 1천3백kg 이상의 시멘트를 소비한 국가는 브루나이·키프로스·루웨이트·아랍에미리트·카타르 등 10여개국으로 대부분 개발도상국

국가별 시멘트 생산·소비량(2000년)

순위	0	200	400	600	(백만t)
중국	[Bar]				
미국	[Bar]				
인도	[Bar]				
일본	[Bar]				
한국	[Bar]				

생산량

소비량

중국 52, 한국 48

자료: 일본 시멘트공업협회

외환위기 후 다시 늘어나는 1인당 연간 시멘트 소비

연도	1993	1996	1998	2000	2002
소비량 (kg)	~1000	~1200	~1300	~1000	1,140

※ 한국양회공업협회의 국내 전체 시멘트 소비량을 통계청에서 제시한 해당 연도 인구로 나눈 값임.

### 시멘트 1인당 소비 세계평균의 4배 수도권 매립지 절반이 폐콘크리트

한국양회공업협회에 따르면 지난해 재개발로 SOC 건설이 한창인 중국도

돼 있다. 이렇다 보니 한국은 세계적으로도 알아주는 '콘크리트 공화국'이 돼버렸다.

가 넘는 양이다. 한국이 유독 시멘트를 많이 사용하는 것은 사회간접자본(SOC) 투자를 많이 하고 있기 때문만은 아니다. 경

설이나 마구잡이 개발로 헐고 새로 짓느라 시멘트의 소비량과 폐콘크리트 발생량이 동시에 늘고 있다는 지적이다.

이다. 일본은 91년 6백97kg을 고비로 줄어들기 시작해 2001년에는 5백39kg 이었다. 김현수 기자 envirepo@joongang.co.kr

Title of news paper is " Korea is Republic of Concrete " .



***One of successful sustainable development of infrastructures- CheongGaeChun Project in Seoul***



***JFES-WFEO International Symposium on River Restoration, Sept. 13, 2007, Hiroshima 2007 JSCE conf.***



The Fourth Civil Engineering Conference  
in the Asian Region (4th CECAR)

Ace

For a Better Quality of Life

# 4th 土木 CECAR Taipei 2007



Taipei Declaration on Sustainable Development  
Taipei 101, June 26, 2007 ACECC台北永續發展宣言  
*Working for Asian Sustainability*  
We will work together for protecting and enhancing the environment,  
inspiring optimism, and creating a sustainable Asia.





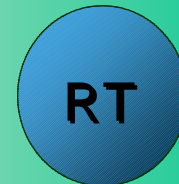
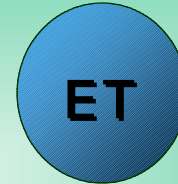
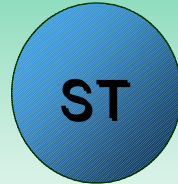
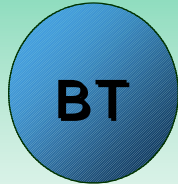
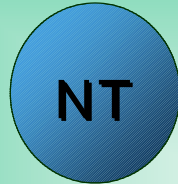
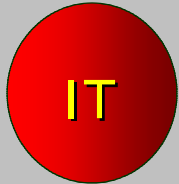
# Recent effort in Korea

Infrastructure development technology utilizing other advanced technologies



**Next generation sustainable construction technology**

# Information Technology for SD



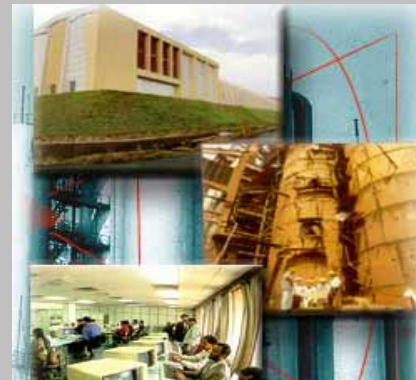
e-Communication



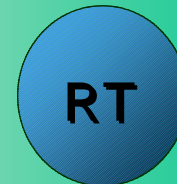
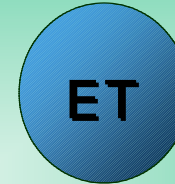
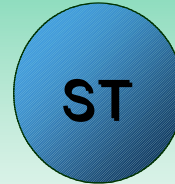
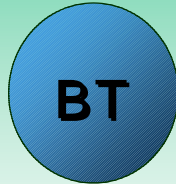
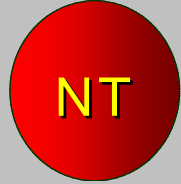
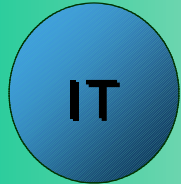
U-technology



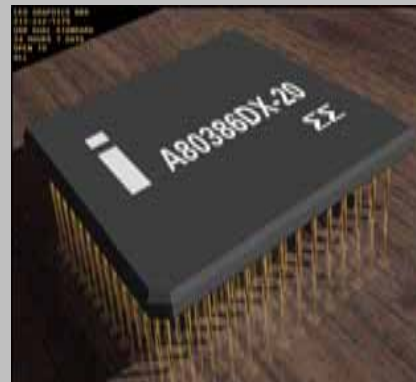
RFID/USN



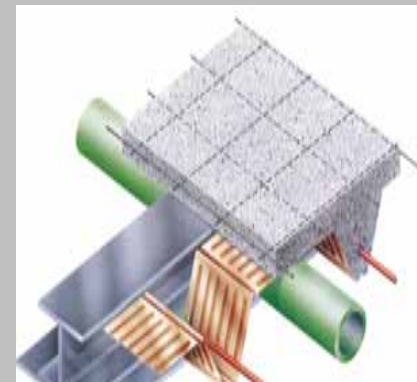
# Nano-Technology for SD



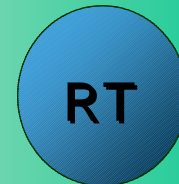
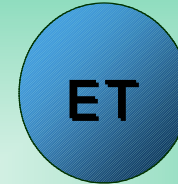
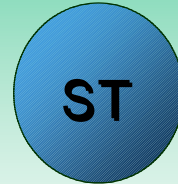
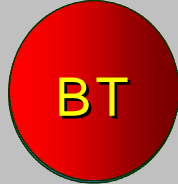
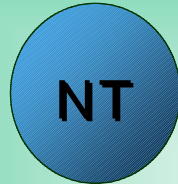
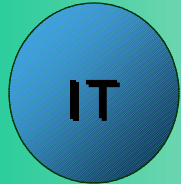
New nano materials



Smart Material



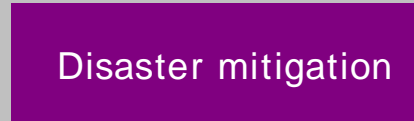
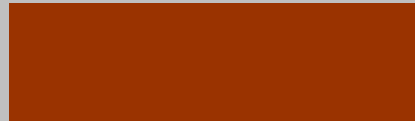
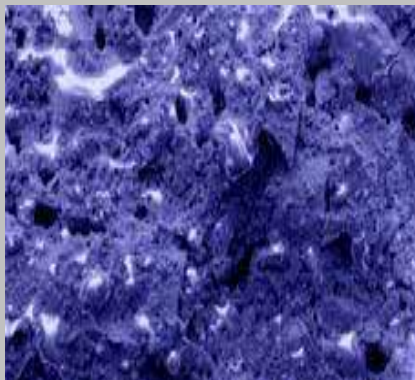
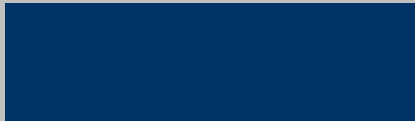
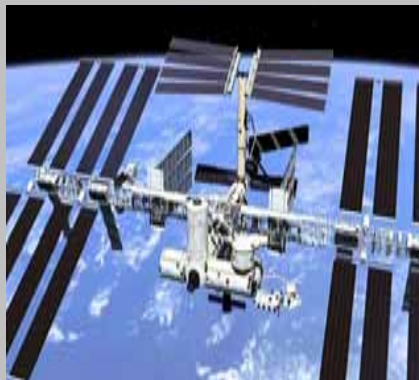
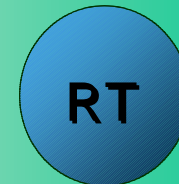
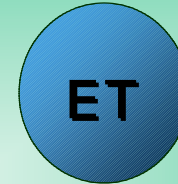
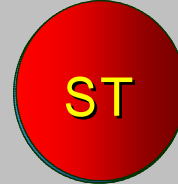
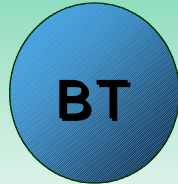
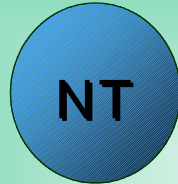
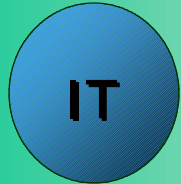
# Bio-Technology of SD



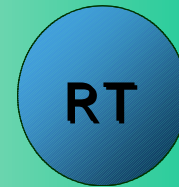
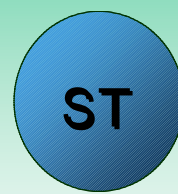
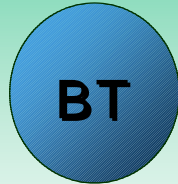
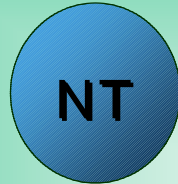
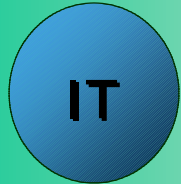
Clean energiy



# Space - Technology for SD



# Environmental Technology for SD



Restoration



Environ. Friendly



Super



# Robotics - Technology for SD

IT

NT

BT

ST

ET

RT

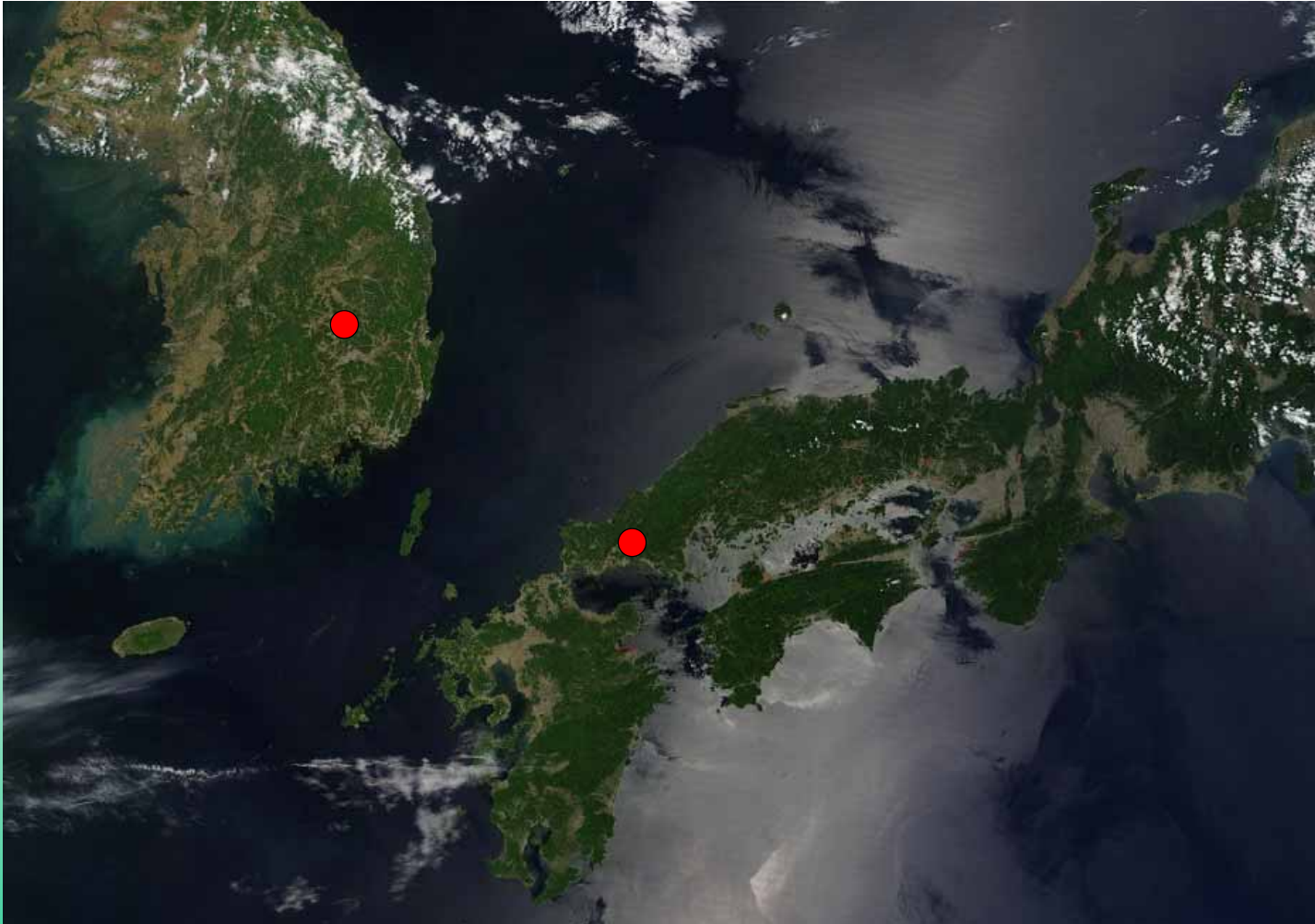
Robots



Intelligent maintenance



Taipei → Hiroshima → Daegu  
(KSCE 2007 annual conference, Oct. 11-12)



***2007 KSCE International Round Table Meeting on  
“sustainable development and vision for civil engineers”  
See you in Daegu at Oct. 11, 2007!***

