

**Korea-OECD Workshop on
Delivering Green Growth-Seizing
the Opportunities for Industries**

Implications for Green Growth and Job Creation

March 4, 2010

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Contents

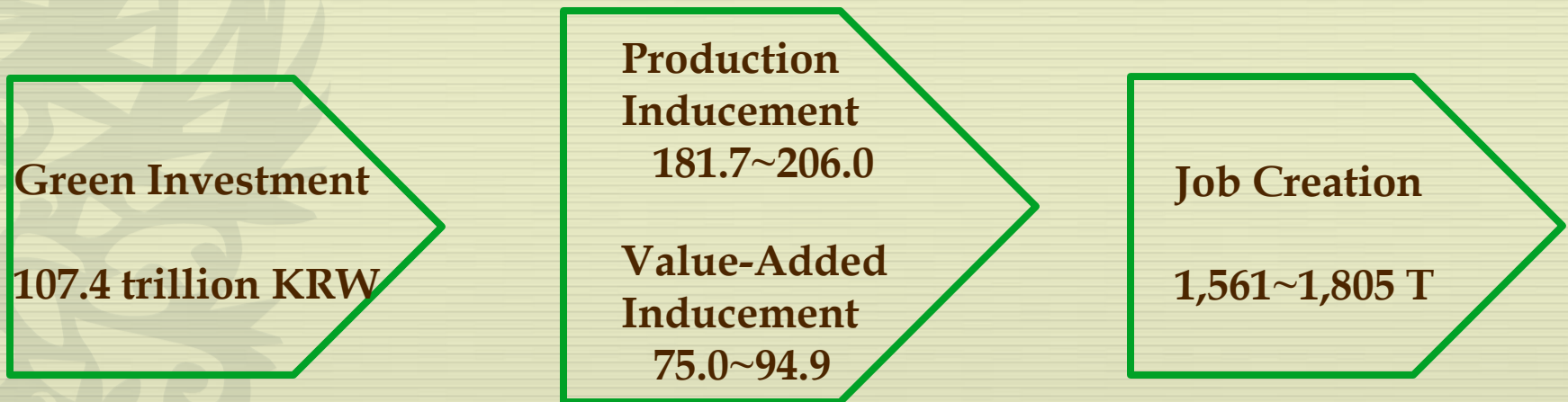
- 1. The Five Year Green Growth Plan**
- 2. Green Workforce and Creation of Green Jobs**
- 3. A Model of Employment in the Green(er) World**
- 4. Reports on Green Jobs**
- 5. More on Green Jobs**

The Five Year Green Growth Plan (2009-2013)

July 2009

Three Strategies

1. Measures for climate change and securing energy independence
2. Creation of new growth engine
3. Improving quality of life and strengthening the status of the economy



Green Workforces and Creation of Green Jobs

November 2009

Green jobs

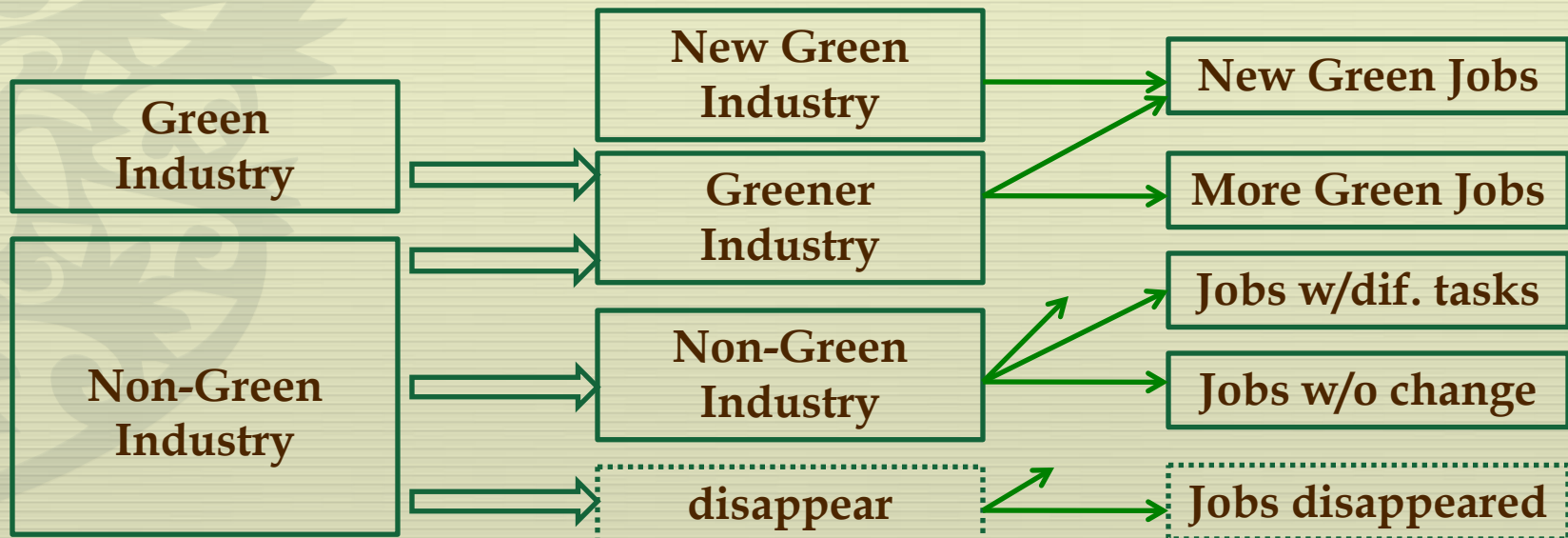
in 64 out of 169 KSIC industries

610,000 (2008) → 810,000 (2013): annually 6.0% (vs. 1.3%)

Green job creation in

Renewable energy	30
Energy efficiency improvement	72
greening industries and space	278
Environment protection & recycle	127
Low carbon activities	307

Changes in employment structure



Green Workforces and Creation of Green Jobs

Issues on green workforces

- **The market structure to support creation of decent green jobs**
 - More and better green jobs for better educated labor forces
- **Forecast of demand for and supply of green workforce**
 - Definition of green jobs and its classification system
- **Education and (re)training workforces for the greener job world**
 - New and more green jobs
 - Changes in tasks
 - Reemploying those who lose their jobs
- **Professional and highly-skilled workforces**

Green Workforces and Creation of Green Jobs

The virtuous cycle of green growth and green job creation

**Investment in infrastructure
for green job creation**

Linkage bw. GG and employment
Green job network & LMI system
Decent green jobs
Promotion of employing green jobs

**Expansion of TVET
for green workforce**

Skilled workers for new growth
engine of green industries
Smooth transition of workforces
in greening existing industries
Demand for green workforce
by SME's and local labor market
The National Technical
Qualification System

**Investment in
core green workforces**

Expansion of investment in
green technologies
Core R&D professionals
Professional & skilled workers
in green service industries
Career counseling/education
for future green workforces

1.88 trillion KRW over 2009-2013

Green Jobs

United Nations Environment Programme(UNEP)

“Green Jobs: Towards decent work in a sustainable, low-carbon world”
(September, 2008)

“Green jobs as positions in

- ❖ agriculture, manufacturing, construction, installation, and maintenance, as well as
- ❖ scientific and technical, administrative, and service-related activities, that
- ❖ contribute substantially to preserving or restoring **environmental quality**”

Green jobs include jobs that help to

- ❖ protect and restore **ecosystems and biodiversity**
- ❖ reduce energy, material, water **consumption** through high-efficiency and avoidance strategies
- ❖ **decarbonize** the economy
- ❖ minimize or altogether avoid generation of all forms of **waste and pollution**

“Green jobs also need to be **good jobs** that meet longstanding demands and goals of the labor movement, i.e. **adequate wages, safe working conditions, and worker rights, including the right to organize labor unions**”

A Model of Employment in Green World

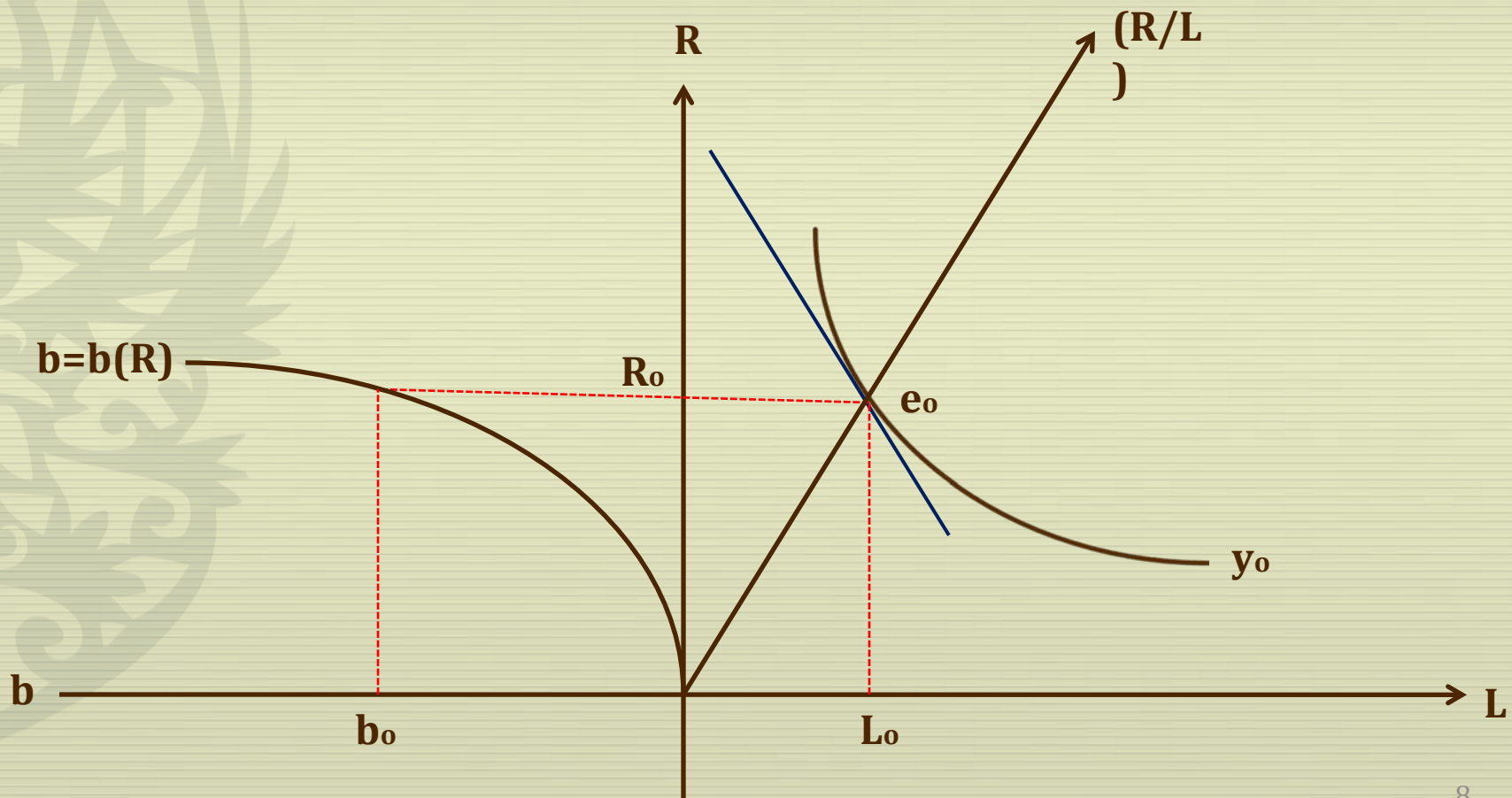
Production: $y + b = f(L, R; K, \dots)$

Input L: human capital R: natural resources K: physical capital

Output y

$b = b(R)$: byproduct (waste, pollution, etc)

Profit Max. w/o considering byproduct: $\pi = py - (wL + rR)$

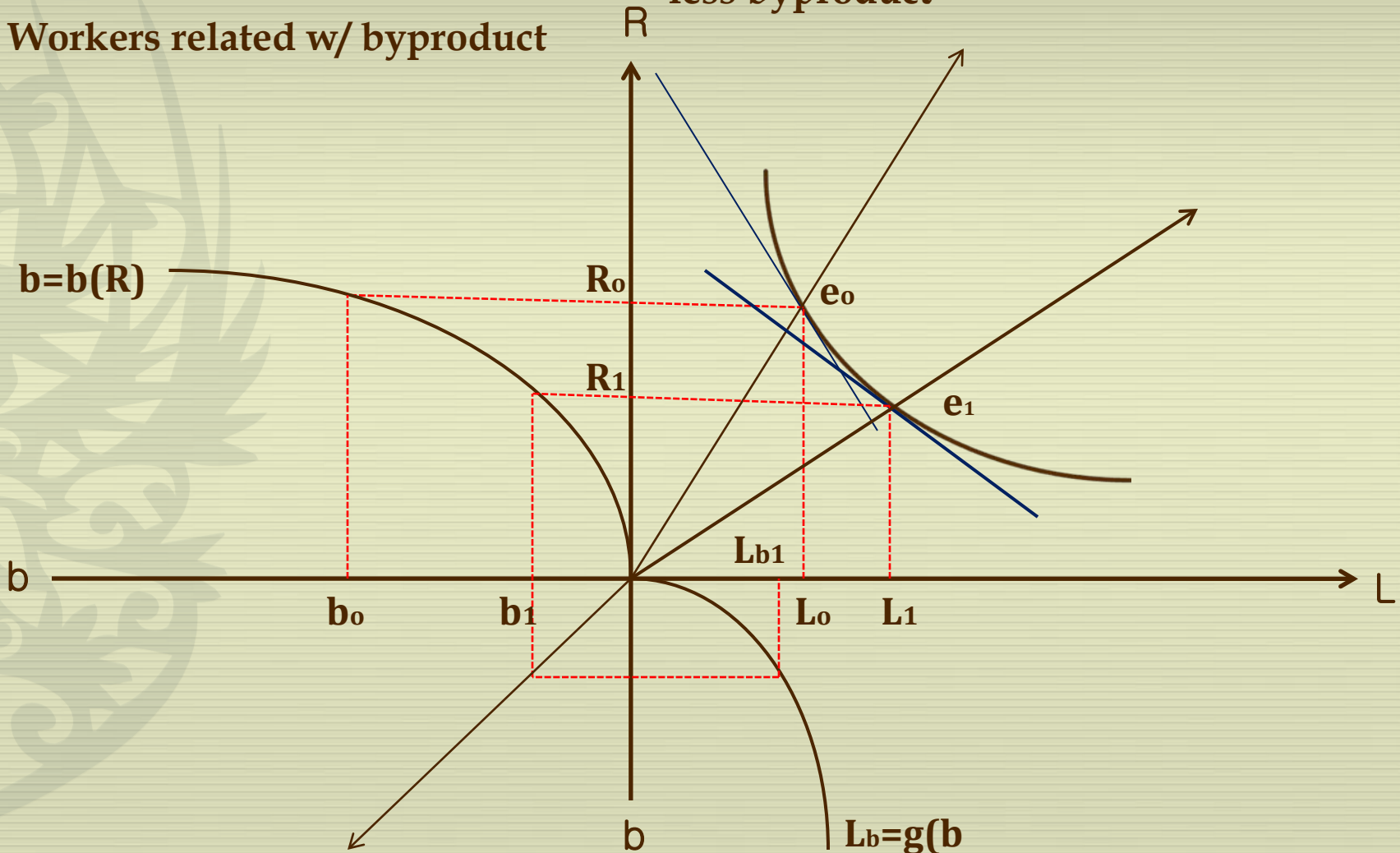


A Model of Employment in Green World

Profit Max. w/ considering byproduct: $\pi = py - (wL + rR) - g(b(R))$

higher relative price of resources \rightarrow less resource-intensive production
less byproduct

Workers related w/ byproduct

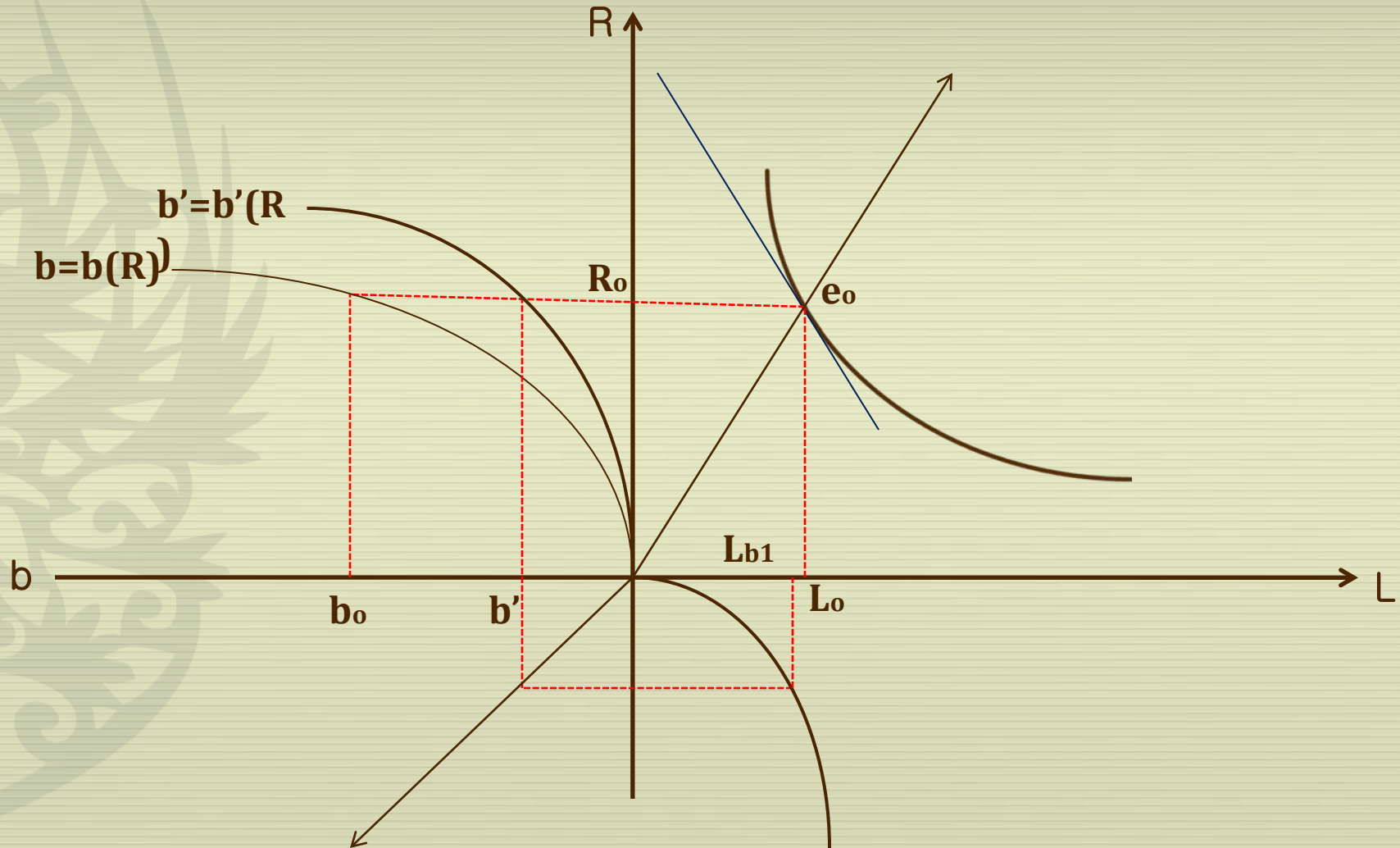


A Model of Employment in Green World

Profit Max. w/ green technology to reduce byproduct

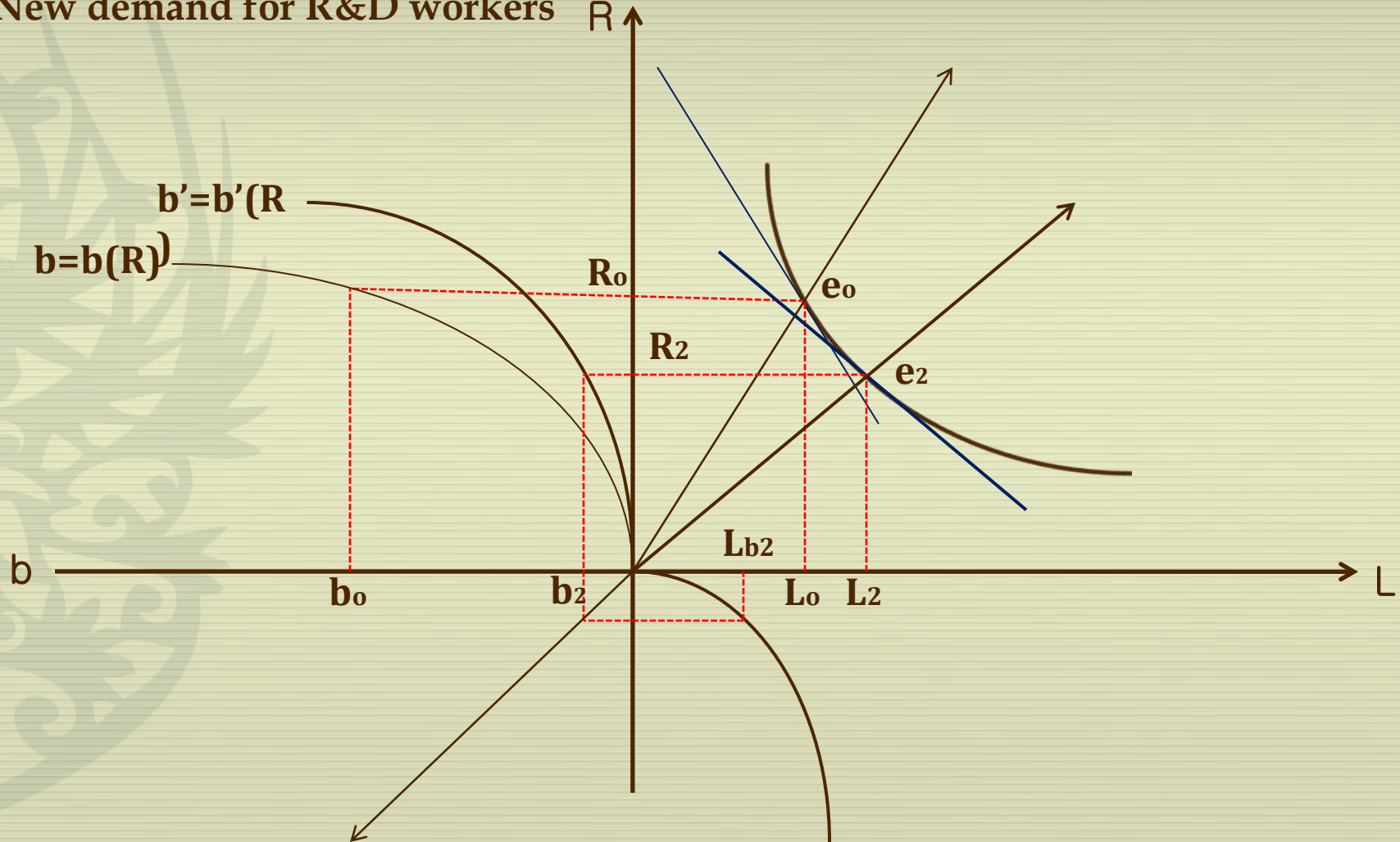
$$\pi = py - (wL + rR) - g(b'(R)) - (\text{R\&D per output})$$

There is cost related with byproduct and R&D



A Model of Employment in Green World

- Profit Max. w/ green technology to reduce byproduct
- Less resource-intensive technology or more workers
- New demand for workers related with byproduct
- New demand for R&D workers



Reports on Green Jobs

United Nations Environment Programme(UNEP)

“Green Jobs: Towards sustainable work in a low-carbon world” (Dec. 2007)

“Green Jobs Initiative in Global Challenge for Sustainable Development: Strategies for Green Jobs” (May 2008)

“Green Jobs: Towards decent work in a sustainable, low-carbon world” (2008.09)

Shades of Green

New production/consumption model

durability and repairability

low consumption level more public forms of consumption

New approach to working hours: flexibility & 4-day workweek

time sovereignty-break ‘work-and-spend’

a time credit system (Belgium)

job rotation w/paid, educational, childcare, sabbatical leaves (Denmark)

work time reductions (Netherlands)

A Fair and Just Transition

Reports on Green Jobs

The European Employment Summit (Nov. 1997)

Commission of the European Communities, Communication on environment and employment (Building a Sustainable Europe)

“environmental policy, if well designed, should be seen as a strong driving force for investment and the building of a sustainable Europe, creating both growth and employment.”

EU Focus on Green Jobs (1999)

Employment through environmental activities

EU environment and employment: Future Action

Eco-industry

The EU Eco-industry's export potential(1999)

Analysis of the EU Eco-industries, Employment and Export Potential (2002)

Econ-industry, its size, perspectives and barriers to growth in the enlarged EU(2006)

Study on the Competitiveness of the EU Eco-industry-Within the Framework Contract of Sectoral Competitiveness Studies(2009)

Reports on Green Jobs

Environment and labour force skill: Overview of the links between the skills profile of the labour force and environmental factors (Dec 2008)

“jobs in the environmental sector and/or jobs requiring specific environment-related skills”

- 1. Additional job creation**
- 2. Substitution**
- 3. Destruction**
- 4. Change**

The Impacts of Climate Change on European Employment and Skills

In the Short to Medium-Term: A Review of the Literature-Final Report (2009)

The Impacts of Climate Change on European Employment and Skills

in the Short to Medium-Term: Company Case Studies-Final Report (2009)

Environment and ageing(2008)

Links between the environment, economy, and jobs(2007)

Facts and Figures: the links between EU's economy and the environment(2007)

Reports on Green Jobs

OECD

**Environment and Employment: An Assessment at Working Party
on National Environmental Policy (May 17, 2004)**

**Declaration on Green Growth (June, 2009)
the Meeting of the Council at Ministerial Level; Ministerial Council Meeting**

**A Proposal for Developing a Green Growth Strategy (November, 2009)
Framework for the Green Growth Strategy (November, 2009)**

**Green Growth: Overcoming the Crisis and Beyond (2009)
Creating green-collar jobs**

Reports on Green Jobs

USA

The Green Jobs Act of 2007

'An Act To move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.'

Greening of the World of Work: Implications for O*NET-SOC and New and Emerging Occupations

(The National Center for O*NET Development; 2009)

64 Green Increased Demand Occupations

60 Green Enhanced Skills Occupations

45 Green New and Emerging (N&E) Occupation

46 New candidate occupations

Green Jobs for a New Economy: the Career Guide to Emerging Opportunities (2010)

Reports on Green Jobs

- ❖ **The Complete Guide to Environmental Careers in the 21st Century (ECO; 1998)**
- ❖ **The ECO Guide to Careers that Make a Difference; Environmental Work for a Sustainable World (The Environmental Careers Organization) (ECO & Kevin Doyle; 2004)**
- ❖ **Great Jobs for Environmental Studies Majors (Great Jobs Series) (Julie DeGalan; 2008)**
- ❖ **Green Careers (Wetfeet Insiders Guide) (Frank Marquardt; 2008)**
- ❖ **Green Jobs: A Guide to Eco-Friendly Employment (A. Bronwin Llewellyn; 2008)**
- ❖ **Careers in Renewable Energy: Get a Green Energy Job (Gregory McNamee; 2008)**
- ❖ **Green Careers: Choosing Work for a Sustainable Future (Jim Cassio & Alice Rush; 2009)**
- ❖ **The Complete Idiot's Guide to Green Careers (Barbara Parks & Jodi Helmer; 2009)**
- ❖ **DC Green Jobs and Careers (Anca Novacovici & Dan Triman; 2009)**
- ❖ **7 Myths about Green Jobs (Andrew P. Morris, William T. Bogart, & Laura Huggins; 2009)**
- ❖ **Green Collar Jobs: Environmental Careers for the 21st Century (Scott M. Deitche; 2010)**
- ❖ **Green Careers in Energy: Your Guide to Jobs in Renewable Energy (Peterson's and Therese DeAngelis; 2010)**
- ❖ **Green Careers for Dummies (Carol McClelland; 2010)**
- ❖ **Green Careers in Building and Landscaping: Your Guide to Jobs in Sustainable Construction, Retrofitting, and Landscape Design (Therese DeAngellis; 2010)**
- ❖ **Job in Green Travel and Tourism (Green Careers) (Jacqueline Ching; 2010)**
- ❖ **Jobs as Green Builders and Planners (Green Careers) (Ann Byers; 2010)**

More on Green Jobs

Definition

Classification and Forecast

Changes in the employment structure

micro level (firm)

macro level (local, regional, and national)

Human resource policies

education

(re)training

Economic policies

Labor market policies



Thanks for all!