

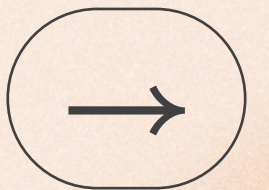
2025 APN

Greening Infrastructure: Korea's Experience

September 24, 2025

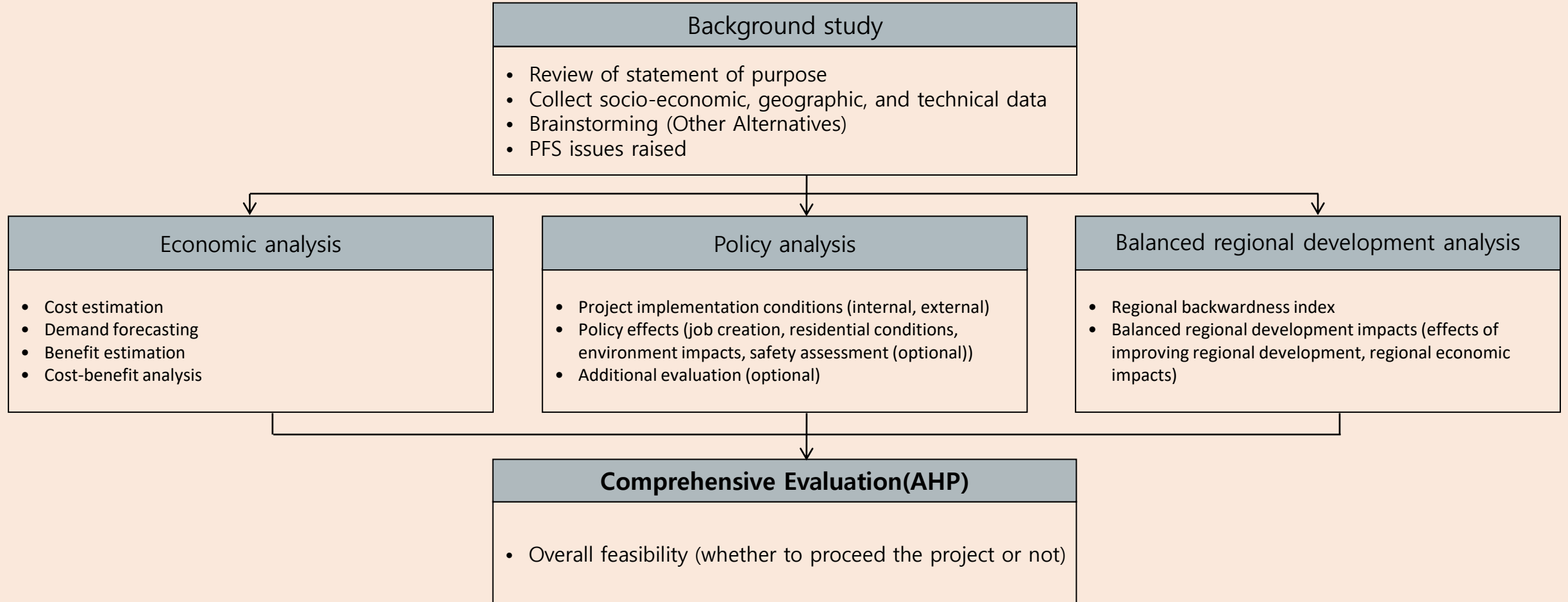
KDI

Assessing Environmental and Social Factors in Feasibility Analysis



1

Structure of Feasibility Assessment



2 Methods of Feasibility Assessment

1 Economic Analysis

Conduct cost-benefit analysis to determine the economic feasibility of a project by comparing the socio-economic benefits with the accompanying costs

2 Policy Analysis

Evaluate social benefits or risks resulting from factors that cannot be quantified by the cost-benefit analysis, but should still be considered in the project decision-making process

3 Balanced Regional Development Analysis

Additional scores are given to projects in less developed regions and projects with significant ripple effects for such regions



Analytic Hierarchy Process (AHP)

Quantifiable

Project sector	Environmental value assessment items
Road & Rail (Transportation)	<ul style="list-style-type: none"> • Air pollution reduction (including greenhouse gases) benefits • Noise reduction benefits • Water pollution reduction benefits • Environmental cost savings benefits from electrification projects
Harbor/Port	<ul style="list-style-type: none"> • Environmental cost-saving benefits in the logistics network • Environmental cost-saving effects from reduced transportation distance • Environmental cost-saving effects from fuel conversion
Water Resources	<ul style="list-style-type: none"> • Water quality improvement benefits from improved water usage
Environmental Facilities	<ul style="list-style-type: none"> • Water environment improvement benefits • Odor improvement benefits • Greenhouse gas and air pollution reduction benefits • Water resource saving benefits
Land & Urban Development	<ul style="list-style-type: none"> • Benefits from urban parks and green areas
Energy & Resource Development	<ul style="list-style-type: none"> • Air pollution improvement benefits • Greenhouse gas reduction benefits

Note: Applied considering the characteristics of individual projects in the actual feasibility study
Source: KDI, "A Study on Incorporation of Environmental Values in Feasibility Assessments," 2022..

4 Social and Environmental factors in Economic Analysis: Cost

<Example>

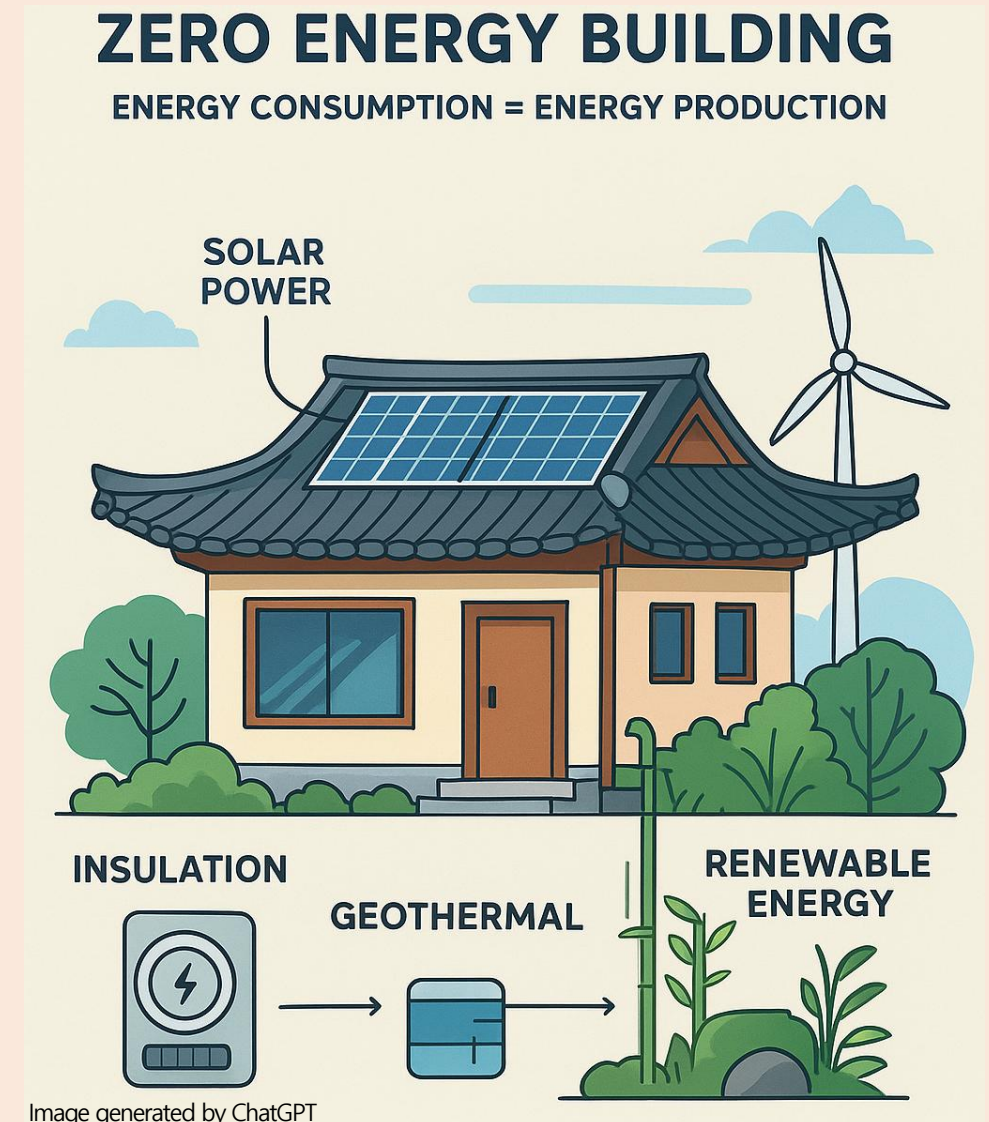
'Zero Energy Buildings'

From 2020, all buildings over 1,000m² must comply with Zero-energy building regulations

- high-performance insulation
- energy-efficient HVAC (heating, ventilation, air conditioning) systems
- on-site renewable power generation (i.e. solar and geothermal energy)

Higher upfront costs

taken into account in the cost-benefit analysis



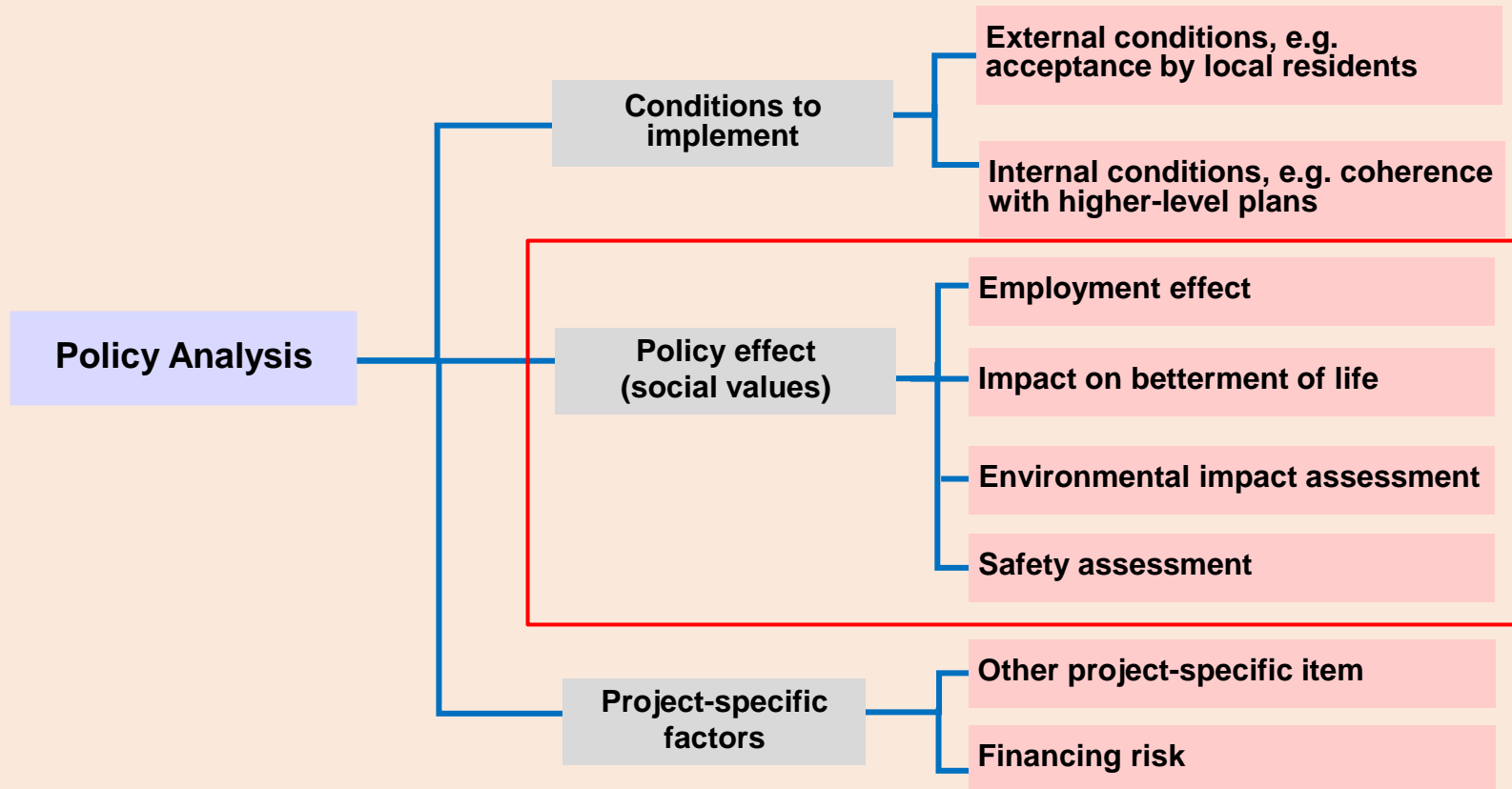
Zero Energy Buildings



Images from Korea Energy Agency ZEB website (www.zeb.energy.or.kr)

5 Social and Environmental factors in Policy Analysis

Unquantifiable



Principles of policy effects review:

- (1) Any overlap among evaluation items, including those items already incorporated in the economic analysis?
- (2) Meaning and significance of each evaluation item is well described?
- (3) Meaning and significance of each evaluation item is logically linked to project's implementation?
- (4) Magnitude of the effect presented quantitatively or qualitatively is appropriate?

6 Takeaways and Challenges

Takeaways

Feasibility assessment strengthens decision-making by factoring in social value alongside economic considerations, ensuring that qualitative and social impacts are explicitly reflected in the evaluation



Challenges

Still face growing demand to quantify and integrate non-monetized social and environmental values, which will require further research and methodological development



Thank You