

KOREAN REPORT ON WEC ENERGY POLICY SCENARIOS TO 2050

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이 자료는 지난 5월 24일 중국 소흥시에서 개최된 WEC 아태지역 에너지 시나리오 워크숍 및 역내 회원국 회의에서 'Energy Policy Scenarios to 2050' 을 위한 아태지역 국가별 보고서 중 에너지경제연구원 김남일 박사가 발표한 우리나라의 국가 보고서 내용입니다.

I. Introduction

WEC national member committees are asked to submit a national report along with the Terms of Reference for the Regional Analysis.

On behalf of WEC Korean member committee, Korea Energy Economics Institute (KEEI) has produced this Korean Report.

1) Global Scenarios

The WEC scenario study will be based on policy environment that are defined in relation to two dimensions:

- Heavy or Light engagement of Government (HG or LG)
- High or Low Integration and Co-operation between nations (HC or LC).

Also the relevant energy trends can be categorized for 2 types, "decelerating TPER" or "accelerating TPER" scenarios.

Therefore eight options could be listed.

2) Korean Features

1. Outline

Korea is poorly endowed with energy resources. Korea's indigenous energy resources are limited to anthracite, firewood and hydropower. The rapid industrialization of the economy progressed during the 1960's and 1970's contributed to Korea's remarkable economic growth, propelling

energy consumption at a rapid pace.

Since the industrializing process in the 1970' s was concentrated on heavy and raw material industries which are relatively energy-intensive, the increasing rate of energy consumption had outpaced economic growth rates until the second oil shock hit the Korean economy.

The second oil shock forced Korean government to revise the industrial development policy to promote less energy-intensive industries such as machinery, electric appliances and equipment industries and to diversify energy sources to reduce oil dependency of the economy.

However, due to the continuation of low oil price since 1986 and the considerable expansion of petrochemical capacities in the early 1990s, oil consumption has soared at a high growth rate. Therefore, total energy consumption increased at an average growth rate of more than 7 percent in the 1980' s and the 1990' s.

But the growth rate has dropped since the foreign currency crisis took place in the late 1990' s, which mainly resulted from the low economic growth rate.

Korea' s level of dependence on oil has decreased drastically since the second oil crises (from 61% in 1980 to 45.7% in 2004). On the other hand, nuclear energy and natural gas have grown in importance in their supply share of energy. Consumption of nuclear energy has increased from 2% in 1980 to 14.8% in 2004, while natural gas has increased from 3.2% in 1990 to 12.9% in 2004.

Almost all Korean primary energy sources are imported from abroad. Moreover as energy imports are largely dependent on Middle East suppliers, any regional conflicts or marine transportation route crises could seriously impact the stability of energy supplies to Korea. That is, ensuring the energy security is a major issue in Korea.

In light of recent drastic changes around the globe resulting from deregulation and market reforms, the energy industries in Korea are relatively less liberalized. Energy sector in Korea is facing many changes that are both internal and external : high oil prices coming from instability of international oil market, environmental concerns after Russia' s ratification of Kyoto Protocol, intensified competition over securing energy resources, and increasing demand by civil society for participating in formulating energy policy. Under these changing conditions, Korean government pursues reshaping of policy objectives toward sustainable energy security strategy. Three main policy directions for the sustainable strategy are strengthening energy supply security, transformation to energy efficient society, and establishing sustainable energy system.

Korea is currently exploring workable energy cooperation schemes in Northeast Asia in order to mitigate energy security risks and, at the same time, to secure cost-effective energy supply.

2. Premises of Scenario Analysis for Korea

(1) Unique Features of Korean Energy

First of all, indigenous energy resources in Korea are very limited, recording 97% overseas

energy dependency. Korea faces several risks in terms of energy security : geopolitical risk coming from heavy dependence on the middle eastern oil, supply risk due to rapidly increasing Chinese energy demand, and high oil price risk caused by unstable international oil market. Therefore, international/regional cooperation should be required at any events for ensuring stable energy supply.

Second, government has stepped toward withdrawal from direct control of energy assets, and for facilitating a new regulatory framework while it has to ensure the major long-term objectives of energy security and efficiency. Korean government is standing at a crossroads to readjust its role on energy sector.

Third, in light of recent drastic changes around the globe resulting from deregulation and market reforms, the energy industries in Korea are relatively immature and still monopolized. The restructuring process in power and gas industry is staggering while oil industry was liberalized in 1998. Therefore, end-user prices of energy are mostly regulated, not reflecting marginal costs.

Fourth, South Korea is an energy island neighboring to North Korea, which can cause serious restrictions on a set of oil and gas pipeline routes in north east Asia.

(2) BAU Scenario (KEEI Analysis)

BAU Scenario is estimated by KEEI in implementing two national projects “Prospects and Direction of National Energy Policy in response to UNFCC” in August 2005, and “National Plan toward Hydrogen Economy 2040” in November 2005.

Indicator	2003	2020	2030	2040	Avg. Annual Growth Rate (%)			
					'03- '20	'20- '30	'30- '40	'03- '40
GDP	540.8	1,089.4	1,536.7	2,074.2	4.2	3.5	3.0	3.7
Primary Energy (mill toe)	215.1	330.7	408.1	448.3	2.6	2.1	0.9	2.0
Energy Intensity (TOE/1,000 USD)	0.40	0.30	0.27	0.22	-1.7	-1.0	-2.0	-1.6
Population (million)	47.8	50.0	49.3	46.9	0.3	-0.1	-0.5	-0.1
GHG emissions (million TOE)	131.4	177.2	211.4	227.2	1.8	1.8	0.7	1.5

Long-term trends in primary energy consumption are affected by a number of factors that are difficult to predict, such as energy prices, economic growth, and industry structure. It is commonly assumed in long-term prospects for Korea’s energy future that the economic growth rate will slow down gradually during the period of 2003 to 2040 and the share of energy-intensive industries is projected to continuously decline for the next several decades.

Oil dominates energy mix in Korea, accounting for around 47.6 per cent in total primary energy consumption in 2003. However, its share in total primary energy consumption will decline to 34.6 per cent in 2040. Demand for bituminous coal is projected to nearly double from 2003 to 2040, mainly due to a high increase in use for power generation.

Natural gas consumption will increase at a rate of 2.8 percent during the period of 2003 to 2040. Nuclear is projected to grow at an annual average rate of 2.9 percent from 2003 to 2040. Its share of total primary energy will expand to 21.0 percent in 2040.

(3) General Notes for Scenario Analysis

< General Notes : Assumptions >

- ◇ The common assumptions and the global & regional descriptions are maintained for all 4 scenarios as given by WEC
- ◇ Korean mitigating policies are modified in line with uniqueness of energy situation
- ◇ Only consider decelerating TPER due to expected slowdown of economic growth rate to 2050
- In line with the BAU Scenario, it seems not so risky to single out only decelerating scenarios for the sake of analytical simplicity. We focus on the most likely four scenarios among eight candidates in this Korean Report on Energy Policy Scenarios to 2050.
 - Scenario 1 LG-LC with decelerating TPER,
 - Scenario 2 HG-LC with decelerating TPER,
 - Scenario 3 HG-HC with decelerating TPER,
 - Scenario 4 LG-HC with decelerating TPER
- ◇ Scenario 1 (LG-LC) with given mitigations is a bottom line that is corresponding to BAU Scenario (KEEI)

< General Notes : 3A Assessment >

Accessibility has been almost completely secured nowadays in Korea except some isolated and remote areas. Therefore, the proposed mitigation policies, if taken, would be more relevant to improve Availability and Acceptability. As almost all the primary energy sources should be imported to Korea, the mitigation policy is naturally assumed to aim to be effective to improve the energy security, leading to enhance the Availability with the necessary considerations to Acceptability.

◇ Accessibility

- Given more than 99% electrification and nationwide energy infrastructures, accessibility is not an issue any more in Korea.

◇ Availability

- As almost all Korean primary energy sources are imported, government should be emergency-prepared and international/regional cooperation should be sustained at any events to improve availability

◇ Acceptability

- Given the lack of other options, nuclear is necessary with respect to enhancing energy security and reducing overall emissions.
Public acceptance of nuclear energy should be achieved in Korea.

< General Notes : After-2040 Pictures >

◇ Residential/Commercial Sector

- Change in preferred housing mode : conventional apartment to mall-augmented apartment and mansions in suburban area
- Intelligent building energized by distributed generation (heat and power)

◇ Transport Sector

- Popularized fuel cell vehicles using hydrogen, bio fuels or fossil fuels
- Subject to the “National Plan toward Hydrogen Economy 2040” (2005)

◇ Industry Sector

- More share of less energy consuming industries
- Lowered portion of manufacturing, higher of service sector

II. Korean Scenarios**1) Scenario 1, LG - LC with decelerating TPER**

1. Global Aspects

This scenario has as its primary driver domestic economic development underpinned by domestic energy security. Government engagement will be constrained, reluctant to pursue the structural reforms and continue to rely on welfare policies that limit economic dynamism.

The lack of government engagement and international co-operation results in a less reactivity to external events such as energy shocks or world recessions.

The transfer of know-how and technologies will be relatively constrained under this scenario.

In this scenario there is no international post-Kyoto treaty and therefore the GHG emissions go beyond the 550 ppm ceiling because of the reliance on coal when oil prices soar and energy demand increases. Many of the actions could also involve environmental compromises.

Availability is a problem in this scenario since nothing is done to avoid the shocks and their

impacts on all countries, especially OECD. The market mechanisms could be used to advance energy security objectives and companies will seek long term international supply agreements to enhance energy security.

Acceptability remains so-so because of increased reliance on coal. So GHG emissions are likely to grow. It could be expected to set nationally focused environmental goals.

2. Korean Aspects to Scenario 1, LG - LC with decelerating TPER

(1) As Mentioned before, Scenario 1 (LG-LC) with given mitigations is a bottom line that is corresponding to BAU Scenario (KEEJ)

- GDP will keep growing up to 2050, but at a decreasing rate
- Energy Intensity will keep decreasing, because GDP Growth is larger than the increase of Primary Energy Requirement
- Primary Energy Mix will keep improving up to 2050 because dominant share of Oil will keep decreasing.
- Supply / Demand Tension

Oil will keep decreasing. Coal will keep increasing till 2040 due to continued use for generation. Gas will keep increasing mainly because of increased demand for clean fuel till 2040. Nuclear and Renewables will keep increasing.

(2) Mitigations

① Korean Government

- Initiating energy market liberalizations
- Continuing overseas E&P projects, offshore oil exploration in Korean territory for ensuring domestic energy security
- Promoting energy conservation technologies, renewables
- Strengthening policies on energy source diversification (Nuclear)

② International Cooperation

- Total Diplomacy for diversification of energy import source
- Regional Cooperation with resource-endowed countries (NE Asia)

(3) 3A assessment

① Accessibility

- Accessibility will remain neutral, because it is matured and will not change in Korea

② Availability

- Availability may be still a problem even with the government's efforts on energy procurement and regional cooperations

③ Acceptability

- More dependence on nuclear energy raising acceptability debates

2) Scenario 2, HG - LC, with decelerating TPER

1. Global Aspects

The first priority with this scenario will be energy security. In this scenario governments would, in response to potential oil and gas shortages, take specific actions to ensure security of supply. These actions could include.

- Conservation programmes
- Bi-lateral development of offshore energy resources
- Nuclear programmes
- Infrastructure investment
- Subsidies for renewable technologies

More internationally traded oil and gas would become available and would alleviate or avoid the shortages.

There will be a strong sense of national pride and strong incentives to ensure development of domestic capability. The transfer of know-how and technologies will be relatively constrained.

This focus on domestic interests may have a negative impact on economic growth since some domestic solutions may be sub-optimal or reliant on older technologies

From a climate change point of view decreases in energy use and increase in renewables and nuclear would be positives. Coal-to-liquid and oil shale projects would need to be coupled to CCS to avoid increased GHG emission from the transport sector.

2. Korean Aspects to Scenario 2, HG - LC with decelerating TPER

Under this Scenario, Korean government should be well-prepared for emergency. Given the condition of low international cooperation, a wide range of domestic measures will be initiated toward a transition to less energy-consuming society. Hydrogen economy would be possibly pursued. It is necessary to implement full energy technology to improve the energy efficiency.

(2) Mitigations

① Korean Government

- All mitigating policies mentioned at Scenario 1
- Accelerating a transition to less energy-intensive industry structure
- Implementing the “National Plan toward Hydrogen Economy 2040” (2005)

② International Cooperation

- All mitigating policies mentioned at Scenario 1

(3) 3A assessment

① Accessibility

- Accessibility will remain neutral, because it is matured and will not change in Korea

② Availability

- Availability may be tightened because each country will make full efforts to secure its own energy resources in the midst of less cooperative moods

③ Acceptability

- Hightened interests in alternative energy sources (hydrogen, renewables) could improve acceptability, except for nuclear energy debates

3) Scenario 3, HG - HC, with decelerating TPER

1. Global Aspects

In this scenario, Governments will actively share their experience and expertise, in pursuit of human rights issues, poverty alleviation and climate change mitigation. The global concerns of Greenhouse Gas Emissions and Energy Poverty are the subject of international action driven agreements and programs.

The reduction of energy poverty will increase demand, which will stretch energy supplies and infrastructures.

From an energy technology point of view, there will be a stimulus to develop technologies. Funding of such development will be encouraged through pro-active co-operative energy policies, bi-lateral and regional inter-Government agreements and specific fiscal incentives. The technology focus will help to mitigate some of the energy constraints.

In terms of environmental safeguards, GHG emissions would remain under check with the performance targets collectively agreed and respected, backed up with technology driven action plans. Managing GHG emissions will have a significant cost which will have a negative impact on GDP making energy poverty reduction harder to achieve.

Strong global cooperation will be required on.

- energy poverty reduction,
- energy supply for the increased demand, and
- low emissions, efficient energy technologies for GHG emissions reduction,

2. Korean Aspects to Scenario 3, HG - HC with decelerating TPER

- (1) The primary driver of this Scenario is sustainable development. Energy security and economic growth will be pursued in accordance with environmental considerations. Technological development for GHG emissions reduction will be promoted by government. It is further stimulated by international cooperation.

(2) Mitigations

① Korean Government

- All mitigating policies mentioned at Scenario 1
- Strengthening energy conservation policies
- Promoting RD&D projects on reduction of GHG emissions

② International Cooperation

- All mitigating policies mentioned at Scenario 1
- Addressing cross-border environmental problems (NE Asia)
- Enhancing bilateral/multilateral cooperation in tackling climate change

(3) 3A assessment

① Accessibility

- Accessibility will remain neutral, because it is matured and will not change in Korea

② Availability

- Availability may be improved through enhanced international/regional cooperation

③ Acceptability

- Improvement on acceptability will be attained by various environment-friendly measures

4) Scenario 4, LG - HC, with decelerating TPER

1. Global Aspects

In this scenario the primary driver is economic development. The main preoccupation will be freeing up global markets to promote GDP growth through affordable energy. There will be few restrictions on global movement of goods and services.

In this scenario little is done by governments to proactively avoid the energy shocks and their impacts on all countries, especially OECD. However, the positive side is the capacity of market forces to foster new technologies.

The market driven interchange will lead to the transfer of technology and experience.

Environmental awareness would probably be enhanced but increasing reliance on coal and increased energy demand will raise GHG emissions. In this scenario market driven mechanisms such as Clean Development Mechanism (CDM), Joint Implementation (JI) and International Emissions Trading will allow countries to meet internationally agreed targets.

Because of the lack of proactive government policy intervention and anticipation, severe energy shocks will probably happen but the open world economy will be resilient and will rebound after the recessions.

The success of this policy option will depend on whether the market will deliver technologies to increase security and reduce GHG and other environmental impacts.

2. Korean Aspects to Scenario 4, LG - HC with decelerating TPER

This case requires Korean government to maintain nuclear energy and pursue alternative energy sources and active cooperation to ensure energy availability. Strengthening regional cooperation, especially participating in oil and gas pipeline projects in North East Asia, may be an effective means to this goal.

(2) Mitigations

① Korean Government

- All mitigating policies mentioned at Scenario 1

② International Cooperation

- All mitigating policies mentioned at Scenario 1
- Multilateral cooperation increasing bargaining power against Middle East
- Oil and gas pipeline projects in North East Asia

(3) 3A assessment

① Accessibility

- Accessibility will remain neutral, because it is matured and will not change in Korea

② Availability

- Availability may be weakened unless maintaining nuclear, developing alternative energies and active international /regional cooperation are pursued

③ Acceptability

- More dependence on nuclear energy raising acceptability debates

III. Summary and Recommendations

Summary and Recommendations from our analysis of Four Korean Energy Policy Scenarios with a view to WEC 3” A”s might be wrapped up as follows;

1) Accessibility

Through the strenuous efforts for past several decades, Korea has established the highly reliable energy infrastructures - electricity networks and oil & gas pipelines for transmission/ distributions, attaining domestic energy accessibility.

In order to sustain this level of Accessibility for the future, Korea has to address this issue as a top priority and proper level of investment for maintenance and needed extension of energy infrastructures following the energy demand growth.

2) Availability

As Korea is poorly endowed with its indigenous primary energy sources, energy availability is an essential factor for its economic sustainability. Future prospects require Korean government to make its full efforts to secure its energy Availability by conducting various policy measures including;

- To initiate energy market liberalizations
- To continue overseas E&P projects, offshore oil exploration in Korean territory for ensuring domestic energy security
- To promote energy conservation technologies, renewables
- To accelerating a transition to less energy-intensive industry structure
- To strengthen policies on energy source diversification(Nuclear)
- To engage in total diplomacy for diversification of energy import source
- To enhance regional cooperation with resource-endowed countries (NE Asia)
- To implementing the “National Plan toward Hydrogen Economy 2040” (2005)
- To participate in oil and gas pipeline projects in North East Asia

3) Acceptability

Given the energy security as the top priority, Korea also has to consider to enhance acceptability in parallel when it proceeds its energy policies by constituting its energy mix to be as low as possible with its carbon intensity, fully utilizing nuclear power generation, effective renewables, as well as higher efficiencies technologies.

Korean government also need to actively participate in bilateral /multilateral cooperation to tackle global climate change.

Worldwide increase of consumptions of fossil fuels, especially coal, in coming decades would make it quite difficult to suppress the GHG concentration in the atmosphere within desirable level, unless effective, substantial international co-operations could be implemented.

IV. References

- “Energy Policy Scenarios to 2050, Framework” (January 2006)
- “WEC Energy Policy Scenarios to 2050, Terms of Reference for the Regional Analysis” (September 2005)
- Letter from Asia Regional Coordinator dated 24 January 2006
- “Prospects and Direction of National Energy Policy in response to UNFCCC” (by KEEI, August 2005)
- “National Plan toward Hydrogen Economy 2040” (by KEEI, November 2005)

TABLE 1a		UNMITIGATED			
Scenario Number 1 : Low Gov.-Low Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1b		MITIGATED			
Scenario Number 1 : Low Gov.-Low Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1a		UNMITIGATED			
Scenario Number 2 : High Gov.-Low Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1b		MITIGATED			
Scenario Number 2 : High Gov.-Low Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1a		UNMITIGATED			
Scenario Number 3 : High Gov.-High Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1b		MITIGATED			
Scenario Number 3 : High Gov.-High Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1a		UNMITIGATED			
Scenario Number 4 : Low Gov.-High Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

TABLE 1a		MITIGATED			
Scenario Number 4 : Low Gov.-High Cooperation		Korea			
		2003	2020	2040	2050
GDP Growth		→	→	→	→
Demographic Growth		→	→	→	→
Energy Intensity		→	→	→	→
Prim Energy Mix		→	→	→	→
GHG Emissions		→	→	→	→
Supply / Demand Tension	Oil	→	→	→	→
	Gas	→	→	→	→
	Coal	→	→	→	→
	Nuclear	→	→	→	→
	Renewables	→	→	→	→
	Non-Commercial	N/A	N/A	N/A	N/A
Tot. Prim Energy Requirement		→	→	→	→
	Neutral	Increasing	Decreasing		
Key	→	→	→		

Table 2a	UNMITIGATED		
Korea	Availability	Accessibility	Acceptability
Scenario 1	→	→	→
Scenario 2	→	→	→
Scenario 3	→	→	→
Scenario 4	→	→	→
Key	Neutral →	Increasing →	Decreasing →

Table 2b	MITIGATED BY POLICY		
Korea	Availability	Accessibility	Acceptability
Scenario 1	→	→	→
Scenario 2	→	→	→
Scenario 3	→	→	→
Scenario 4	→	→	→
Key	Neutral →	Increasing →	Decreasing →