Implementation status and Suggestions for Korea's SDG 15 (Life on Land)

Raehyun KIM[1], Eunho Choi[1], Seongsil CHO[1]

[1][Division of Global Forestry, National Institute of Forest Science, rhkim@korea.kr]

Abstract

Forests take a critical role in SDGs in that SDG 15 (Life on Land) supports to prevent desertification, promote deforestation neutrality and halt biodiversity loss. At this point, this analysis aims to investigate closely detailed targets and indicators of Korea's SDG 15 which are related to the forestry sector because South Korea is closely connected with forests territorially. Therefore, this analysis first looked into the current situation in South Korea across the targets of SDG 15 and consequently evaluated each indicator by comparing them with the related national policies. As a result, it was identified that 1) the forest-related targets and indicators involve a lot of potential of synergies and trade-off with other SDG's indicators and 2) efforts to improve the current institutional systems are required from political, economic, social, and technological aspects. Of them, SDG 7 is significant because they can support the achievement of overall SDGs including SDG 15 if the offsets between them and SDG 15 are resolved. In addition, SDG 11 is also required to be improved over various indicators in order to reinforce the synergies with SDG 15. However, there was a limitation to evaluate all the indicators of K-SDG 15 since the whole detailed targets and indicators of K-SDG have not yet been completed in terms of systems for their implementation and evaluation. Therefore, this analysis also suggests the need to complete the system in the near future.

Keywords: K-SDG, Forests, Synergies, Trade-off, Attainability

Introduction, scope and main objectives

In 2015, the United Nations (UN) summit adopted 'Sustainable Development Goals (SDGs)' which invited all nations including the least-developed, developing and developed countries in order to make efforts for prosperity of human beings and to promote environmental conservation. At this point, South Korea recognized the need of an institutional framework to monitor and assess the implementation of SDGs and, as a result, the country established 'Korean-SDGs (K-SDGs)' in 2018 to support the global efforts and currently, K-SDG has been developed once again to be applied from 2021 until 2040.

The primary K-SDGs which was set up in 2018 consisted of 17 Goals, 122 sub-goals and 214 indicators with targets to be achieved by 2030. This is currently changed into including 17 Goals, 119 sub-goals and 236 indicators(Ministries concerned of the Republic Korea, 2020). Within the goals, forests take a critical role, especially, by supporting SDG 15 to prevent desertification, promote deforestation neutrality and halt biodiversity loss. K-SDG 15 consists of 7 sub-goals and 15 indicators. It features the goal considers and reflects the challenge of the division of the country. In addition, South Korea is one of the most successful case of reforestation nationwide since the past and the country is closely connected with forests territorially. Some researches have tried to figure out correlation of forests and K-SDGs (National Institute of Forest Science, 2020). This analysis further aims to suggest an effective approach to implement the goals by looking into detailed targets and indicators of Korea's SDG 15 in the forestry sector. To do this, the analysis focused on several key indicators of K-SDG 15 (Life on Land) first and looked into the correlations of each with other goals.

Methodology/approach

Considering forests in South Korea, the analysis focused on several key indicators, which are 15-1(1) 'the rate of protected areas for biodiversity of land and freshwater', 15-1(2) 'the rate of forestland of the total land areas', 15-6(2) 'the damaged area of forests by sudden exotic species' and 15-7(1) 'the restoration of forests including Baekdudaegan[1]' (Table 1). This is because: land area is the most fundamental element which is affecting all other indicators within SDG 15; the prevention of deforestation is an essential way to maintain and enhance ecosystem services from forests and; South Korea has a challenge to overcome the division of the country.

Table 1 The overview of the K-SDG 15 indicators for this analysis

Indicators	Targets	
	2030	2040
15-1(1) The rate of protected areas for biodiversity of land and freshwater	17.0%	Stable
15-1(2) The rate of forestland of total land areas	Continuously expanded	
15-6(2) The annual damaged area of forests by diseases and insects	10,000ha	Continuously decrease
15-7(1) The restoration area of forests including Baekdudaegan	1,812ha	3,000ha

Source: Korean Sustainable Development Portal (www.ncsd.go.kr)

The indicators mentioned above were reviewed by experts of forests and K-SDG to comprehend 1) the necessity of sub-goals and compatibility with national forest policies, 2) the current status in the country about the indicator, and 3) the expected synergies and trade-off of the indicator with other goals because it deserve to look into them for the target.

South Korea has a long-term forest plan which is implementing currently – The 6th National Forest Plan. This means the plan is the core plan in the forestry sector and, therefore, other forest policies in the country should be compatible with this. Hence, this analysis looked into the indicators basically based on the national forest plan and, in addition, other plans were compared together to figure out the necessity, compatibility, synergies and trade-off.

Results

1. 15-1(1) The rate of protected areas for biodiversity of land and freshwater

1.1 The necessity and compatibility of 15-1(1)

South Korea, as a successful country in the national greening projects, has to conserve the manage the afforested areas. Moreover, the country should restore if another deforestation occurs and prevent land degradation in advance. This means the indicator of 'the rate of protected areas for biodiversity of land and freshwater' is required to properly manage the ecosystems in the country.

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[1] Baekdudaegan is the biggest and longest mountain range which spreads across from the North to the South Korea, meaning that this is a symbolic and characteristic range in terms of the national relationships as well as the function of the ecosystem in the Korea peninsula.

The indicator 15-1(1) correspond 'the 3rd National Forest Biodiversity Plan' of the 6th National Forest Plan in that it ultimately pursues terrestrial biodiversity. For other national promotion plans, this indicator is supporting 'system establishment to conserve and manage forest protected areas' and 'efficient expansion and management of the national forests'.

1.2 The current status and attainability of 15-1(1)

The indicator 15-1(1) is targeting the terrestrial protected area to account for 17.0% of the domestic terrestrial area by 2030 and, in turn, consistently expanded by 2040 from 16.6% since 2020 (Korea Database on Protected Areas, http://www.kdpa.kr/#). The 2030 target is equal to UN's recommendation. As of 2017, the status of South Korea lagged behind it but corresponding to the establishment of K-SDG, the ratio has been increased since 2018. As a result, it showed 16.6% in 2019 and, in turn, 16.9% in 2020 which is very close to the 2030 target.
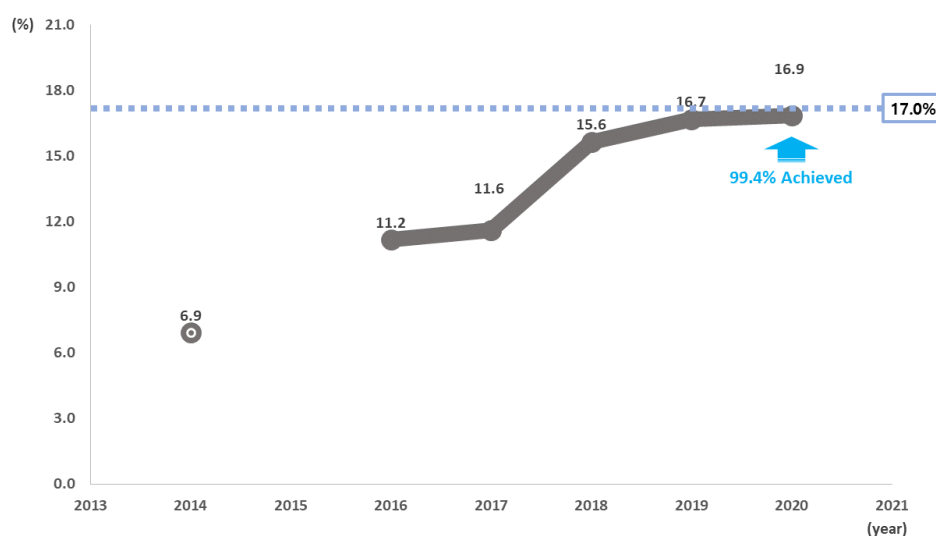
Fig. 1: The tendency of the rate of terrestrial protected area in South Korea

2. 15-1(2) The rate of forestland of total land areas

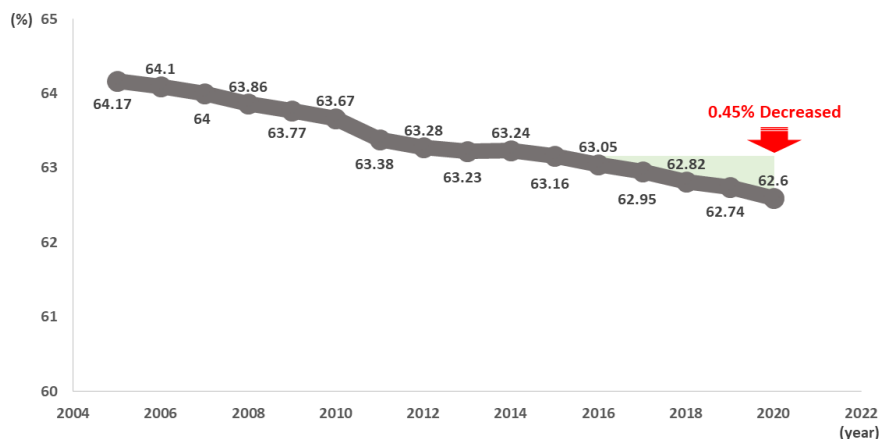### 2.1 The necessity and compatibility of 15-1(2)

This indicator is associated with the need of management of ecosystem in the country based on sustainable forest management, prevention of land degradation and expansion of biodiversity like the former indicator. However, more than this, 15-1(2) would be the bottommost one because it is a requirement of promotion and implementation of policies for conserving and restoring the national ecosystems.

Moreover, this indicator is directly related to a part – 'contribution to the nationally determined contributions (NDC)' – of the strategy-specific plan in the 6th National Forest Plan. All countries are focusing on the significant issue, NDC, nowadays as it means carbon emission reductions. South Korea is also endeavoring to achieve the contribution. This means this indicator is critical at the international as well as national aspects.

2.2 The current status and attainability of 15-1(2)

The target of this indicator says that the rate being expanded sustainably form 63.7% in 2015. However, the rate tendency was being retrogress. During 2010-2015, the domestic forestland area in the end of 2015 was 63.35 hundred thousand of hectare which was 3,400 ha (0.54%) less than that in 2010 whereas it declined by

0.45% during 2015-2020. This showed the decrease seemed to get slow but, however, it has been still going downward trend inviting the need of innovative improvement.

**Fig. 2: The tendency of the rate of forestland of total land areas in South Korea**

3. 15-6(2) The annual damaged area of forests by diseases and insects

3.1 The necessity and compatibility of 15-6(2)

This indicator is suitable to the strategy-specific plan of 'the preemptive prevention and control of diseases and insects' in the 6th National Forest Plan. Also, this supports the 'Law on the conservation and the use of biodiversity'. The law requires the government to manage the native biodiversity based on national invasive alien species management plans which establish every five years. However, the system needs to be developed more in order to monitor and analyze the damage systemically as other developed countries do.

3.2 The current status and attainability of 15-6(2)

The target of this indicator requires to decrease the annual damaged area by 10,000 ha in 2030, whereafter to be continuously decreased by 2040. The current figure seems to be still high comparing the targets. However, when looking into the overall figures since 2000, it is obvious it is drawing downward tendency. According to the tendency, it is expected that the targets for 2030 and 2040 are achievable.
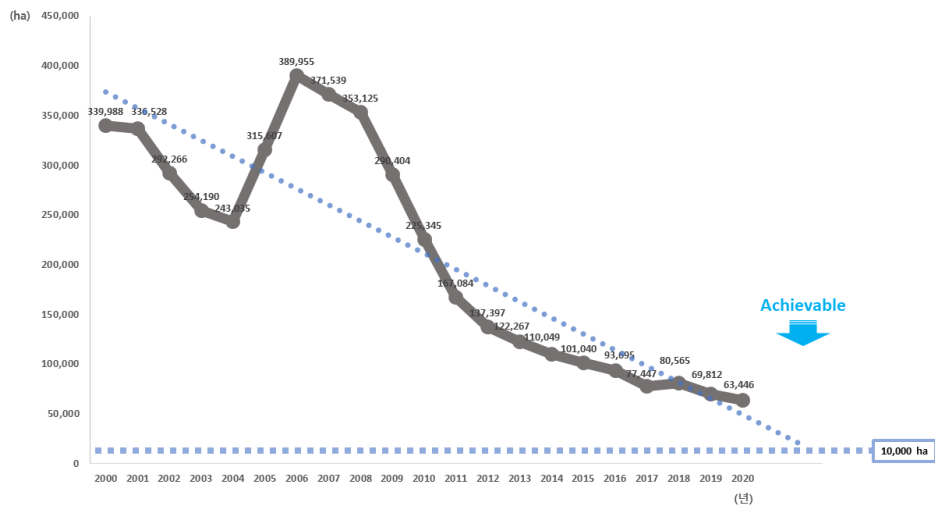
Fig. 3: The change of the damaged area of forests by sudden exotic species in South Korea

4. 15-7(1) The restoration area of forests including Baekdudaegan

4.1 The necessity and compatibility of 15-7(1)

South Korea features the country include characteristic valuable ecosystems and Baekdudaegan is the biggest and the longest mountain range in the country. It is worth noticing not only ecological aspect but also societal aspect. The restoration of Baekdudaegan is worthy to conserve and restore the unique ecosystems of the country in terms of ecosystem function. In addition, the range will take a critical role in preparing the unification of the two Koreas. At this point, the indicator also can support several relative policies, which are that for biodiversity[2], Baekdudaegan and DMZ regions[3], and ecological axis[4] in the 6th National Forest Plan.

4.2 The current status and attainability of 15-7(1)

The current status of this indicator showed 625.93ha which much lag behind the 2030 target which requires 1,812 of the restoration, which accounts for 34.5% of the achievement. Further, it does only 20.9% of the 2040 target. The tendency of 15-7(1) also shows that the country has to restore Baekdudaegan accelerated (Figure 4). This result is meaningful in that the restoration re-connects the ecological axis cut off by the division of the two Koreas. because it is the main mountain range functioning as the principal axis of the topography in the country.

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[2] The 3rd Forest Biodiversity Master Plan 2018-2022

[3] Baekdudaegan and DMZ Restoration Plan

[4] Forest Ecological Axis Connection and Restoration Plan
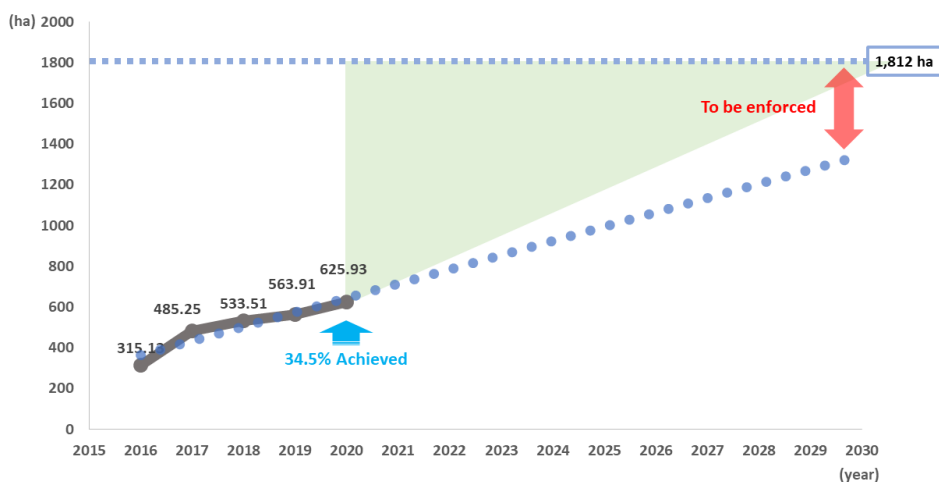
Fig. 4: The change of the restoration area of forests including Baekdudaegan

5. The expected synergies and trade-off among the indicators

According to a research on the national implementation plan in relation to the forestry K-SDG (National Institute of Forest Science, 2020) , K-SDG is aiming 1) societal development, 2) economic development, and 3) environmental conservation. The first aim involves the Goal 1 to 6 which are for the recovery of human dignity. The second aim does the Goal 8 to 11 which pursue sustainable economic growth drivers. Lastly, the Goal 7 and 12 to 17 aim to conserve the ecosystems through responses to climate change and natural disaster risk, and protection of the environment. It is required to look into the correlation between SDG 15's indicators and those of other Goals in order to reinforce synergies and resolve trade-off for the attainability of SDG 15. Based on the findings of the research, this analysis investigated into the correlation of K-SDG 15's indicators and the others. Of them, it is worth noticing, for example, Goal 7 Goal 11 and Goal 13 (Table 2).

Goal 7 is significant to achieve Goal 15 because a couple of indicators of the goal have trade-off relation with Goal 15. The government of South Korea is targeting 30.8GW of new sunlight generation supply by 2030, which needs 49 thousand hectare or more. The sunlight generation could result in forest degradation despite it's temporary, and landslide caused by poor construction and management.

As an another example, the indicator of urban park area in Goal 11 has a potential to be improved. The indicator says 'urban parks', not 'urban green space' according to 'Urban planning status' of the country. On the other hand, 'Landscape architectural promotion master plan' is trying to develop urban parks as one of the contributors to carbon neutrality.

Lastly, Goal 13 brings synergies with Goal 15 in terms of responses to climate change. The indicators 'rate of local government planning a master plan corresponding to climate change' and 'National greenhouse gas emissions' are especially relative to carbon neutrality. Carbon neutrality is a challenge at the international level. South Korea also declared to reach it by 2050 and now is endeavoring. The country is focusing on the forestry sector as the biggest carbon removal – to remove 23.6 hundred thousand ton of CO_2.

Table 2 Overview of synergies and trade-off indicators within and outside K-SDG 15

Goal	indicator	Relative plans	Correlation

	2(1) Percentage of renewable energy generation	- Implementation plan for renewable energy 3020	Trade-off resolution required
7	2(2) Percentage of renewable energy to primary energy	- The 4th new renewable energy master plan (revised)	
11	7(1) Urban park are per capita	- Landscape architectural promotion master plan - Urban planning status	Improvement of indicator required
13	2(1) Rate of local government planning a master plan corresponding to climate change	- The 2nd climate change response master plan	Synergy Reinforcement required
	4(1) National greenhouse gas emissions	- 2050 Carbon neutrality scenario	

Discussion

The current status of the Goal 15 requires additional efforts to enhance the attainability of the indicators. Of them, forestland area is the most significant indicator. However, it is challenging to actively achieve the target for it due to continuous urban developments. Therefore, managing synergies, trade-off and additional contribution for it is essential.

To reinforce synergies and generate additional contribution, the country needs to expand the function of forests as carbon removal in relation to climate action including carbon neutrality. However, it can be less effective in the future if the current situation is continued because the function of forests will be weak over time. Therefore, it is required to make efforts and invest to reinforce the function of forests as carbon removal from the local level to the national level. In addition, it is necessary to expand a limited indicator – one for urban park area per capita – into 'urban green space' including urban forestry.

Also, trade-off is especially significant in enabling the forestry sector to fully support K-SDG 15. It is noticeable to reinforce permission standard for temporary forest degradation by examining environmental benefits from the sunlight generation, and to raise REC for biomass generation.

Table 3 Suggestions for K-SDG 15

Goal	indicator	Correlation	Improvement
7	2(1) Percentage of renewable energy generation	Trade-off resolution required	- To reinforce permission standards for forest degradation - To raise the REC for biomass generation
	2(2) Percentage of renewable energy to primary energy		
11	7(1) Urban park are per capita	Improvement of indicator required	- To include urban forests
13	2(1) Rate of local government planning a master plan corresponding to climate change	Synergy Reinforcement required	- To reinforce the function of forests as carbon removal
	4(1) National greenhouse gas emissions		

Conclusions/ wider implications of findings

Conservation, restoration and afforestation of forests in K-SDG 15 is critical. However, it is very challenging due to the social developments. At this point, the preparation of socio-ecological integrated policies in addition to technological development for conservation and restoration of forestry ecosystems will help to the functions and values of forests. Hence, the closest cooperation among concerned ministries is vital to achieve K-SDG 15 in South Korea, above all. On the other hand, the county also has to develop the current system to assess the implementation of the national sustainable developments in terms of social, economic and environmental aspects to mitigate trade-off expected. In addition, these efforts will be able to function well only when the whole county including each citizen or organization and local community pays attention and participates in the efforts. Therefore, the country has another requirement to draw the society. This means K-SDG 15 will be effectively achieved on a multilateral efforts.

Acknowledgements

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