

ORIGINAL RESEARCH PAPER

## Investigating Iran's Position in Indicators of Sustainable Development in Relation to Rights Habitat and Biodiversity Conservation

Mehdi Behraves<sup>1</sup>, Seyed Abbas Poorhashemi<sup>2</sup>, Mostafa Panahi<sup>3</sup>, Mohammad Reza Parvin<sup>4</sup>

<sup>1</sup> Department of Environmental Law, Faculty of Natural Resources and Environment, Islamic Azad University, Science and Research Branch, Tehran, Iran

<sup>2</sup> President of the Canadian Institute for international law expertise (CIFILE), Totonto, Canada

<sup>3</sup> Associated professor of Department of Environmental Economics, Faculty of Natural Resources and Environment, Science and Research Branch, Islamic Azad University, Tehran, Iran

<sup>4</sup> Assistant Professor of IP, Departement of Microbial Biotechnology, Agricultural Biotechnology Research Institute of Iran (ABRII), Agricultural Research, Education and Extension Organization (AREEO), Karaj, Iran

### ARTICLE INFORMATION

Received: 2021.12.05

Revised: 2022.01.30

Accepted: 2022.05.05

Published online: 2022.05.05

DOI: [10.22034/AP.2022.1946564.1124](https://doi.org/10.22034/AP.2022.1946564.1124)

### KEYWORDS

Sustainable development  
Indicators  
Habitat  
Biodiversity  
Environmental rights

### ABSTRACT

One of the most important goals of sustainable development, which is a requirement for all countries, is the protection of habitats and biodiversity. The purpose of this study is to investigate and determine the position of Iran in achieving the goals related to the protection of aquatic and terrestrial habitats and the realization of sustainable development indicators (SDG17). For this purpose, in this article, by comprehensively reviewing all valid international reports and documents, the rank and score of Iran has been determined and compared worldwide. The results showed that Iran has a score of 70.01 in achieving the goals of sustainable development, which is 74th among 165 countries in the world. Overall, based on the research findings, it can be said that Iran's ranking in achieving goal number 14 is slightly better than goal number 15. In other words, Iran has performed better in the field of marine biodiversity protection than inland biodiversity protection. The situation of Iran in the field of SDG14; Significant challenges remain and score moderately improving, insufficient to attain goal.

**How to Site:** Behraves M., Poorhashemi S.A., Panahi M., Parvin M.R., Investigating Iran's Position in Indicators of Sustainable Development in Relation to Rights Habitat and Biodiversity Conservation, Anthropogenic Pollution Journal, Vol 6 (1), 2022: 84-91, DOI: [10.22034/AP.2022.1946564.1124](https://doi.org/10.22034/AP.2022.1946564.1124).

Corresponding author: [mahdi.behraves@gmail.com](mailto:mahdi.behraves@gmail.com)



This work is licensed under the Creative Commons Attribution 4.0 International License. To view a copy of this license, visit

<http://creativecommons.org/licenses/by/4.0/>.

## 1. Background

Habitats and biodiversity as part of the environment of any country have an important role and place in achieving the goals of sustainable development. Part of the current environmental problems of the contemporary world is due to the extinction or depletion of wildlife reserves and the destruction of their natural habitats. The fate of man as a part of nature is inextricably linked with the fate of other living things and the environment (Mora et al, 2011). During the last century, decreases in biodiversity have been increasingly observed. In 2007, German Federal Environment Minister Sigmar Gabriel cited estimates that up to 30% of all species will be extinct by 2050 (Carrington, 2021). Of these, about one eighth of known plant species are threatened with extinction (Ghesemi Aghbash and Fataei, 2006); Ceballos et al, 2020). As of 2012, some studies suggest that 25% of all mammal species could be extinct in 20 years (Giam et al, 2010). In 2020 the World Wildlife Foundation published a report saying that “biodiversity is being destroyed at a rate unprecedented in human history”. The report claims that 68% of the population of the examined species was destroyed in the years 1970 – 2016 (IUCN, 2021).

The management of environmental resources, especially wildlife and endangered species based on conventional approaches, has posed several problems for these resources. Therefore, the need for a dynamic approach to obtain complete and timely information from the species in order to better plan and control their habitat is essential (Bartram et al., 2019).

Legal systems provide the framework and model for the use of the environment. In general, the framework and patterns of environmental exploitation can be realized either legally or in the form of regulations, memoranda, etc. However, the existence of these patterns is very important for various reasons, including the creation of regulations and regulations for the use of resources in order to prevent their improper exploitation and the

protection of the environment and biodiversity. Without effective rules and regulations, actions such as resource use, pollution control, wildlife conservation, and most human activities become chaotic (Burgess, 2018). But unfortunately, most agreements and regulations are formulated in response to problems, so it can be said that there is always a delay between the time of need and the development of a satisfactory law to solve the problem. Environmental management is a method of environmental monitoring that encompasses all aspects of ecology, policy-making, planning and social development. The goals of environmental management are: to prevent and solve environmental problems, to limit, establish and strengthen institutions that strongly support environmental management professionals, and to identify technology with useful new policies (Firzli, 2020; Fataei et al., 2010). Wildlife management in developing countries suffers from a variety of problems such as government neglect, lack of adequate funding and incentives, lack of training and weak oversight structures. One of the problems with the lack of sustainable development is that the role of local communities in wildlife conservation is not enshrined in law. Wildlife management is discussed under Applied Ecology. Therefore, wildlife cannot be understood without knowledge of ecology. In particular, having information about the theory of population dynamics and the relationship between them and resources is absolutely necessary to be able to judge the results of a managerial action correctly (Ritchie et al, 2018).

Human concerns about the environment on a national, regional, and global scale became apparent when, with industrial development and the use of limited renewable and non-renewable resources, housing globally increased. Development on the one hand is directly related to industry, technology and on the other hand to degradation, environmental pollution, ... Conservation of animal species is one of the goals that human beings have been thinking about for a long time.



**Figure 1.** Seventeen Sustainable Development Goals Based on the Paris Conference (2015) (Hutton, 2017)

Many of the animal species that represent the diversity of life on Earth are now extinct. In many countries, certain species of animals are classified as endangered. Preserving biodiversity plays an important role in meeting essential human needs such as providing running and clean water, preventing floods and storms and creating a sustainable climate (Jafarzadeh et al., 2015; Seyyedsharifi et al., 2014). The serious danger of the depletion or extinction of wildlife biodiversity in the past has provided ample

development in the form of custom, jurisprudence and international instruments for international environmental law. Thus, the need to develop international, regional and global cooperation between governments and to encourage the development of the use of special conservation and protection techniques for wildlife conservation was the dominant emphasis of these procedures and documents (UN, 2017).

**Table 1.** Number and description of objectives

Number & Title	Description of Goal
14. Life below water	<p>SDG 14 is to: "Conserve and sustainably use the oceans, seas and marine resources for sustainable development".</p> <p>The first seven targets are "outcome targets": Reduce marine pollution; protect and restore ecosystems; reduce ocean acidification; sustainable fishing; conserve coastal and marine areas; end subsidies contributing to overfishing; increase the economic benefits from sustainable use of marine resources. The last three targets are "means of achieving" targets: To increase scientific knowledge, research and technology for ocean health; support small scale fishers; implement and enforce international sea law (Kulonen et al., 2019).</p> <p>Oceans and fisheries support the global population's economic, social and environmental needs. Oceans are the source of life of the planet and the global climate system regulator. They are the world's largest ecosystem, home to nearly a million known species. Oceans cover more than two-thirds of the earth's surface and contain 97% of the planet's water. They are essential for making the planet livable. Rainwater, drinking water and climate are all regulated by ocean temperatures and currents. Over 3 billion people depend on marine life for their livelihood. However, there has been a 26 percent increase in acidification since the industrial revolution. Effective strategies to mitigate adverse effects of increased ocean acidification are needed to advance the sustainable use of oceans (Walters &amp; Scholes, 2017).</p> <p>The current efforts to protect oceans, marine environments and small-scale fishers are not meeting the need to protect the resources. One of the key drivers of global overfishing is illegal fishing. It threatens marine ecosystems, puts food security and regional stability at risk, and is linked to major human rights violations and even organized crime. Increased ocean temperatures and oxygen loss act concurrently with ocean acidification and constitute the "deadly trio" of climate change pressures on the marine environment (Watts, 2019).</p>
15. Life on land	<p>SDG 15 is to: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss".</p> <p>The nine "outcome targets" include: Conserve and restore terrestrial and freshwater ecosystems; end deforestation and restore degraded forests; end desertification and restore degraded land; ensure conservation of mountain ecosystems, protect biodiversity and natural habitats; protect access to genetic resources and fair sharing of the benefits; eliminate poaching and trafficking of protected species; prevent invasive alien species on land and in water ecosystems; and integrate ecosystem and biodiversity in governmental planning. The three "means of achieving targets" include: Increase financial resources to conserve and sustainably use ecosystem and biodiversity; finance and incentivize sustainable forest management; combat global poaching and trafficking.</p> <p>Humans depend on earth and the ocean to live. This goal aims at securing sustainable livelihoods that will be enjoyed for generations to come. The human diet is composed 80% of plant life, which makes agriculture a very important economic resource. Plant life provides 80 percent of the human diet, and we rely on agriculture as important economic resources. Forests cover 30 percent of the Earth's surface; provide vital habitats for millions of species, and important sources for clean air and water, as well as being crucial for combating climate change.</p> <p>The proportion of forest area fell, from 31.9 per cent of total land area in 2000 to 31.2 per cent in 2020, representing a net loss of nearly 100 million ha of the world's forests. This was due to decreasing forest area decreased in Latin America, sub-Saharan Africa and South-Eastern Asia, driven by deforestation for agriculture. Desertification affects as much as one-sixth of the world's population, 70% of all dry lands, and one-quarter of the total land area of the world. It also leads to spreading poverty and the degradation of billion hectares of cropland. A report in 2020 stated that globally, the species extinction risk has worsened by about 10 per cent over the past three decades (Kulonen et al., 2019).</p>

Considering significant advances in international environmental law and scientific understanding of nature conservation, including the protection of biodiversity and the promotion of sustainable development, it is becoming more and more evident. According to available reports and documents, there are several problems in the field of biodiversity protection in Iran. The fact is that in the last two decades, the trend of wildlife and natural resources in Iran has been declining. Obviously, this situation has been largely due to illegal slaughter, overgrazing and the destruction of forests, pastures and other natural ecosystems and forests, i.e., the destruction of habitats and nature. These problems can be analyzed either in the form of legal gaps or in the form of shortcomings in the defined legal procedures. Utilizing international experience in existing laws and regulations in this field and transferring them to national contexts is a necessity and can solve some of the existing problems. Due to the fact that in Iran there are no specific legal standards for wildlife protection, the development of legal standards at the national level to determine or properly manage wildlife protection is necessary. In the meantime, it is important to pay attention to the issue of promoting wildlife protection rights with a sustainable development approach based on international environmental law and legal mechanisms and management and legal tools and requirements to achieve these goals. The main purpose of this article is to evaluate and compare Iran's ranking and position in the indicators of sustainable development - Agenda 2030 (Paris Conference 2015) and especially in relation to the legal aspects of habitat protection and biodiversity (SDG, 2018).

Wildlife management may be applied in both Manipulative and Custodial ways. Manipulative management is the conscious intervention to increase or decrease the population of species that are considered in terms of exploitation. But Custodial management has a preventive or protective aspect and its goal is to minimize external effects on habitat and population.

Protection, with its theoretical and practical aspects, is directly related to management. Theoretical protection is rooted in ideas, cultures, and discourses, and practical protection refers to the application of new methods and technologies. Considering the climatic conditions and the amount and type of wildlife in each country, various conservation theories and conservation technologies are certainly used and will be used. At present, some progress has been made in Iran on the need for protection, but it is possible to take advantage of the experiences of other countries and examine the strengths and weaknesses of existing laws and legal mechanisms in international law (since legal instruments are one of the basic mechanisms for Improving wildlife protection) has made significant contributions to improving existing national laws by identifying threats and opportunities to improve wildlife protection (Allen et al, 2019).

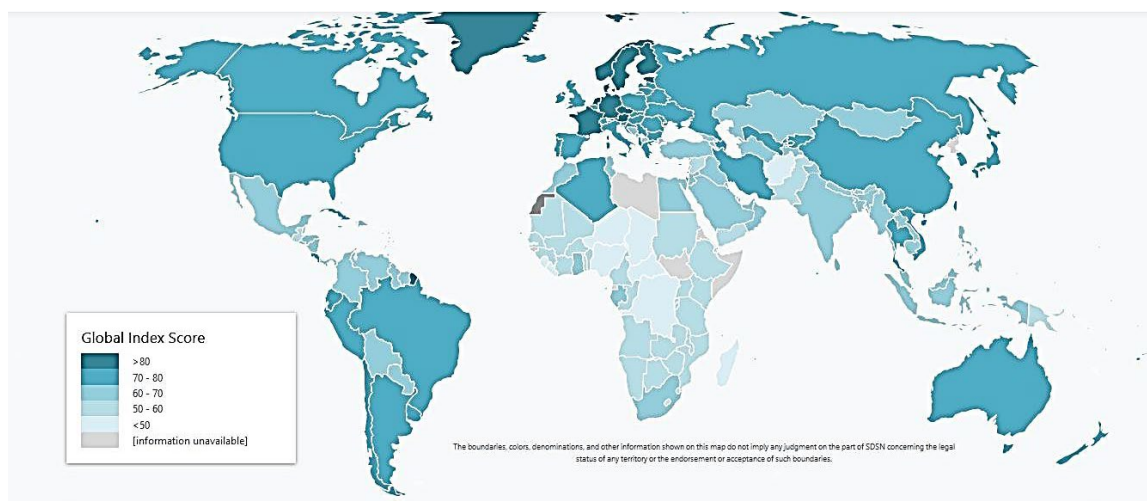
The Sustainable Development Goals (SDGs), also known as the 2030 Agenda for Sustainable Development, is a set of seventeen global goals for 169 specific areas developed by the United Nations during a deliberative process involving its 193 member states on 25 September 2015 (BEI, 2020).

According to the Paris Conference held in 2015, world leaders pledged to work to achieve seventeen lofty goals by the end of 2030 (Figure 1). These goals are the human agenda for the present century.

As one of the participants, Iran pledged to carry out the 2030 Agenda. In December 2016 the Government of the Islamic Republic of Iran held a special ceremony announcing a national education initiative that was arranged by the UNESCO office in Iran to implement the educational objectives of this global program. The announcement created a stir among politicians and Marja' in the country (BMGF, 2020).

## 2. Materials and methods

This research is reviewable in nature and applied in terms of results and outputs.



**Figure 2.** Sustainable Development Report Dashboard 2019 (Reyers & Elizabeth, 2020)



The method of data collection is library and the method of data analysis is analytical-comparative. In order to provide basic data, written sources and valid documents as well as reference websites have been used. In preparing this article, valid international documents as well as reports, EPI and ESI. have been used. The data analysis method was statistical comparison.

As mentioned in the text of the document, Objectives 14 and 15 directly refer to the protection of biodiversity (aquatic and terrestrial) (Table 1).

### 3. Results

A review of credible sources and documents can determine the history of sustainable development:

- In June 1992, at the Earth Summit in Rio de Janeiro, Brazil, more than 178 countries adopted Agenda 21, a comprehensive plan of action to build a global partnership for sustainable development to improve human lives and protect the environment.
- Member States unanimously adopted the Millennium Declaration at the Millennium Summit in September 2000 at UN Headquarters in New York. The Summit led to the elaboration of eight Millennium Development Goals (MDGs) to reduce extreme poverty by 2015.
- The Johannesburg Declaration on Sustainable Development and the Plan of Implementation, adopted at the World Summit on Sustainable Development in South Africa in 2002, reaffirmed the global community's commitments to poverty eradication and the environment, and built on Agenda 21 and the Millennium Declaration by including more emphasis on multilateral partnerships.
- At the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil, in June 2012, Member States adopted the outcome document “The Future We Want” in which they decided, inter alia, to launch a process to develop a set of SDGs to build upon the MDGs and to establish the UN High-level Political Forum on Sustainable Development. The Rio +20 outcome also contained other measures for implementing sustainable development, including

mandates for future programmers of work in development financing, small island developing states and more.

- In 2013, the General Assembly set up a 30-member Open Working Group to develop a proposal on the SDGs.
- In January 2015, the General Assembly began the negotiation process on the post-2015 development agenda. The process culminated in the subsequent adoption of the 2030 Agenda for Sustainable Development, with 17 SDGs at its core, at the UN Sustainable Development Summit in September 2015.
- 2015 was a landmark year for multilateralism and international policy shaping, with the adoption of several major agreements:
  - Sendai Framework for Disaster Risk Reduction (March 2015)
  - Addis Ababa Action Agenda on Financing for Development (July 2015)
  - Transforming our world: the 2030 Agenda for Sustainable Development with its 17 SDGs was adopted at the UN Sustainable Development Summit in New York in September 2015.
  - Paris Agreement on Climate Change (December 2015)

The UN High-Level Political Forum on Sustainable Development (HLPF) is the annual space for global monitoring of the SDGs, under the auspices of the United Nations economic and Social Council. In July 2020 the meeting took place online for the first time due to the COVID-19 pandemic. The theme was “Accelerated action and transformative pathways: realizing the decade of action and delivery for sustainable development” and a ministerial declaration was adopted.

High-level progress reports for all the SDGs are published in the form of reports by the United Nations Secretary General. The most recent one is from April 2020. The online publication SDG-Tracker was launched in June 2018 and presents data across all available indicators. It relies on the Our World in Data database and is also based at the University of Oxford.



Figure 3. Status of achieving sustainable development goals in Iran based on 2021 data (Winfried, 2021)

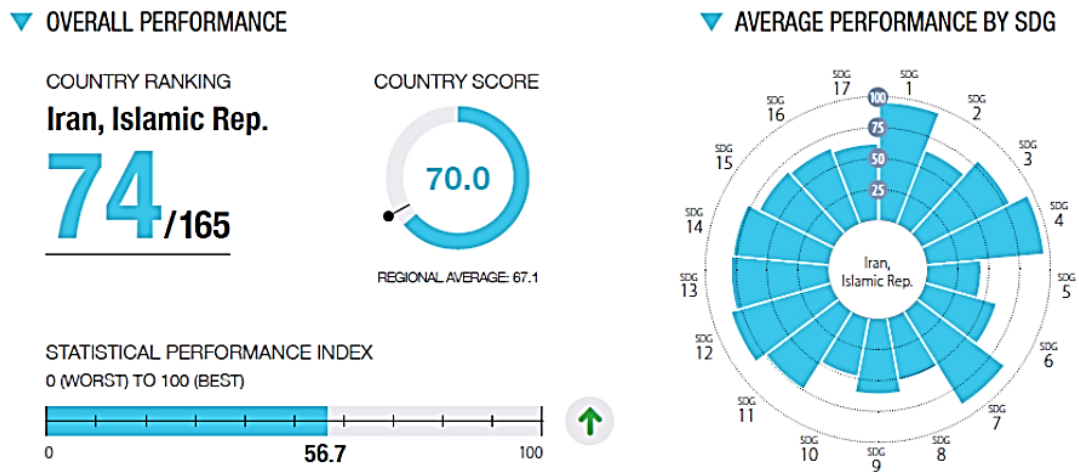


Figure 4. Iran's score and ranking in sustainable development indicators

The publication has global coverage and tracks whether the world is making progress towards the SDGs. It aims to make the data on the 17 goals available and understandable to a wide audience. The website “allows people around the world to hold their governments accountable to achieving the agreed goals”. The SDG-Tracker highlights that the world is currently (early 2019) very far away from achieving the goals. The Global “SDG Index and Dashboards Report” is the first publication to track countries’ performance on all 17 Sustainable Development Goals. The annual publication, co-produced by Bertelsmann Stiftung and SDSN, includes a ranking and dashboards that show key challenges for each country in terms of implementing the SDGs. The publication features trend analysis to show how countries performing on key SDG metrics have changed over recent years in addition to an analysis of government efforts to implement the SDGs (Fig. 2).

World map showing countries that are closest to meeting the SDGs (in dark blue) and those with the greatest remaining challenges (in the lightest shade of

blue) in 2018.

According to a survey conducted by UNDP until September 2021, the situation in Iran in terms of achieving sustainable development indicators has been as follows.

The score obtained by the Government of the Islamic Republic of Iran is 70.01, which is ranked 74th out of 165 countries in the world (Figure 4).

Based on Objectives 14 and 15, which are dedicated to the protection of biodiversity and habitats and is the main topic of this article, as can be seen in the table below, the situation in Iran is not very favorable.

Figure 5 shows a diagram that compares the programs implemented and under implementation in relation to Objectives 14 and 15 in Iran.

As the results show the comparison, Iran has not had the same success in achieving biodiversity-related goals, so that the success rate in the target number 14 was higher than the target number 15. This is while part of the programs is not yet completed and is running.

As seen on this map, Iran is one of the countries that has been relatively acceptable in achieving the target number 14.

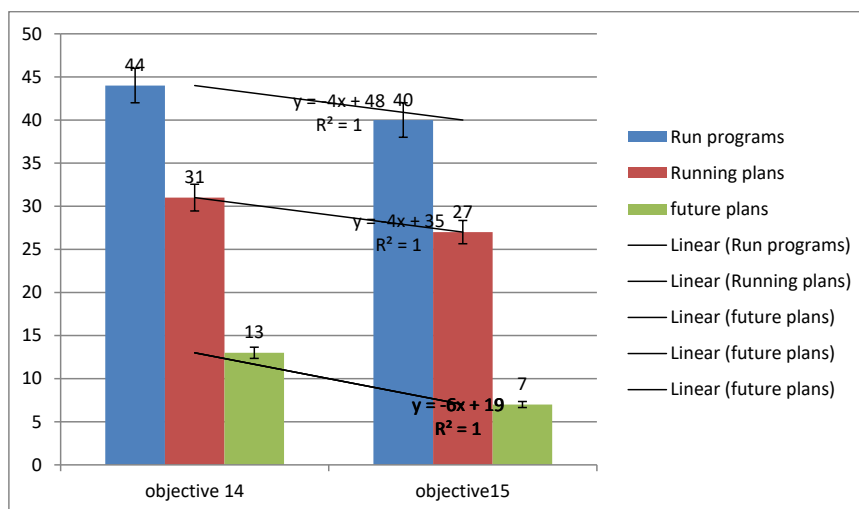


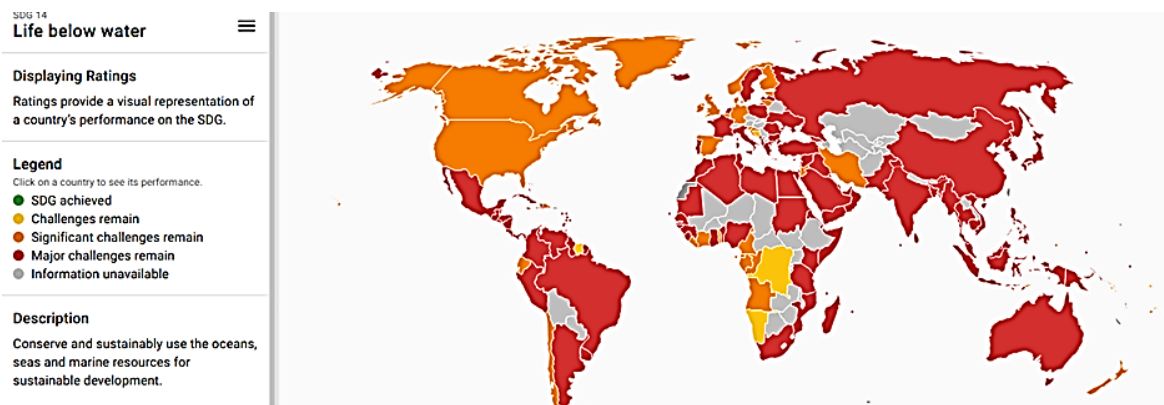
Figure 5. Comparison of programs related to goals 14 and 15 sustainable development in Iran

**Table 2.** Iran's score in achieving goals No. 14 and 15

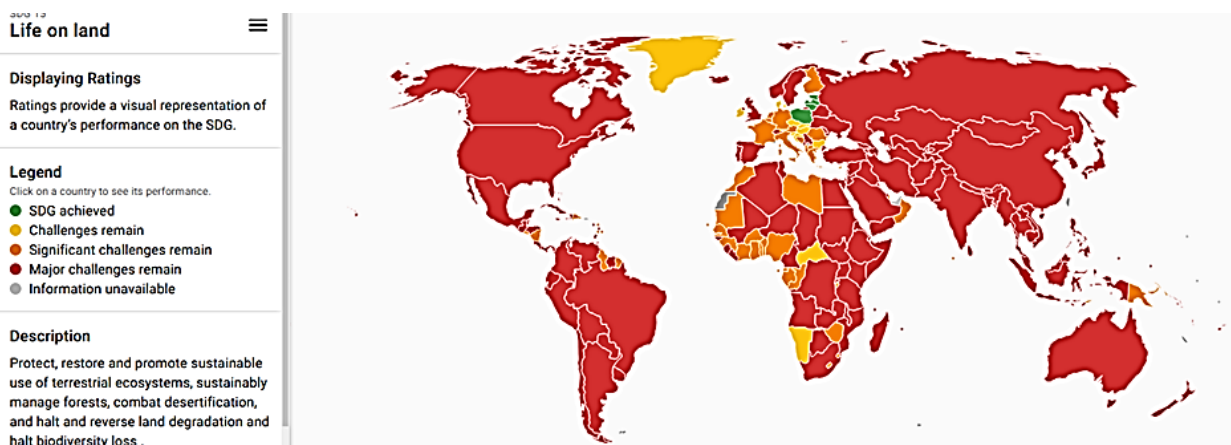
Goal	Description	Indicators	Score
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	Orange square, Orange arrow pointing right
		Ocean Health Index: Clean Waters score	Red square, Red arrow pointing down
		Fish caught from overexploited or collapsed stocks	Yellow square, Green arrow pointing up
		Fish caught by trawling or dredging	Yellow square, Green arrow pointing up
		Fish caught that are then discarded	Green square, Grey circle
		Marine biodiversity threats embodied in imports	Green square, Grey circle
15	The overall score measures a country's total progress towards achieving all 17 SDGs. The score can be interpreted as a percentage of SDG achievement. A score of 100 indicates that all SDGs have been achieved.	Mean area that is protected in terrestrial sites important to biodiversity	Red square, Orange arrow pointing right
		Mean area that is protected in freshwater sites important to biodiversity	Red square, Orange arrow pointing right
		Red List Index of species survival	Orange square, Red arrow pointing down
		Permanent deforestation	Green square, Grey circle
		Terrestrial and freshwater biodiversity threats embodied in imports	Green square, Grey circle

<span style="color:red">■</span> Major challenges	<span style="color:orange">■</span> Significant challenges	<span style="color:yellow">■</span> Challenges remain	<span style="color:green">■</span> SDG achieved	<span style="background-color:grey">■</span> Information unavailable
<span style="color:red">↓</span> Decreasing	<span style="color:orange">→</span> Stagnating	<span style="color:yellow">↗</span> Moderately Improving	<span style="color:green">↑</span> On track or maintaining SDG achievement	<span style="background-color:grey">●</span> Information unavailable



**Figure 6.** Zoning of countries in the world in achieving goal number 14 and comparison with Iran



**Figure 7.** Zoning of countries in the world in achieving goal number 15 and comparison with Iran

Overall, based on the research findings, it can be said that Iran's ranking in achieving goal number 14 is slightly better than goal number 15. In other words, Iran has performed better in the field of marine biodiversity protection than inland biodiversity protection. The situation of Iran in the field of SDG14; Significant challenges remain and score moderately improving, insufficient to attain goal. The situation of Iran in the field of SDG15; Major challenges remain and score decreasing.

The best performance has been related to the following:

- Fish caught that are then discarded
- Marine biodiversity threats embodied in imports
- Permanent deforestation
- Terrestrial and freshwater biodiversity threats embodied in imports

#### 4. Conclusion

In general, it can be concluded that the status of habitat protection and aquatic and terrestrial biodiversity in Iran is not very favorable and is relatively different from the indicators and goals of sustainable development. In the meantime, it is necessary to pay attention to the legal aspects and apply the legal requirements to pay more attention to the protection of ecosystems.

#### References

1. Allen, Cameron; Metternicht, Graciela; Wiedmann, Thomas; Pedercini, Matteo (2019). Greater gains for Australia by tackling all SDGs but the last steps will be the most challenging. *Nature Sustainability*. 2 (11): 1041–1050.
2. Bank, European Investment (2020). The EIB Group Climate Bank Roadmap 2021-2025. European Investment Bank.
3. Bartram, Jamie; Brocklehurst, Clarissa; Bradley, David; Muller, Mike; Evans, Barbara (2018). Policy review of the means of implementation targets and indicators for the sustainable development goal for water and sanitation. *NPJ Clean Water*. 1 (1): 3.
4. BMGF (2020). Covid-19 A Global Perspective - 2020 Goalkeepers Report Archived 18 October 2020 at the Wayback Machine, Bill & Melinda Gates Foundation, Seattle, USA
5. Burgess, Cameron (2018). From Billions to Trillions: Mobilising the Missing Trillions to Solve the Sustainable Development Goals. *sphaera.world*. Archived from the original on 17 September 2018. Retrieved 4 June 2018.
6. Carrington, D. (2021). Economics of biodiversity review: what are the recommendations?. *The Guardian*. Retrieved 17 December 2021.
7. Ceballos, G., Ehrlich, P.R., Raven, P.H. (2020). Vertebrates on the brink as indicators of biological annihilation and the sixth mass extinction. *Proceedings of the National Academy of Sciences of the United States of America*. 117 (24).
8. Fataei E, Monavari SM, Hasani AH, Karbasi AR, Mirbagheri SA, (2010) Heavy metal and agricultural toxics monitoring in Garasou River in Iran for water quality assessment, *Asian Journal of Chemistry*, 22(4):2991-2999
9. Firzli, Nicolas (2020). G7 Pensions Roundtable: Les ODD ('SDGs') Désormais Incontournables. *Cahiers du Centre des Professions Financières*. CPF.
10. Giam, Xingli., Bradshaw, Corey J.A., Tan, Hugh T.W., Sodhi, Navjot S. (2010). Future habitat loss and the conservation of plant biodiversity. *Biological Conservation*. 143 (7): 1594–1602. doi:10.1016/j.biocon.2010.04.019
11. Ghesemi Aghbash F, Fataei E, (2006) The Study Of The Effect Of Forest Management On Biodiversity Of Woody Species In Fandoghloo Forest., Pajouhesh-Va-Sazandegi (In Persian), 19(271):11-18.
12. Hutton, Guy (2017). The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene (PDF). *Documents/World Bank*.
13. IUCN. (2021). The IUCN Red List of Threatened Species, IUCN Red List of Threatened Species. Retrieved 28 June 2021.
14. Jafarzadeh N, Fataei E, Vatandoust S, Hatami GR, Shariat M, (2015) Bioassessment and quality classification of Balekhlou River base on Biological index (fish fauna), *Journal of Environmental Science and Technology* 16 (1), 516-527.
15. Kulonen, Aino; Adler, Carolina; Bracher, Christoph; Dach, Susanne Wymann von (2019). Spatial context matters in monitoring and reporting on Sustainable Development Goals: Reflections based on research in mountain regions. *GAIA - Ecological Perspectives for Science and Society*. 28 (2): 90–94.
16. Mora, Camilo., Tittensor, Derek P., Adl, Sina., Simpson, Alastair G.B., Worm, Boris., Mace, Georgina M. (2011). How Many Species Are There on Earth and in the Ocean?. *PLOS Biology*. 9 (8): e1001127.
17. Reyers, Belinda; Selig, Elizabeth R. (2020). Global targets that reveal the social–ecological interdependencies of sustainable development. *Nature Ecology & Evolution*. 4 (8): 1011–1019.
18. Ritchie, Roser., Mispy, Ortiz-Ospina. (2018). Measuring progress towards the Sustainable Development Goals. (SDG 1) SDG-Tracker. org, website
19. SDG Indicator changes (2018). United Nations, Department of Economic and Social Affairs, Statistics Division. 17 April 2020. Retrieved 10 September 2020.
20. Seyyedsharifi SA, Fataei E, Nadery G, Vatandoost S. (2014) Biological monitoring of Gharasou River by using macro benthic community structure. *Annual Research & Review in Biology*, 4: 1682–1690. <https://doi.org/10.9734/ARRB/2014/6699>.
21. United Nations (2017). Resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313 Archived 28 November 2020 at the Wayback Machine)
22. Walters, Michele; Scholes, Robert J. (2017). The GEO Handbook on Biodiversity Observation Networks. Springer Nature. Doi: 10.1007/978-3-319-27288-7. hdl:20.500.12657/28080. ISBN 978-3-319-27288-7
23. Watts, Jonathan (6 May 2019). "Human society under urgent threat from loss of Earth's natural life". *The Guardian*. Retrieved 9 May 2019.
24. Winfried, Huck; Iovane, Massimo; Palombino, Fulvio; Amoroso, Daniele; Zarra, Giovanni (2021). Measuring Sustainable Development Goals (SDGs) with Indicators: Is Legitimacy Lacking?, *The Protection of General Interests in Contemporary International Law: A Theoretical and Empirical Inquiry*. Oxford University Press.