

U.S. Department of the Interior
Bureau of Land Management

Sustainability and Resilience: An Ecosystem Service Perspective for the National Environmental Policy Act



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Disclaimer: The opinions are those of the author and do not necessarily reflect the official position of the Bureau of Land Management, U.S. Department of the Interior.



An Integrated Framework with Ecosystem Services for National Environmental Policy Act (NEPA)

- **NEPA** Requirements
 - **Purpose**: Planning and Decision-making
 - **Approach**: Interdisciplinary Impact Analyses
 - **Vision**: Sustainability and Resilience
- An Integrated Framework with **Ecosystem Services**
 - Integrating Natural and Social **Sciences** for Impact Analyses
 - Measuring **Sustainability** via Socio-Ecological Monitoring and Evaluation
 - Building **Resilience** through Community Engagement
- **Summary**



Impact Analyses for Planning and Decision-making

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
 [Public Law 91–190]
 [As Amended Through P.L. 118–5, Enacted June 3, 2023]

[Currency: This publication is a compilation of the text of Public Law 91–190. It was last amended by the public law listed in the As Amended Through note above and below at the bottom of each page of the pdf version and reflects current law through the date of the enactment of the public law listed at <https://www.govinfo.gov/app/collection/comps/>]

[Note: While this publication does not represent an official version of any Federal statute, substantial efforts have been made to ensure the accuracy of its contents. The official version of Federal law is found in the United States Statutes at Large and in the United States Code. The legal effect to be given to the Statutes at Large and the United States Code is established by statute (1 U.S.C. 112, 204).]

AN ACT To establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the “National Environmental Policy Act of 1969”.

[42 U.S.C. 4321 note]

PURPOSE

SEC. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

[42 U.S.C. 4321]

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

SEC. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all prac-

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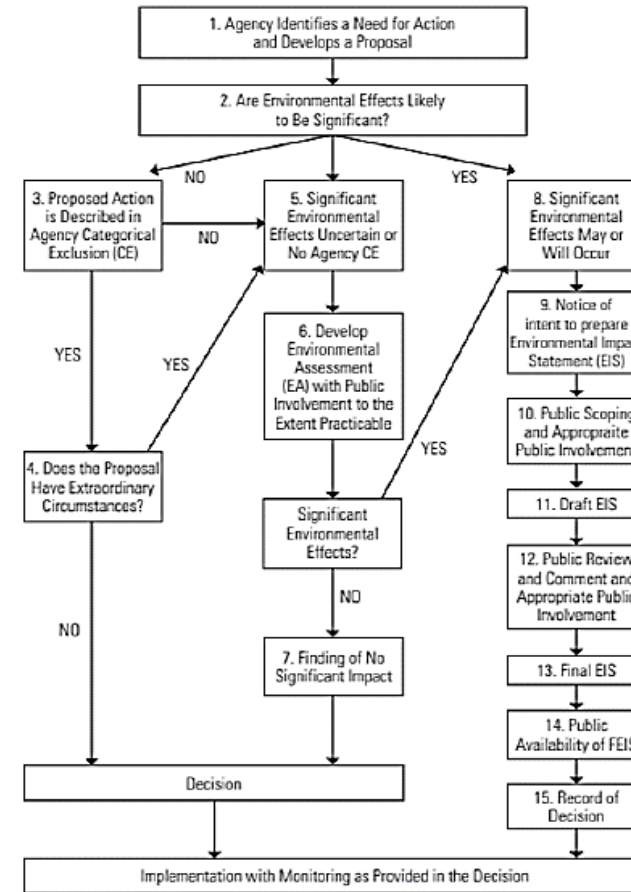
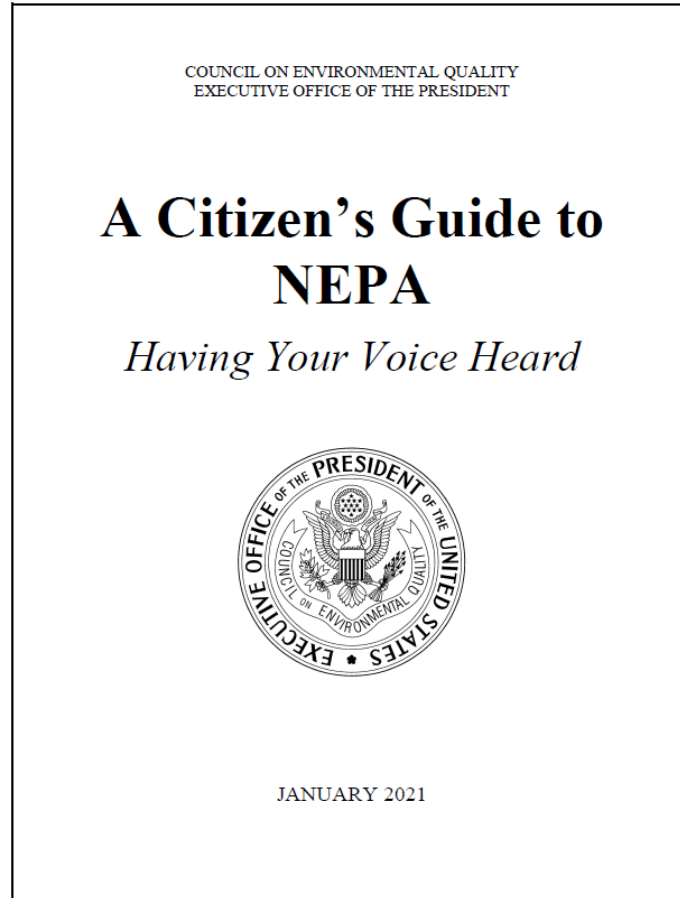
As Amended Through P.L. 118-5, Enacted June 3, 2023

“SEC. 102. (2)...all agencies of the Federal Government shall—(A) utilize a **systematic, interdisciplinary** approach which will ensure the **integrated** use of the natural and social **sciences** and the environmental design arts in **planning** and in **decisionmaking** which may have an **impact** on man’s environment....”

(Source: National Environmental Policy Act of 1969, 42 U.S.C. 4321 et seq., <https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf>)



Impact Analyses for Planning and Decision-making



(Source: Council on Environmental Quality, 2021, *A Citizen's Guide to NEPA*, <https://ceq.doe.gov/docs/get-involved/citizens-guide-to-nepa-2021.pdf>, page 8)



Sustainability and Resilience

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 As Amended Through P.L. 118-5, Enacted June 3, 2023

“SEC. 101. (a)...to create and maintain conditions under which **man and nature** can exist in **productive harmony**, and fulfill the social, economic, and other requirements of **present and future generations** of Americans....”

(Source: National Environmental Policy Act of 1969, 42 U.S.C. 4321 et seq., <https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf>)



Sustainability and Resilience

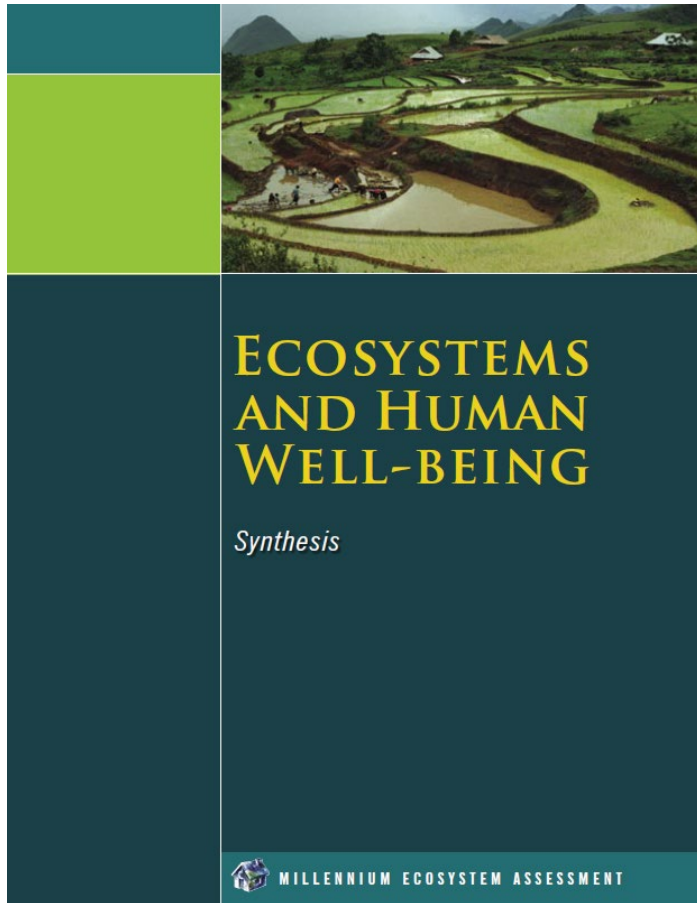


“...the development that meets the **needs** of the **present** without compromising the **ability** of **future generations** to meet their own needs...”

(Source: United Nations, 1987, Report of the World Commission on Environment and Development: Our Common Future (Brundtland Report), <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>, page 41)



Sustainability and Resilience

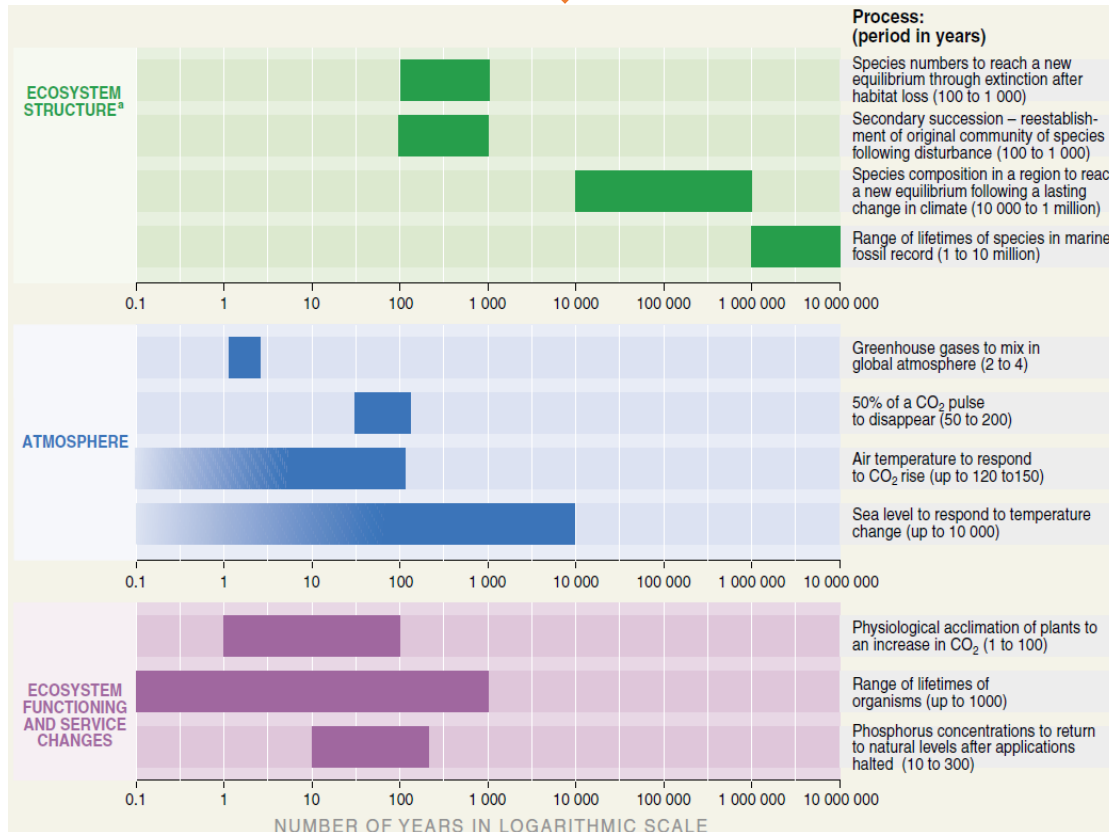


“In general, proactive action to **manage systems sustainably** and to **build resilience** into systems will be advantageous, particularly when conditions are changing rapidly, when surprise events are likely, or when uncertainty is high. This approach is **beneficial** largely because the **restoration of ecosystems or ecosystem services** following their degradation or collapse is generally more costly and time-consuming than preventing degradation, if that is possible at all.”

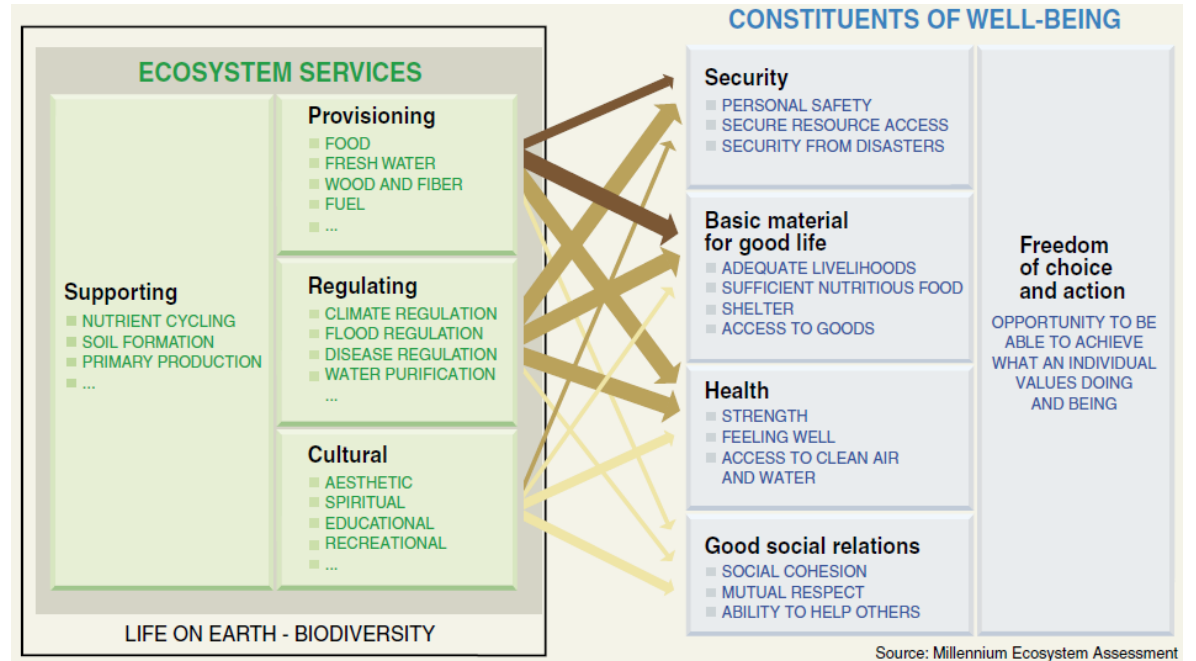
(Sources: Millennium Ecosystem Assessment, 2005, *Ecosystems and Human Well-being*, Island Press, Washington, D.C. <https://www.millenniumassessment.org/en/Reports.html>, page 83)



Ecosystem Functions



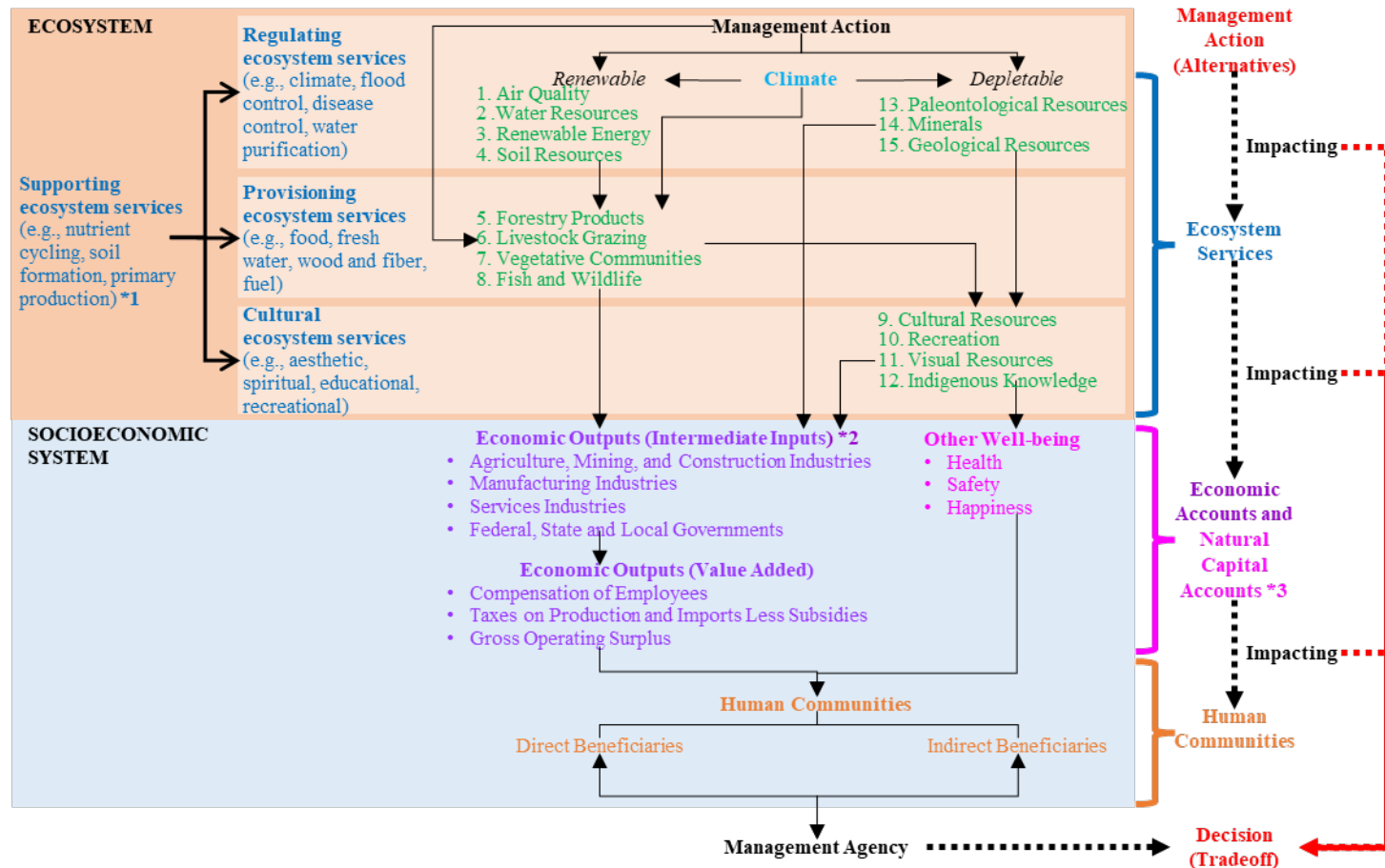
Ecosystem Services



(Source: Millennium Ecosystem Assessment, 2005, *Ecosystems and Human Well-being*, Island Press, Washington, D.C. <https://www.millenniumassessment.org/en/Reports.html>, pages 89 and vi)



Integrated Framework with Ecosystem Services for NEPA

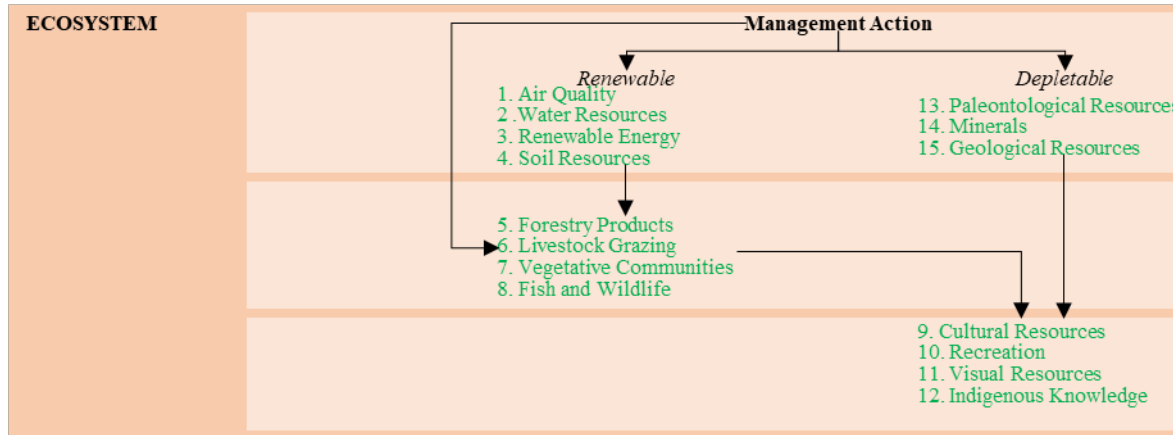


- A holistic framework
 - For **integrating** natural and social **sciences** to understand impacts of management actions on diverse human communities
 - For monitoring **sustainability** and building **resilience** in 6 steps

*Notes: *1 - Millennium Ecosystem Assessment, 2005, Ecosystems and Human Well-being, Island Press, Washington, D.C. <https://www.millenniumassessment.org/en/Reports.html>. *2 - the structure of the economic outputs is based on U.S. Bureau of Economic Analysis, 2011, Measuring the Nation's Economy: An Industry Perspective, A Primer on BEA's Industry Accounts, https://www.bea.gov/sites/default/files/methodologies/industry_primer.pdf. *3 - The White House, 2023, A U.S. System Of Natural Capital Accounting And Associated Environmental Economic Statistics, <https://www.whitehouse.gov/wp-content/uploads/2023/01/Natural-Capital-Accounting-Strategy-final.pdf>.*



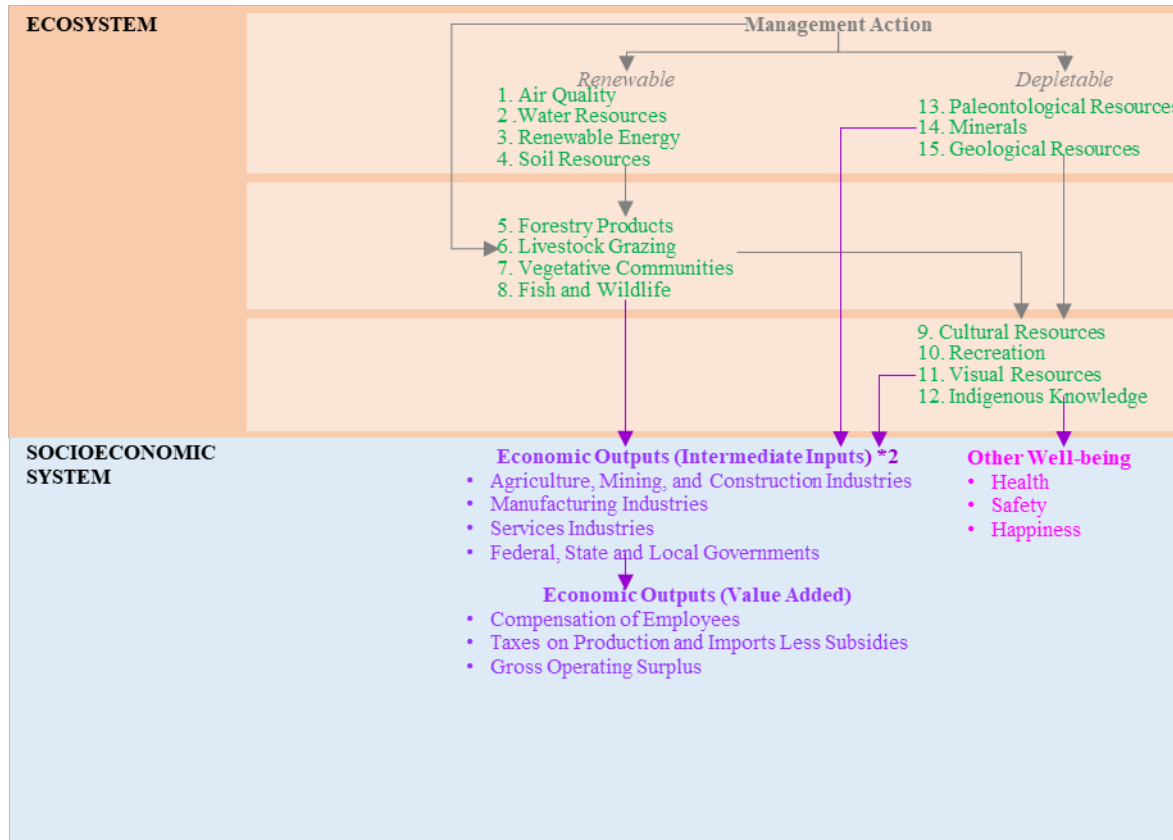
Integrated Framework with Ecosystem Services for NEPA



(1) Identifying multiple interrelated scientific disciplines and databases necessary for natural resource management



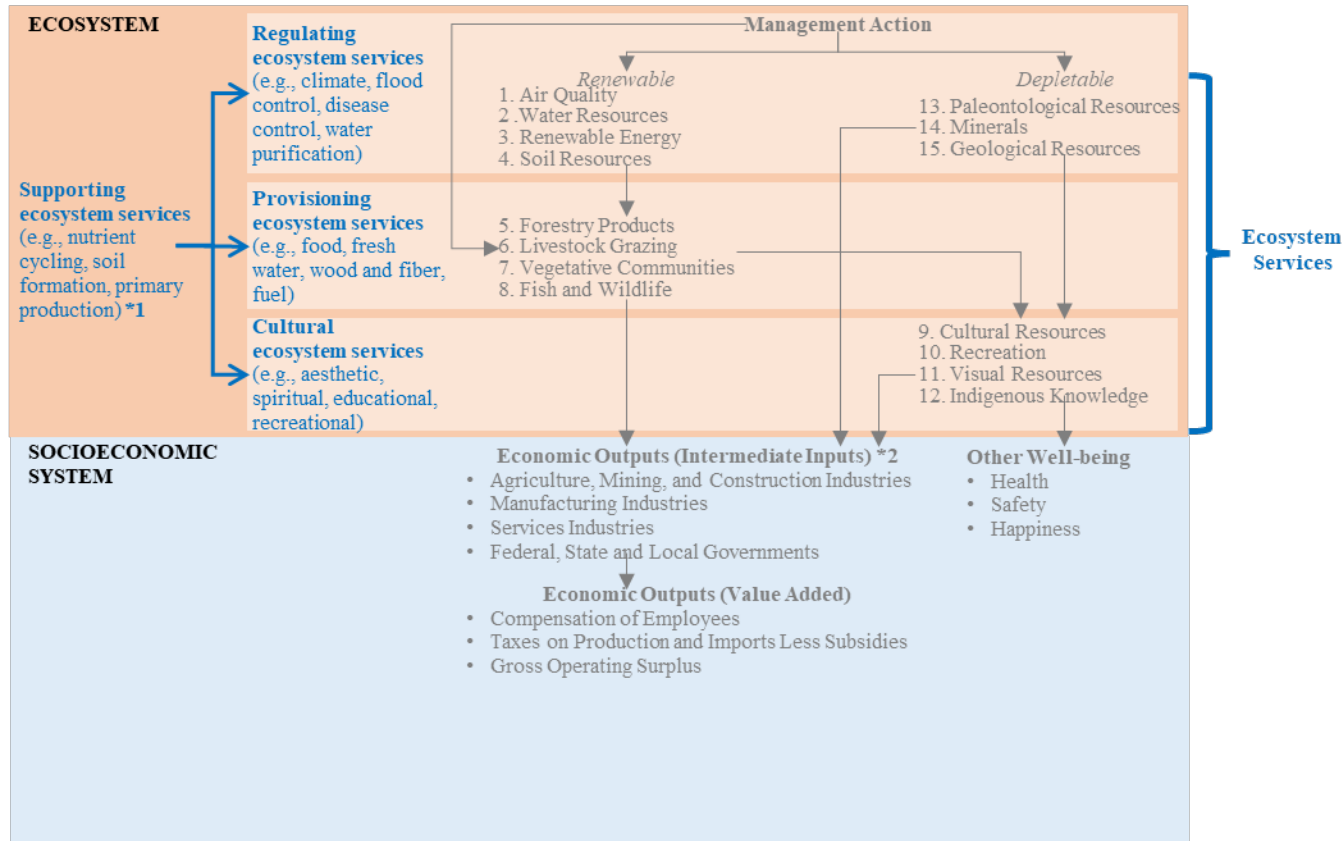
Integrated Framework with Ecosystem Services for NEPA



(2) Connecting economic outputs and other elements of human well-being to the foundation of natural resources



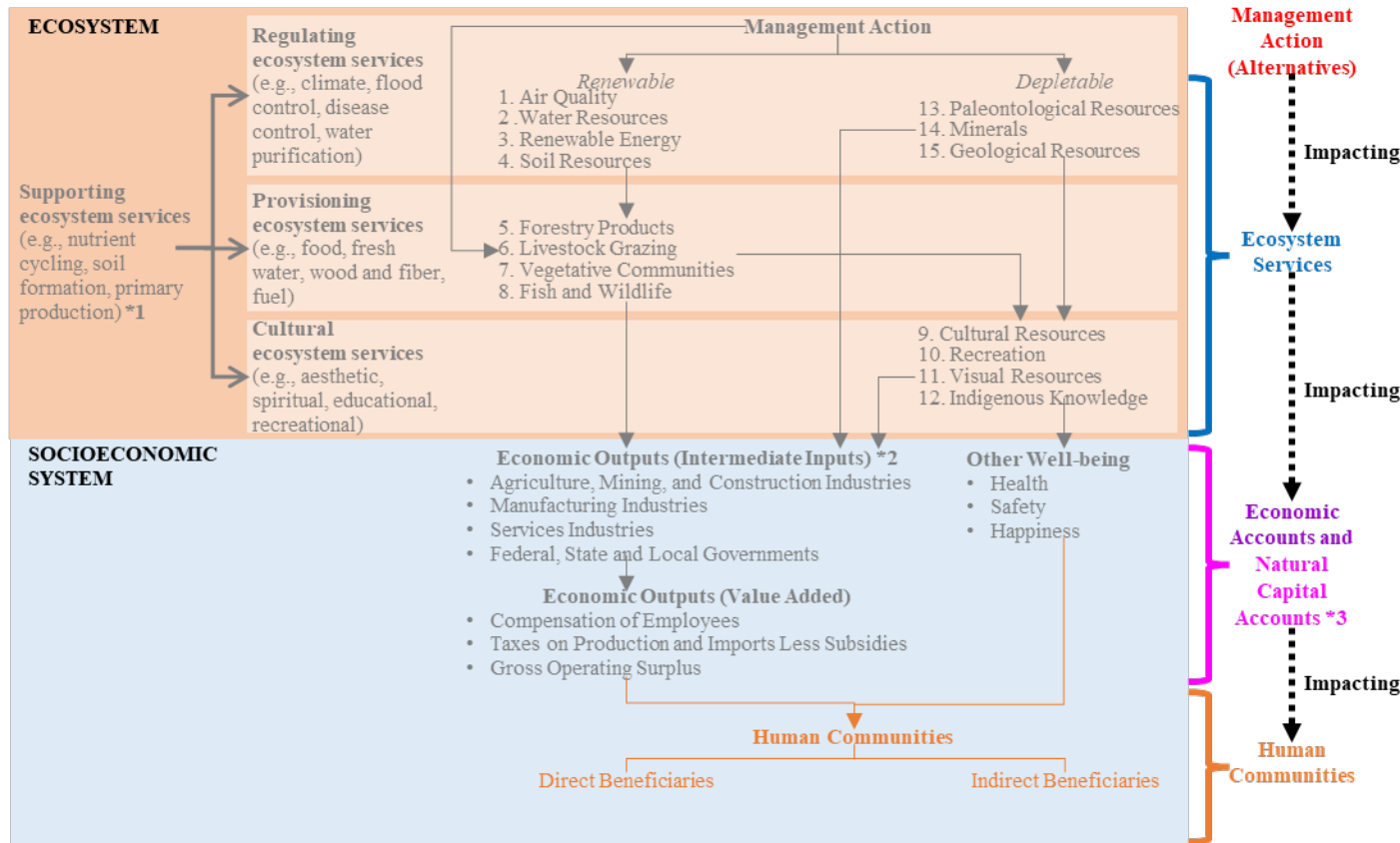
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(3) Using a classification of ecosystem services as an analytical unity for analyzing impacts of natural resource management



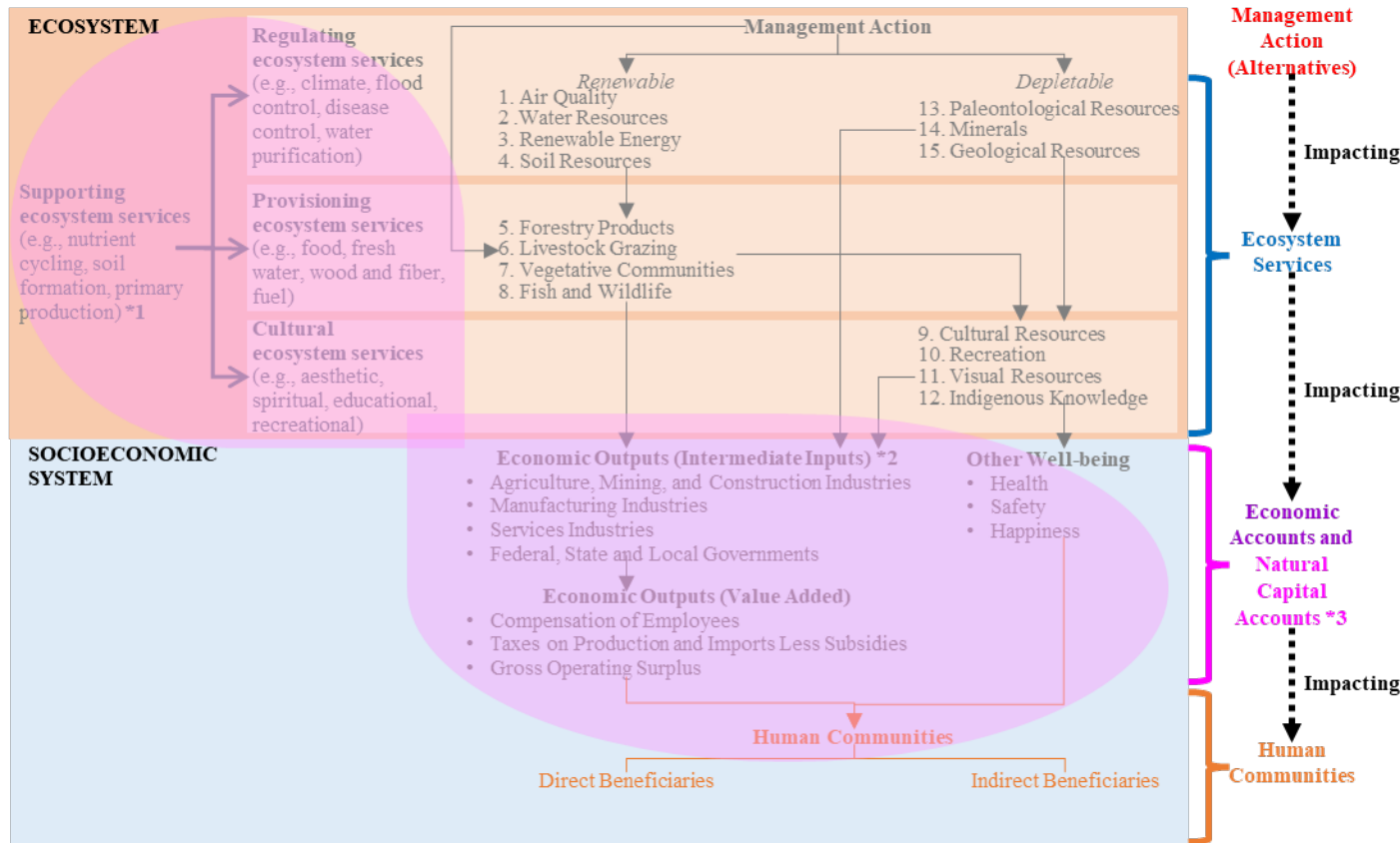
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(4) Developing economic and ecosystem accounting to analyze integrated and cumulative impacts from management actions on ecosystems and human societies



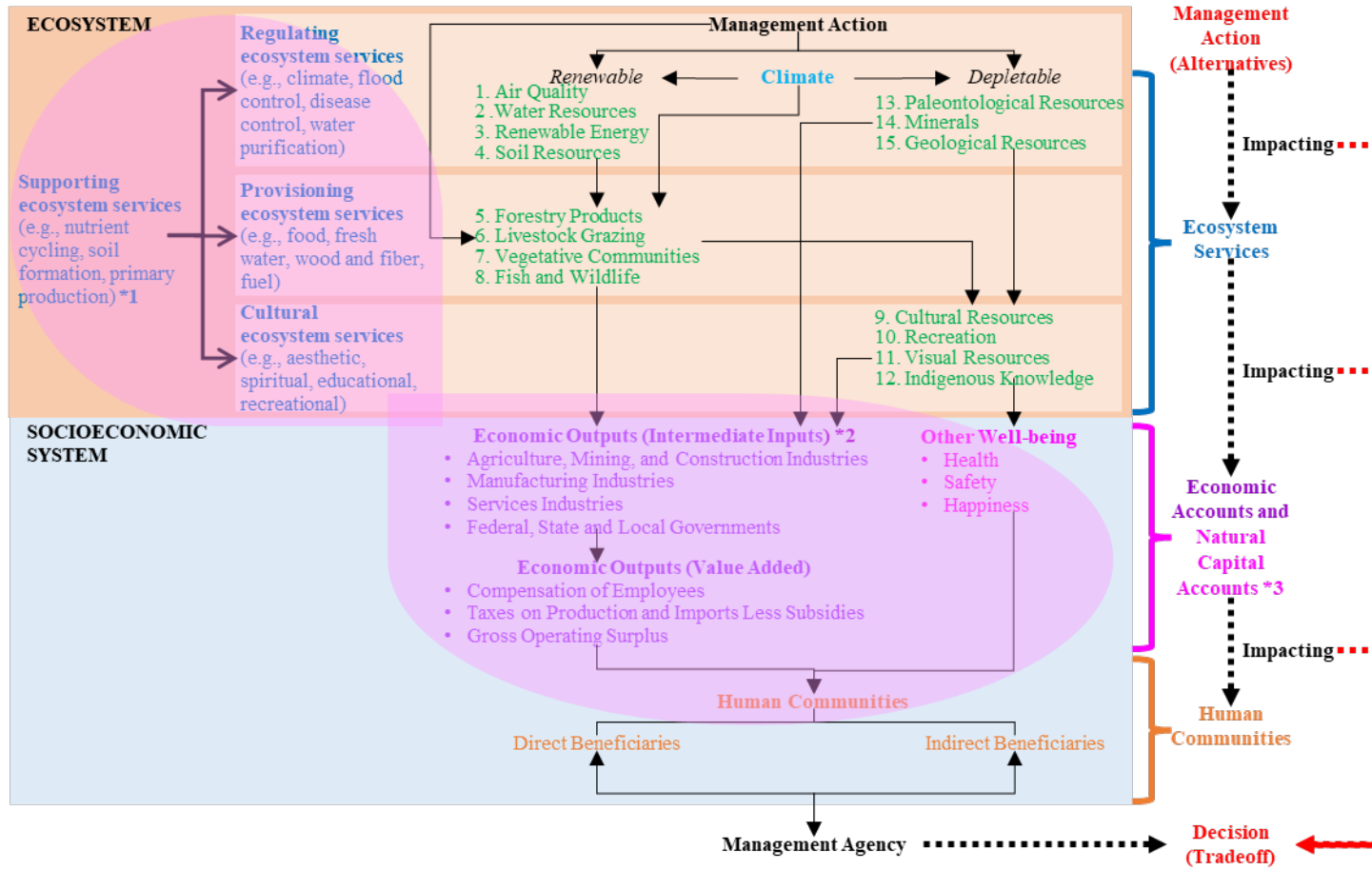
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(5) Monitoring sustainability and building resilience of human societies in adaptation to ecosystem changes



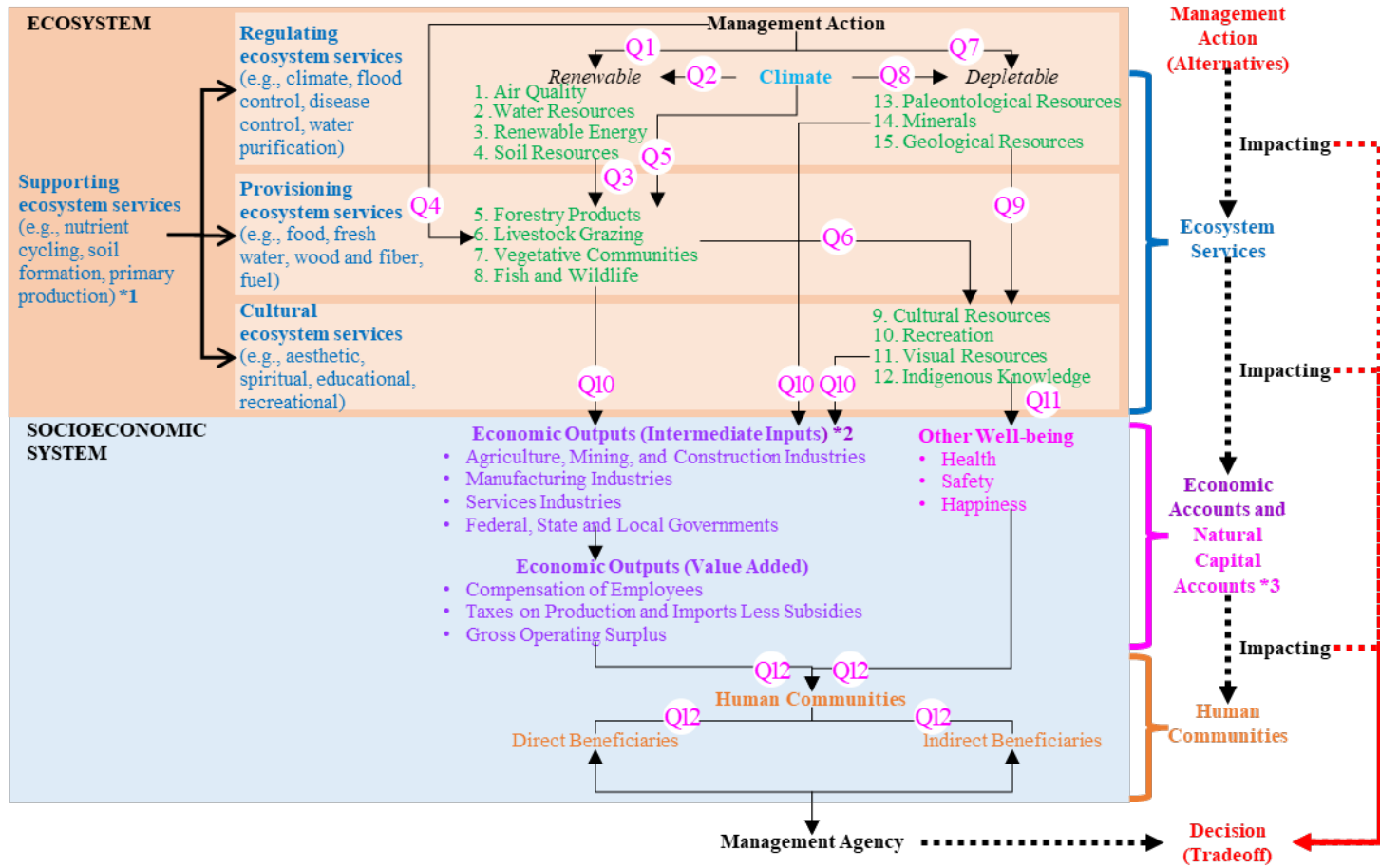
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(6) Incorporating external factors such as **climate** to test dynamic models and understand **tradeoff** of decisions



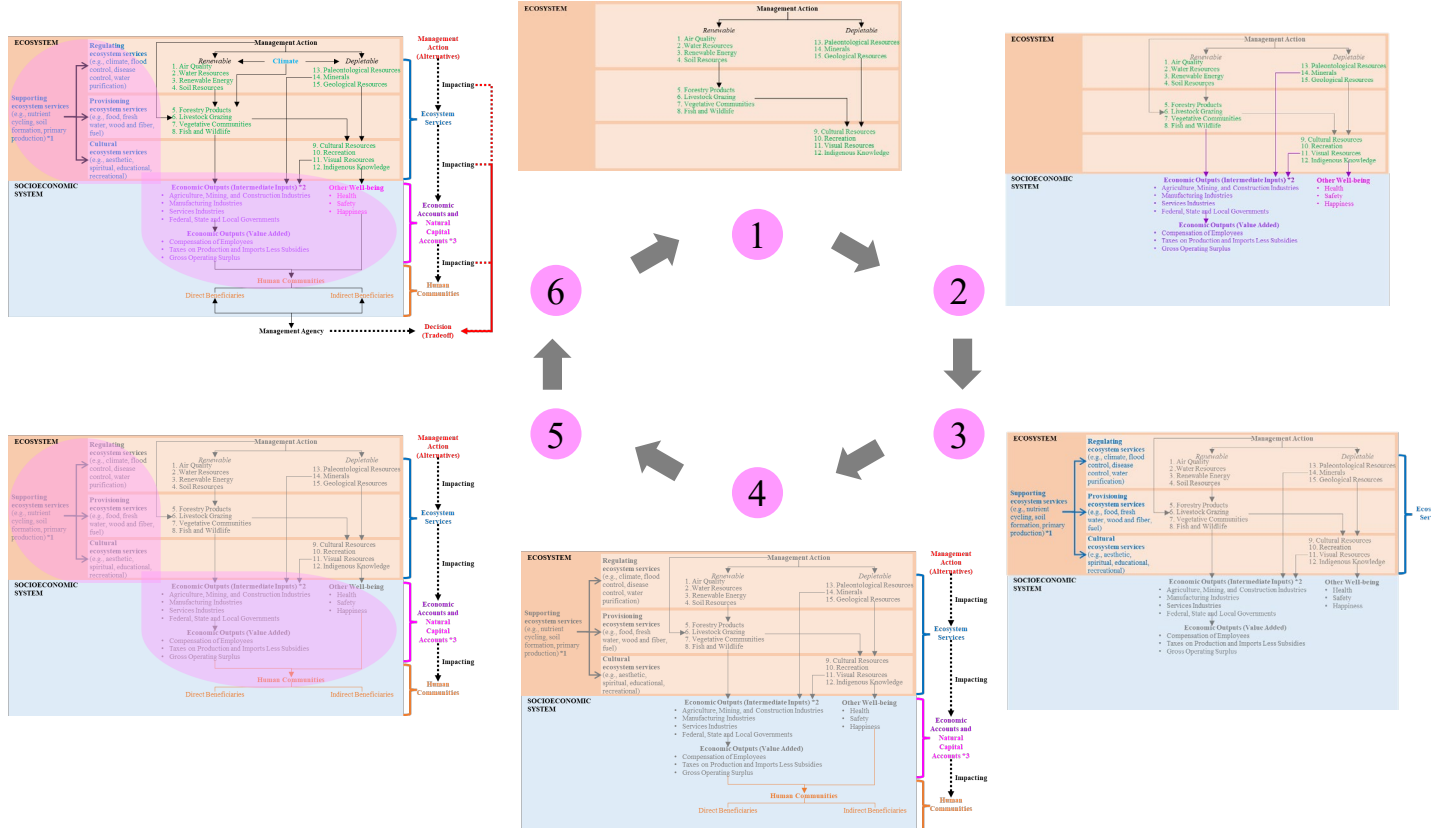
Integrated Framework with Ecosystem Services for NEPA



For more details and applications, please reach out!



Integrated Framework with Ecosystem Services for NEPA



• 6 steps for monitoring sustainability and building resilience under NEPA



Summary

- **Sustainability and resilience** are a great vision embedded in **NEPA** of 1969
- An integrated framework with **ecosystem services** provides practical and substantial contributions for implementing NEPA
 - An analytical unity for integrating natural and social **sciences** for impact analyses
 - A measure for monitoring **sustainability** across ecosystems and geography over time
 - A harmonized process for building **resilience** across economic sectors and human communities



Thank You!

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