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#EU GREEN WEEK

EU Green Week Partner Event

Quantifying water sustainability by integrating the WEFE Nexus: implications for the EU Taxonomy

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NexusNet

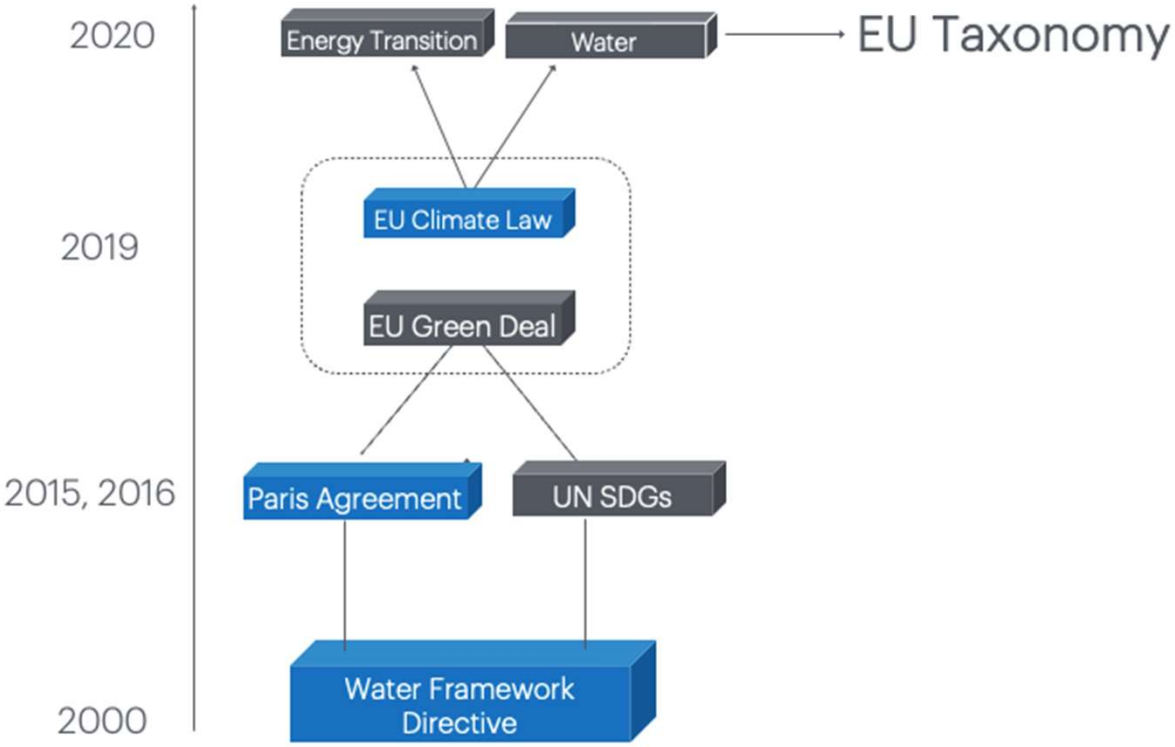
cost
EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

EU Taxonomy

- Taxonomy Regulation (EU) 2020/852 establishes standards for defining what is a sustainable economic activity, in alignment with EU's climate goals.
- It applies to Forestry, Manufacturing, Water and Energy sectors (electricity storage and supply, and transportation).
- The regulations are enablers to channel money in EU in a way that helps EU attain SDGs and objectives of the European Green Deal.

Official Journal of the European Union, REGULA
(EU) 2020/852

Legal Framework



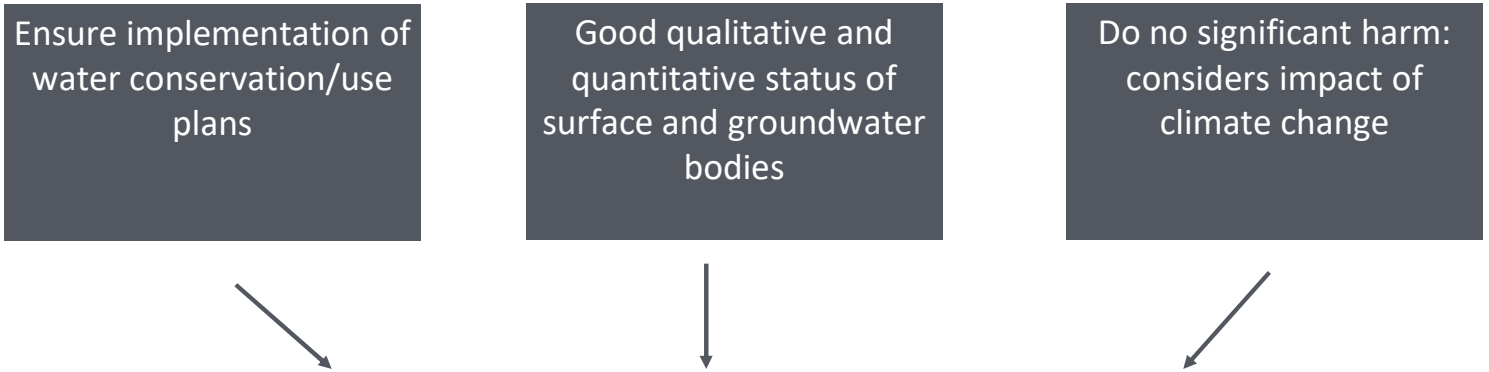
Evaluation criteria in the Taxonomy framework

Ensure implementation of water conservation/use plans

Good qualitative and quantitative status of surface and groundwater bodies

Do no significant harm considers impact of climate change

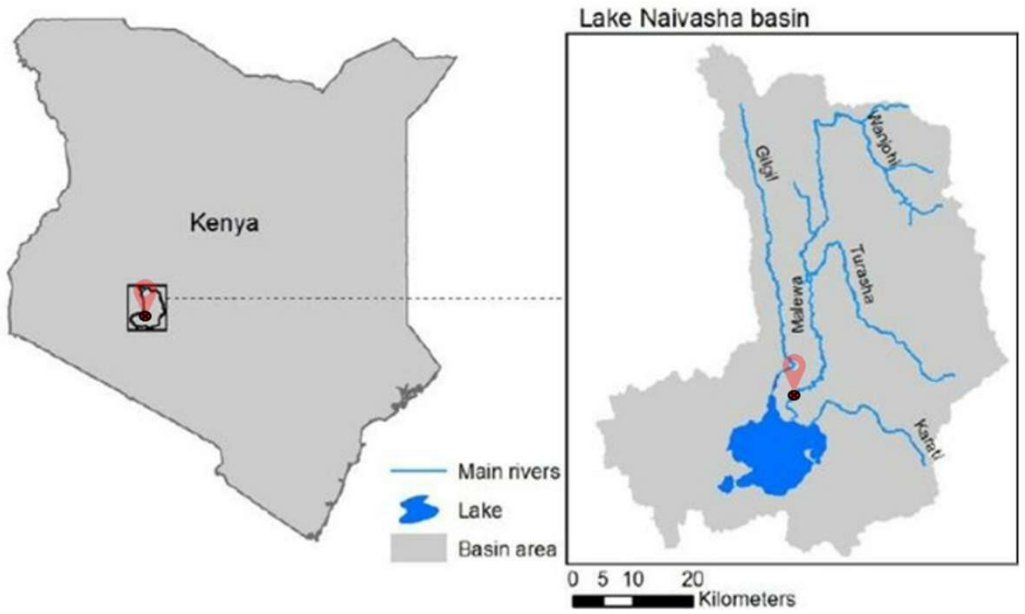
Definition of sustainability in EU Taxonomy



Sustainable Forest Management Principle: “using forests and forest land in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems”

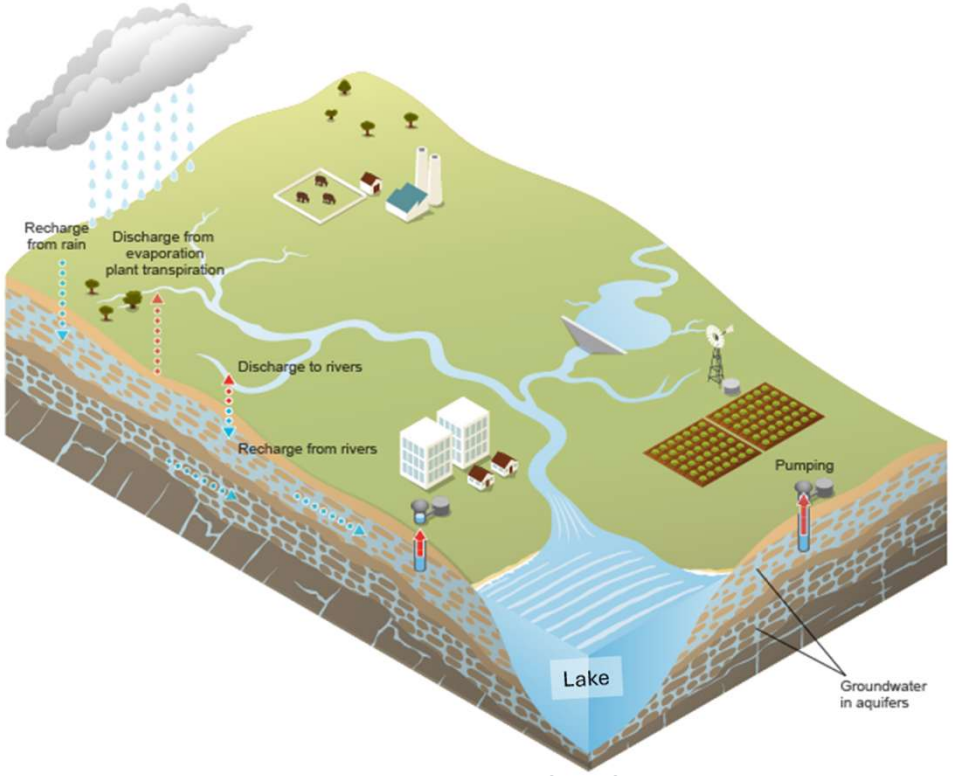
Source: Savani, based on REGULATION (EU) 2020/852

Testing definition of sustainability in EU Taxonomy: Lake Naivasha Kenya

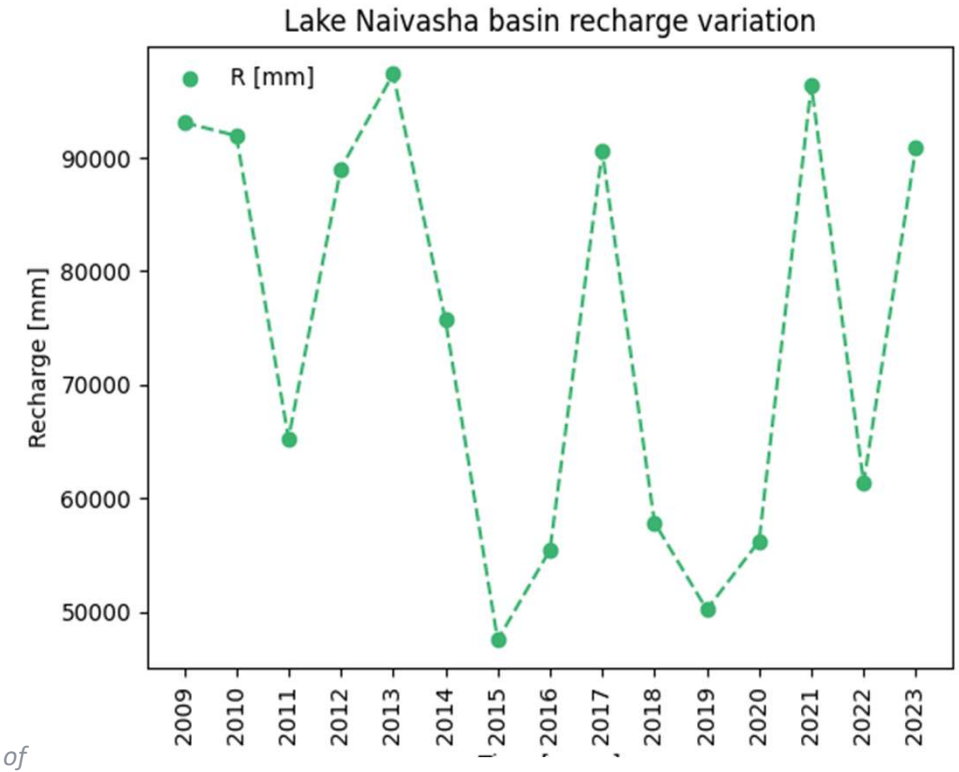


Modified from van Oel, Pieter R., Vincent O. Odongo, Dawit W. Mulatu, Jane Ndungu, Francis K. Muthoni, Job Ogada, George Khroda et al. "An Earth Observation and Integrated Assessment (EOIA) approach for the sustainable governance of a socio-ecological system: the case of the Lake Naivasha basin, Kenya." (2014)

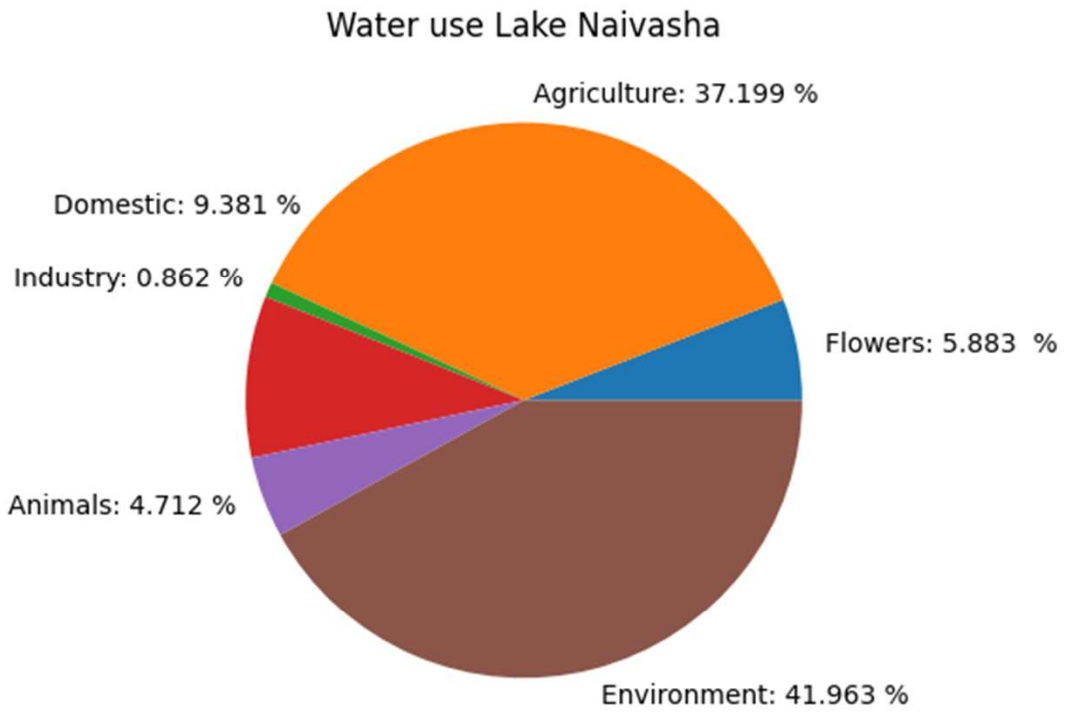
Step 1: quantify water availability



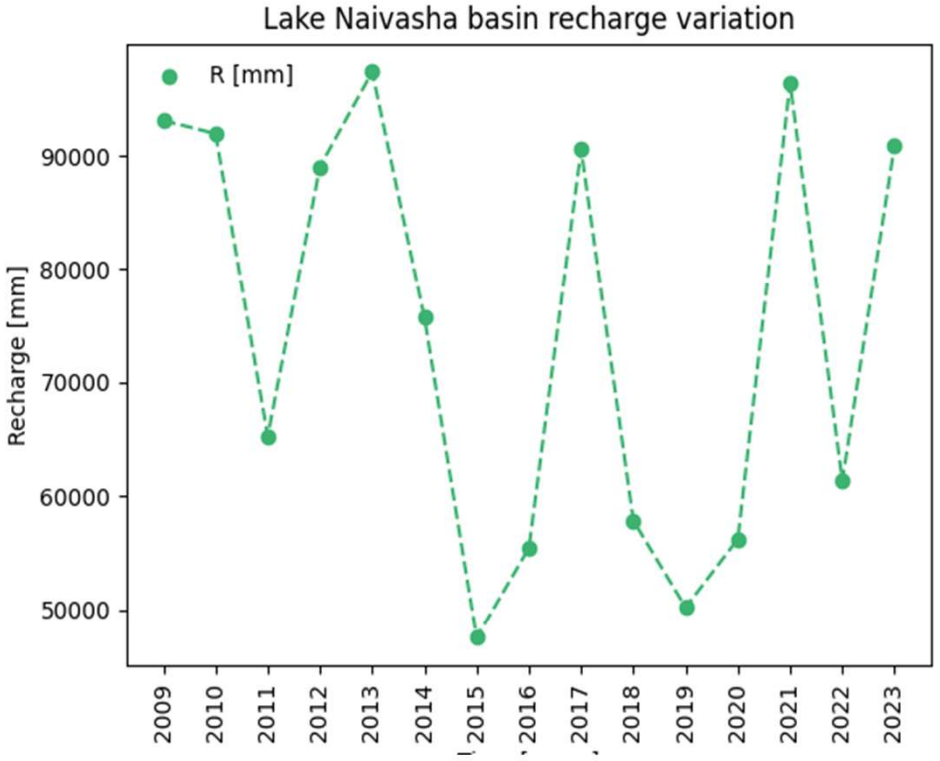
Groundwater in relation to the water cycle. Modified after Australian Government, Bureau of Meteorology. https://media.bom.gov.au/social/blog/921/far-from-bore-ing-what-is-groundwater/?cid=012li08

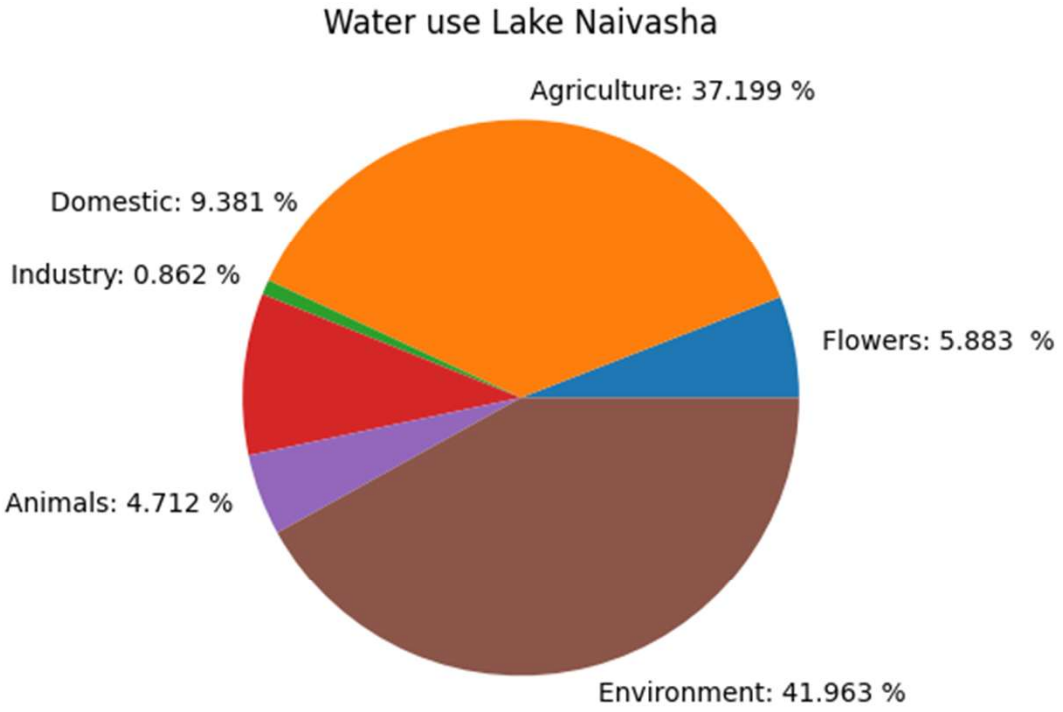


Step 2: estimate water use



Step 3: model response to climate variation





Result of Nexus modelling to quantify sustainability

- **Method:**
  Rank water use by necessity to sustain human life→ water for drinking is most important, followed by water for ecosystem, agriculture, energy and other economic activities. Model change in water use per activity based on climate variations.

- **Results:**
  Case 1: If the total water availability reduces by 10 % --> the amount of water available for non-essential activity reduces by 22.8 %.

Case 3: If the total water availability reduces by 50 % --> this corresponds to the case of drought, and all-non essential activities should stop consuming water in order to be considered sustainable.

Case 4: In case of surplus rain, if the total water availability increases by 15 % --> the amount of water available for non-essential activities increases by 34 %.

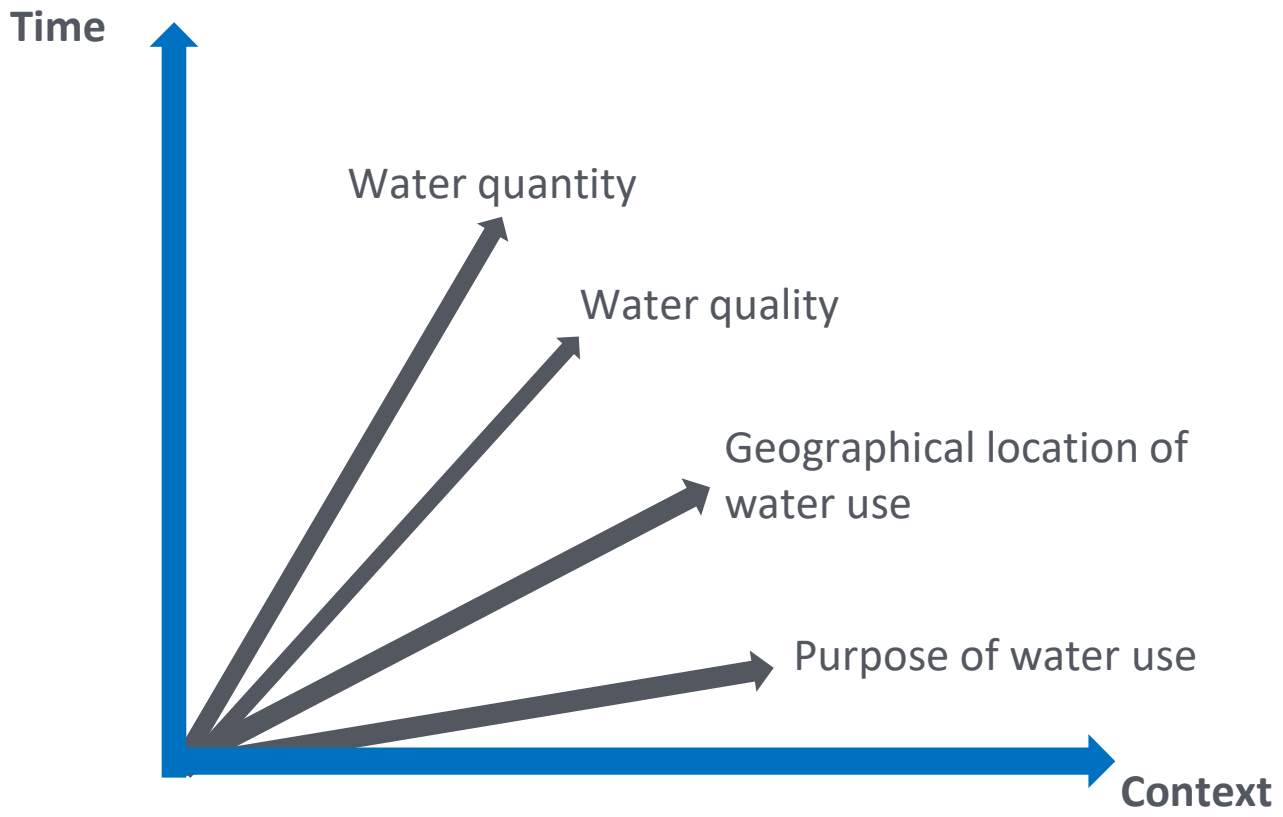
Moral questions:

Who decides what is an essential use of water?

Who decides where an economic activity takes place?

Can water-sustainability ever be achieved in the short-term time scale?

Conclusion: sustainability is multi-dimensional and contextual



Conclusion: redefining sustainability

Sustainable ~~Forest Management~~ Principle: "using natural resources ~~forests and forest land~~ in a way, and at a rate, that maintains ecosystem's ~~biodiversity,~~ productivity, regeneration capacity, vitality and ~~their~~ its potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems"

→ Flower farming in lake Naivasha basin is not sustainable as of now.