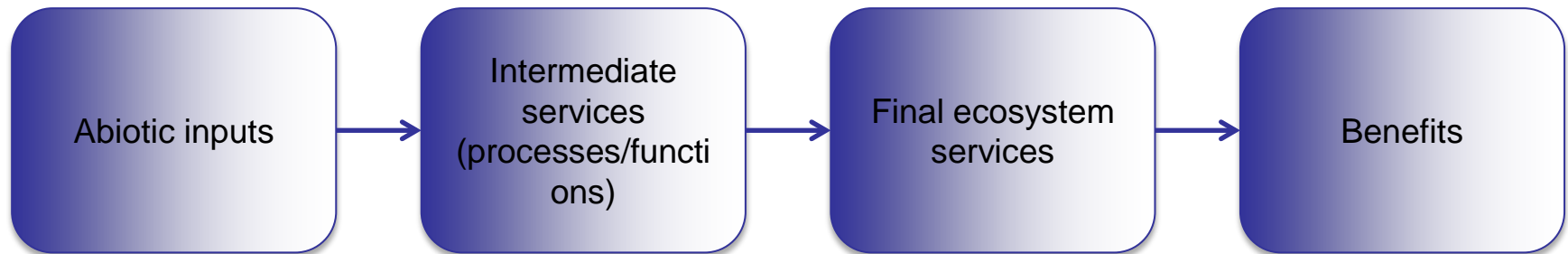


# An ESPA perspective on ecosystem services

# Ecosystem services are not the same as benefits

- The Millennium Ecosystem Assessment (2005) and Wallace (2007), define ecosystem services as the *'benefits that people obtain from ecosystems'*. This definition, however, can lead to double counting as services and benefits are considered to be the same.
- A **BENEFIT** is something that has an explicit impact on changes in human welfare, such as more food or better hiking (Fisher, 2008).
- Whereas, **ECOSYSTEM SERVICES** are the biophysical processes of ecosystems that provide benefits for human well-being (ESPA).



# Ecosystem services are biological or biophysical in nature

- Aesthetic values, cultural contentment and recreation are not ecosystem services. They are benefits as they directly relate to changes in human welfare (Boyd and Banzhaf, 2007).



# Ecosystem services are biophysical or evolutionary processes of ecosystems

The Millennium Ecosystem Assessment (2005), Fisher (2008) and Daily (1997) view biophysical **processes and/or functions** of ecosystems as ecosystem services as long as there are **human beneficiaries**. For example, flood regulation is a service (Fisher, 2008) and not simply a process (Wallace, 2007). Not all processes are services. For example, some bacterial processes that have no ultimate human beneficiaries are not services.



This viewpoint allows us to connect human welfare to nature throughout an ecosystem, and does not only consider the end point.



# Ecosystem services do not have to be utilised directly

## SERVICE



## BENEFIT

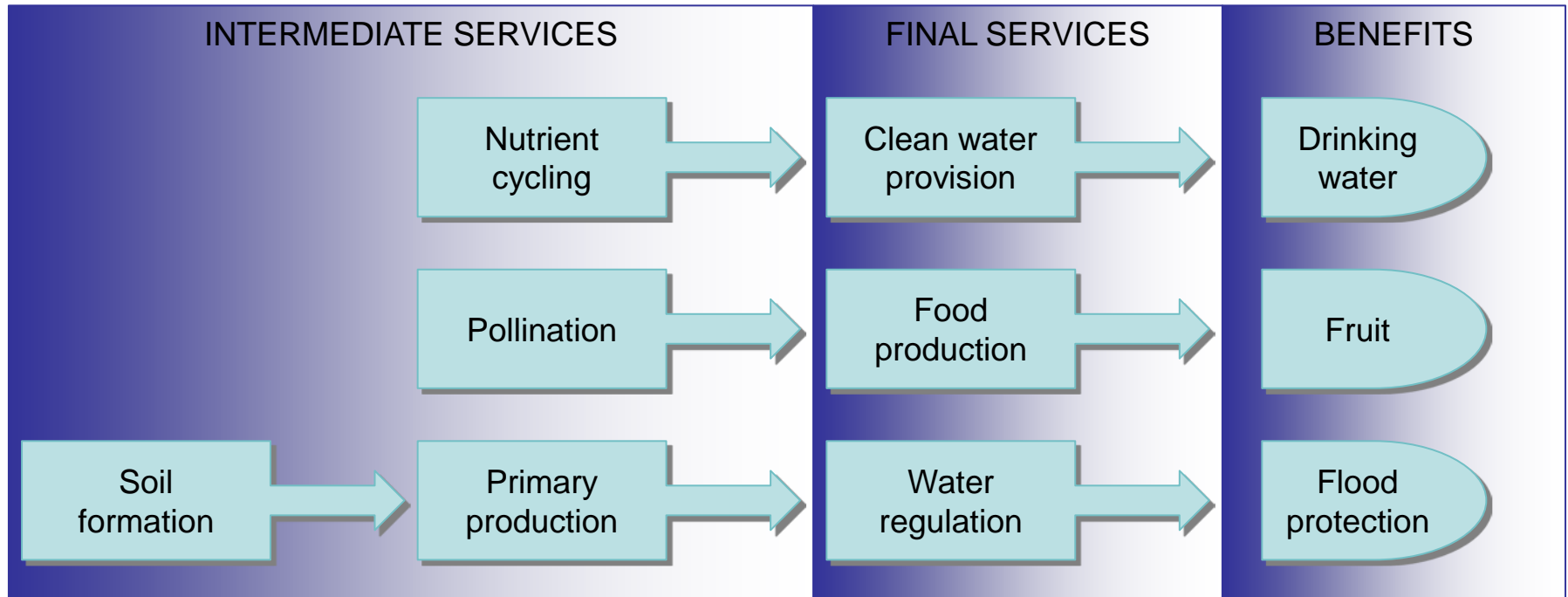
- Boyd and Banzhaf (2007) argue that only the direct endpoints are ecosystem services.
- Daily (1997) and Fisher (2008) states that as long as human welfare is affected by ecological processes or functions (somewhere down the line) then they are services.
- For example, pollination is a service and almonds are the benefit resulting from the pollination service.

# Relationships between ecosystem services and benefits

Intermediate services	Final services	Benefits
Soil formation	Water regulation	Water for irrigation
Primary productivity		Drinking water
Nutrient cycling		Electricity from hydropower
Photosynthesis	Primary productivity	Food
Pollination		Timber
Pest regulation		Non-timber products

Adapted from Fisher (2008)

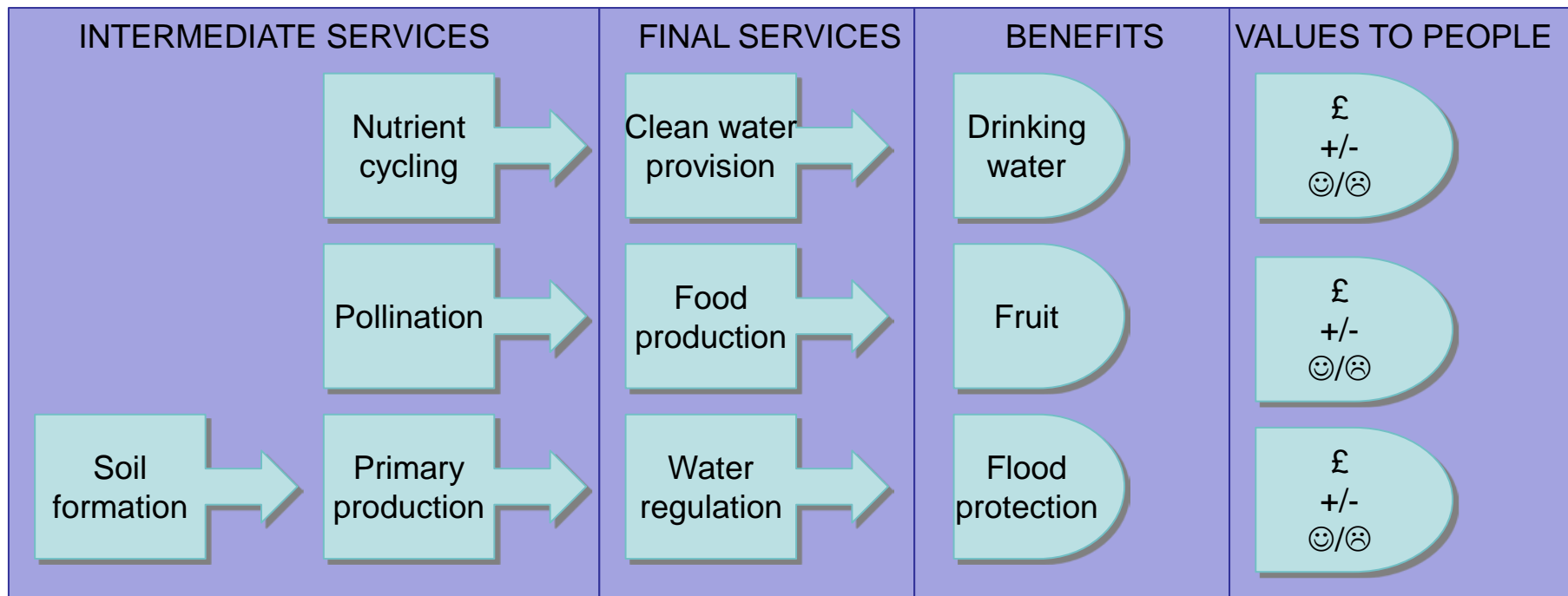
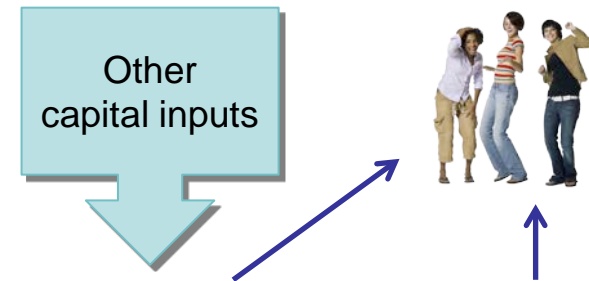
# Relationships between ecosystem services and benefits



Taken from Fisher et al, (2008)

# Valuing ecosystem services and goods

Benefits/goods are valued by people and their value depends on the addition of other capital inputs, which is context specific. For a fair valuation, final ecosystem services must be separated from underpinning processes and other capital inputs accounted for.





# Biodiversity and ecosystem services

1. Biodiversity as a regulator of ecosystem processes e.g. biological soil communities control the dynamics of soil nutrient cycles.
1. Biodiversity as a final ecosystem services e.g. wild species diversity may contribute to the improvement of crop strains.
1. Biodiversity as a good e.g. charismatic species are often an object valued by humans.

## INTERMEDIATE SERVICES



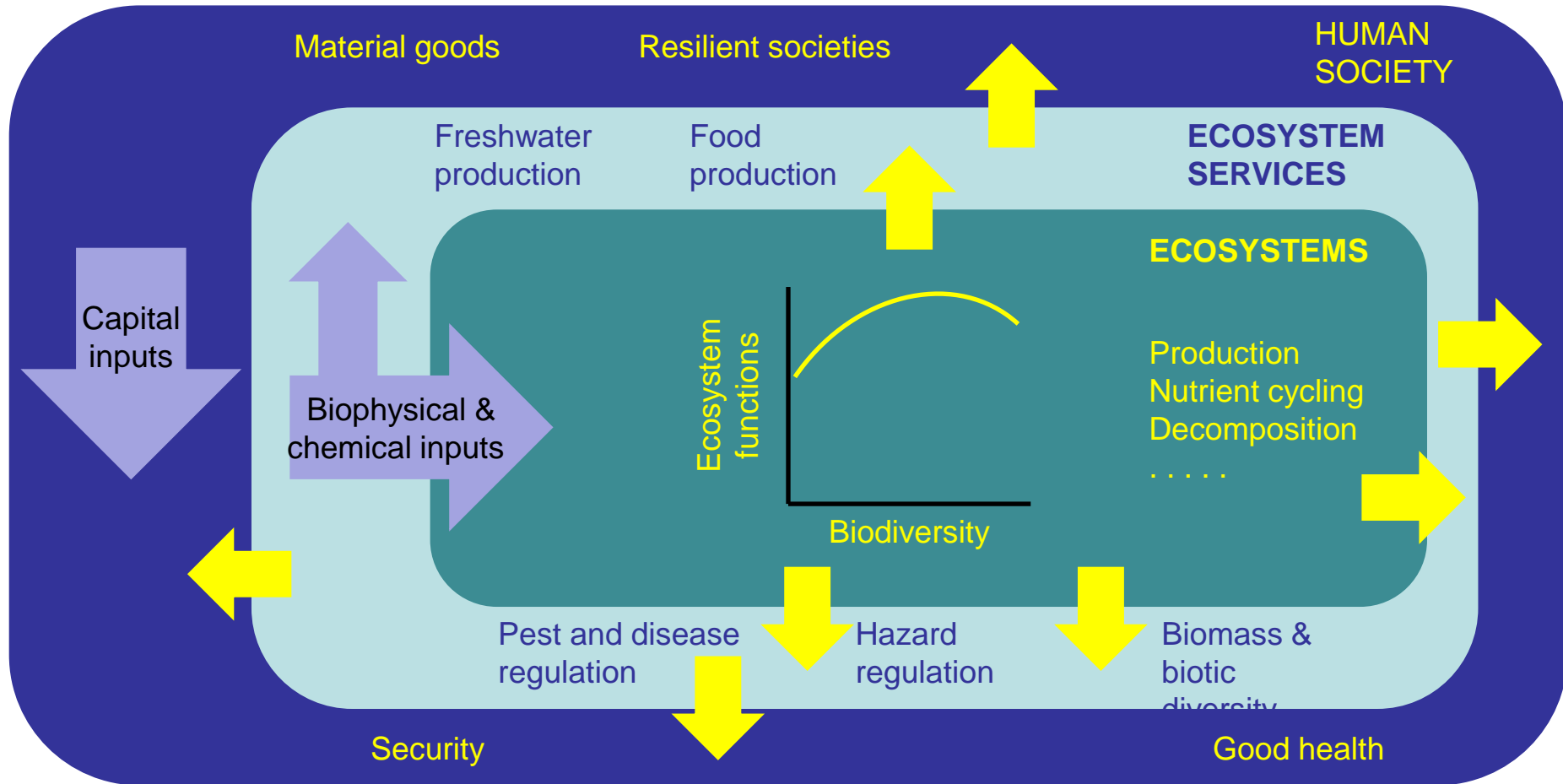
## FINAL SERVICES



## BENEFITS



# Biodiversity, ecosystems, ecosystem services and human society



# Conclusions

- There are complex interactions between ecosystem processes and benefits.
- There is no simple linear relationship and therefore the same service can generate multiple benefits.
- If only the distinct benefits are valued double counting can be avoided.
- As long as there are beneficiaries, most parts of ecosystems provide services to supply benefits.
- The delineation between intermediate services, final services is not strict and services are often a function of a beneficiary's perspective.

# Acknowledgements

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## References:

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# Thank you!



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