



UNIVERSITY OF  
OXFORD

# Mitigating the impact of tourism and recreation on biodiversity

*Dr Joseph W. Bull*

Photo: Bull

# Introduction

---



- Dr Joseph Bull
- Associate Professor in Climate Change Biology, Uni Oxford
- Working in the Aral Sea region since 2010
- Most recently, on Resurrection Island (UK Darwin Initiative funded)
- Focused on:
  - biodiversity conservation
  - industrial development
  - environmental change



# Contents

---



- Biodiversity impacts of tourism and recreation
- Biodiversity impact mitigation and permitting
- Practical session – applications in Karakalpakstan
- Wrap up session:
  - Report back from practical
  - Questions and answers

# Schedule

---



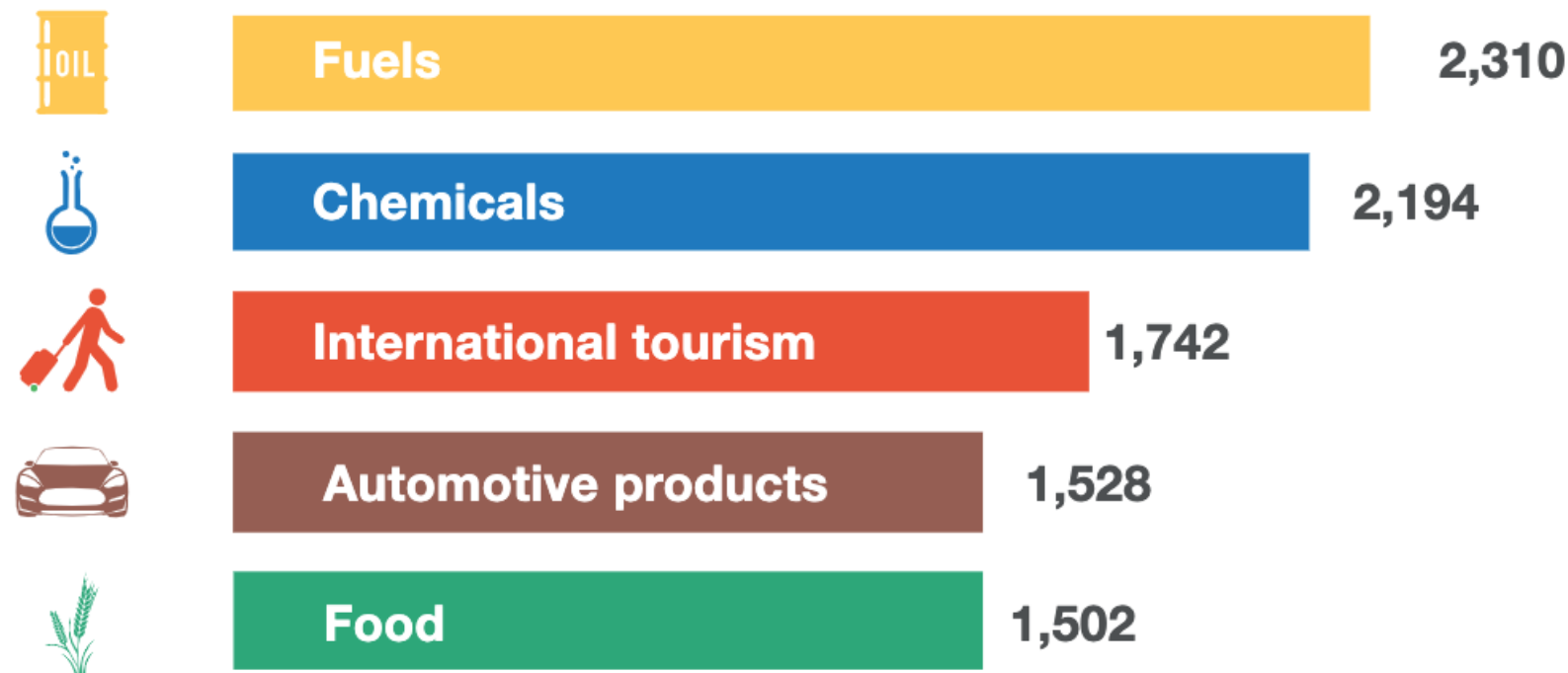
Время	Пункт повестки дня
09:30 – 10:00	<b>Регистрация участников</b>
10:00 – 11:00	Влияние проектов по развитию туризма и рекреации на биоразнообразии
11:00 – 11:30	<b>Перерыв на кофе</b>
11:30 – 12:30	- <b>Смягчение воздействия на биоразнообразие и выдача разрешений</b>
12:30 – 13:30	<b>Обед</b>
13:30 – 14:30	<b>Практическая работа: применение теории к территории Каракалпакстана</b>
14:30 – 15:00	<b>Перерыв на кофе</b>
15:00 – 16:00	- <b>Отчеты результатов практического занятия</b> - <b>Вопросы и ответы</b> - <b>Заккрытие</b>



UNIVERSITY OF  
**OXFORD**

# **BIODIVERSITY IMPACTS OF TOURISM AND RECREATION**

Tourism is the **world's third largest export category** after fuels and chemicals, and ahead of automotive products and food (2019)



**Export earnings by product category, 2019 (USD billion)**



Source: World Tourism Organization (UNWTO) and World Trade Organization (WTO).





UNIVERSITY OF  
**OXFORD**



## AMERICAS

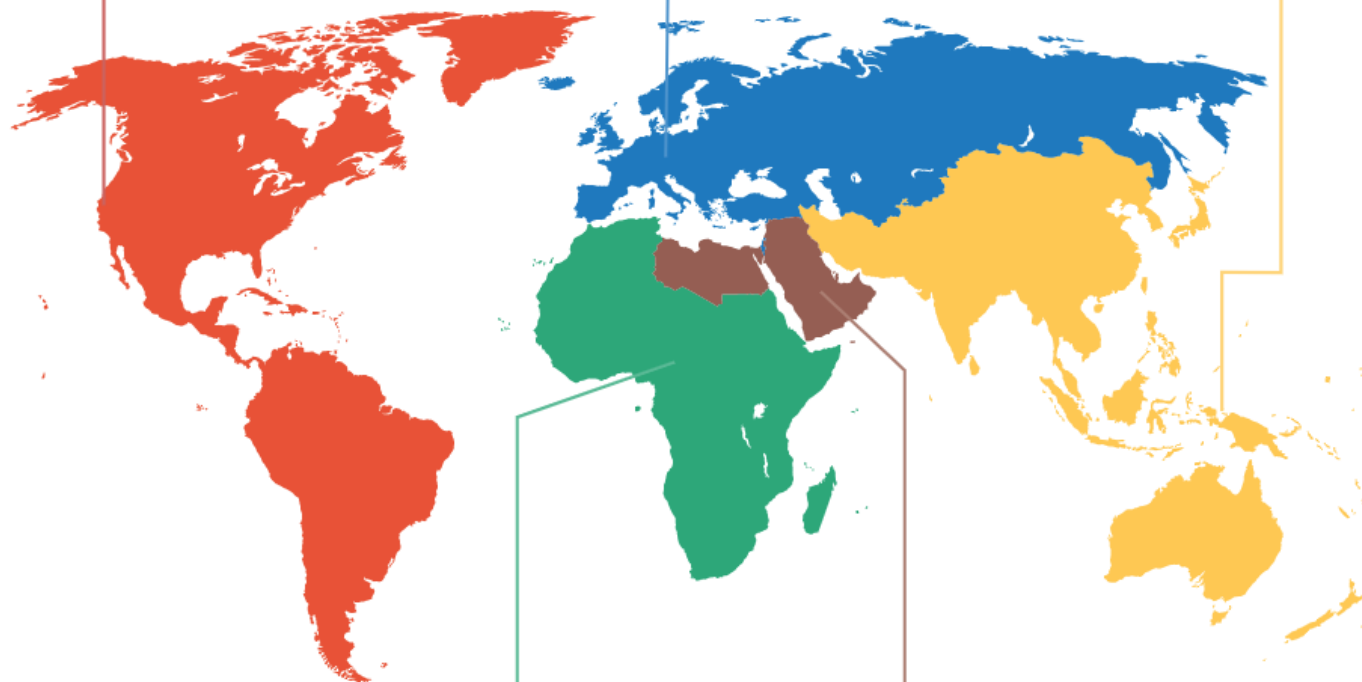
 219 million +2%  
 USD 342 billion +0%



## EUROPE

 744 million +4%  
 USD 576 billion +4%

## ASIA AND THE PACIFIC

 362 million +4%  
 USD 443 billion +1%



 70 million +2%  
 USD 38 billion +1%

## AFRICA

 65 million +8%  
 USD 81 billion +8%

## MIDDLE EAST

### Map of international tourist arrivals (million) and tourism receipts (USD billion)

Source: World Tourism Organization (UNWTO).

Data as of November 2020.

\* Provisional data.

# Tourism

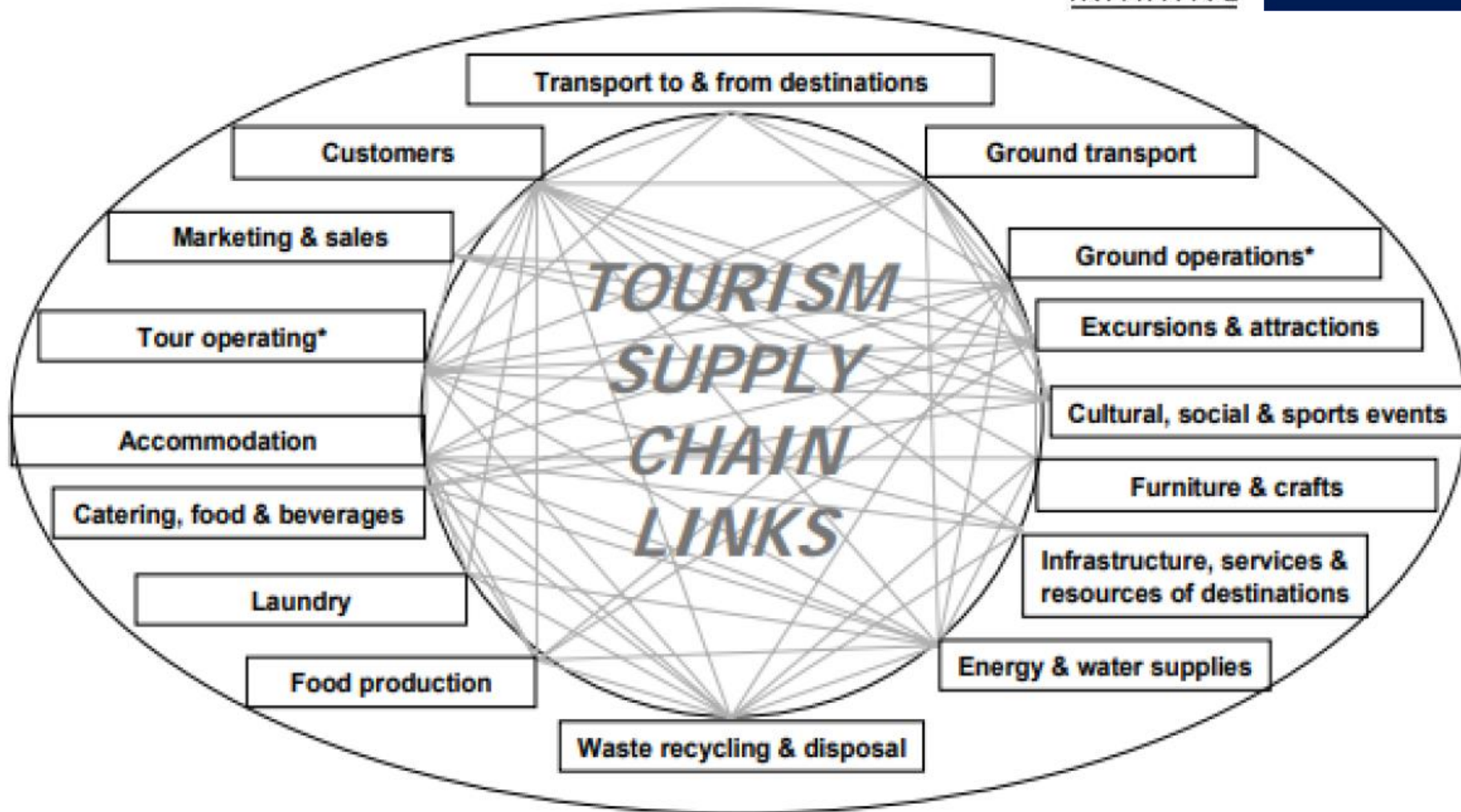
---



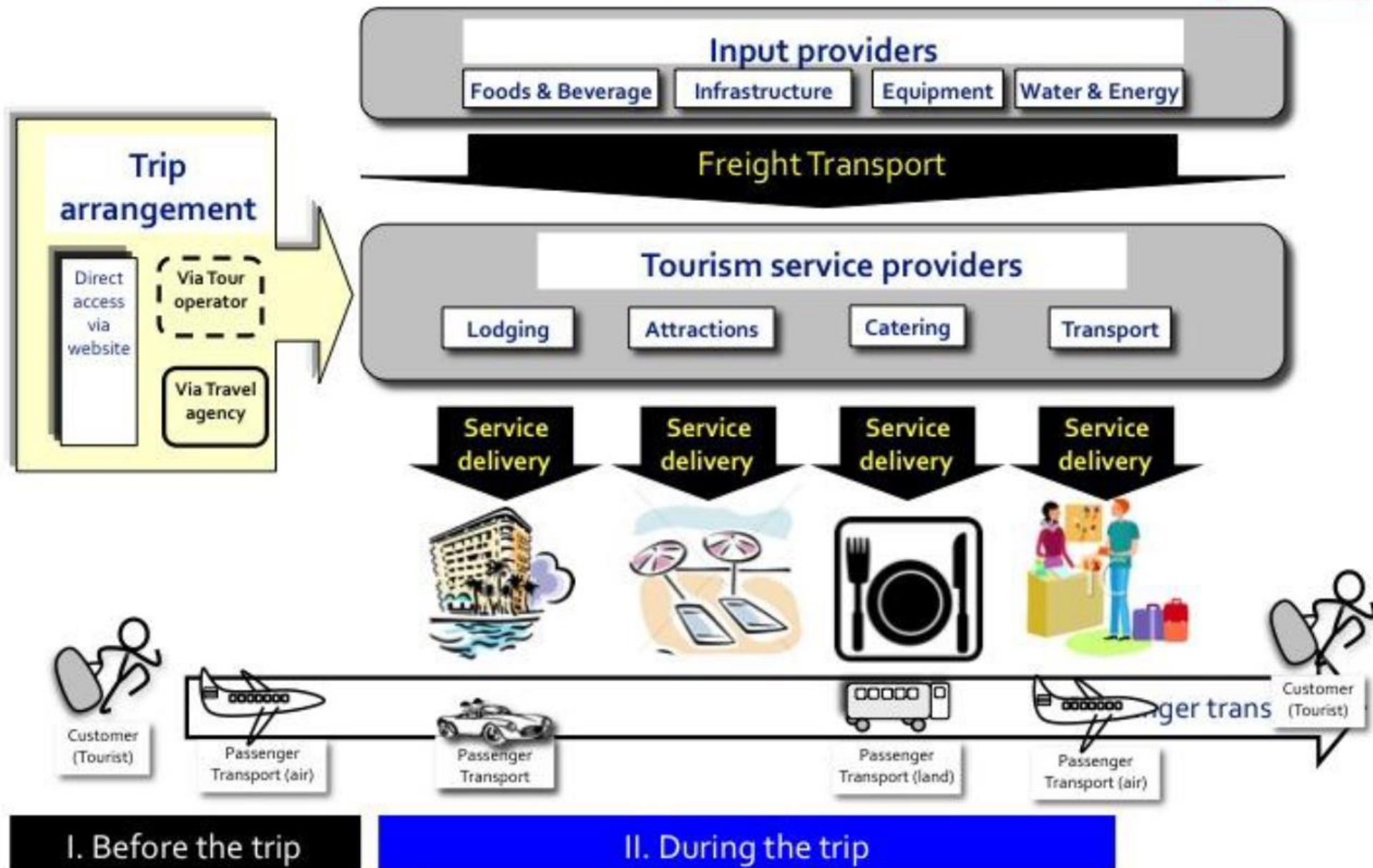
## Uzbekistan

- International arrivals:
  - 975,000 (2010)
  - 6,749,000 (2019)
- Receipts:
  - \$121m (2010)
  - \$1,481m (2019)
  - 0.3% share
- Until Covid-19 (in 2020-2022)!





# The Tourism Supply Chains





# Negative impacts?

---

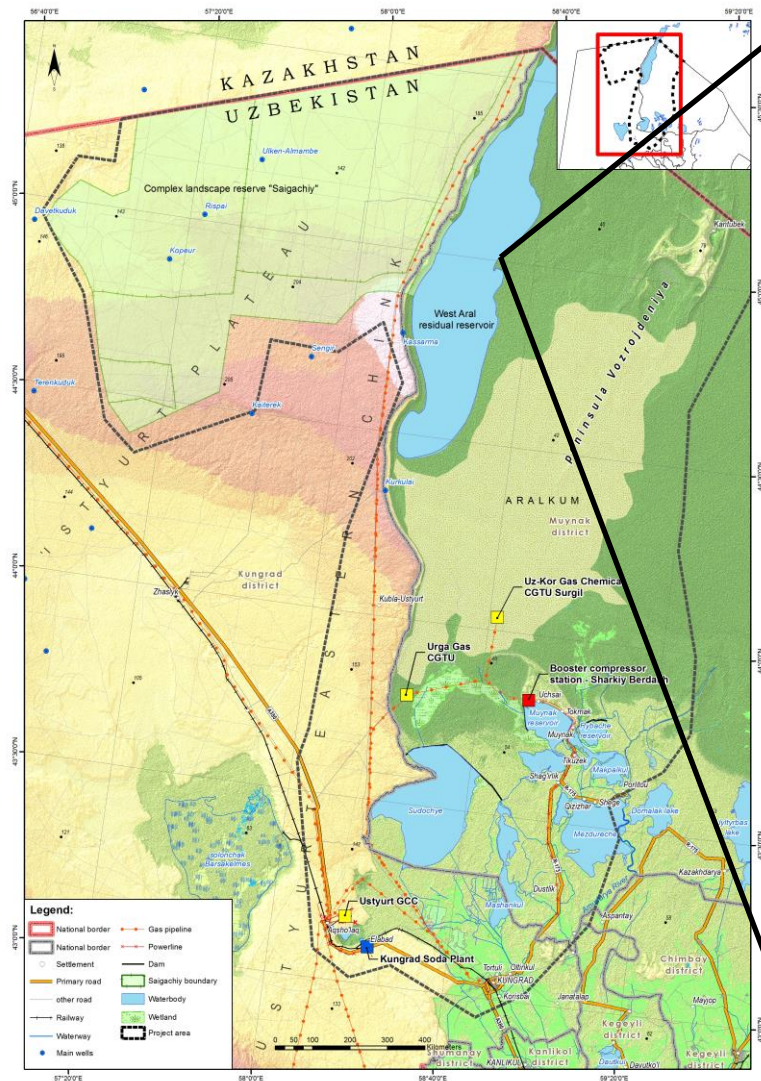


- Land conversion
  - Reduce natural habitats
- Pollution
  - Waste
- Resource use
  - Water, other
- Disturbance
  - Noise, light
- Climate change
  - GHG emissions
- Invasive species
  - Introduction

Photos: Esipov, Bykova, Bull



# Example



Photos: Bull



UNIVERSITY OF  
**OXFORD**

# **BIODIVERSITY IMPACT MITIGATION AND PERMITTING**



# Impact evaluation

---



- Land conversion
  - Reduce natural habitats
- Pollution
  - Waste
- Resource use
  - Water, other
- Disturbance
  - Noise, light
- Climate change
  - GHG emissions
- Invasive species
  - Introduction



# Impact evaluation

---



- Land conversion
  - Reduce natural habitats
- Pollution
  - Waste
- Resource use
  - Water, other
- Disturbance
  - Noise, light
- Climate change
  - GHG emissions
- Invasive species
  - Introduction



Area habitat cleared (hectares)?

# Impact evaluation

---



- Land conversion
  - Reduce natural habitats → Area habitat cleared (hectares)?
- Pollution → General waste produced (tonnes)?
  - Waste
- Resource use
  - Water, other
- Disturbance
  - Noise, light
- Climate change
  - GHG emissions
- Invasive species
  - Introduction

# Impact evaluation

---



- Land conversion
  - Reduce natural habitats → Area habitat cleared (hectares)?
- Pollution
  - Waste → General waste produced (tonnes)?
- Resource use
  - Water, other → Water consumption (m<sup>3</sup>)?
- Disturbance
  - Noise, light
- Climate change
  - GHG emissions
- Invasive species
  - Introduction

# Impact evaluation

---



- Land conversion
  - Reduce natural habitats → Area habitat cleared (hectares)?
- Pollution
  - Waste → General waste produced (tonnes)?
- Resource use
  - Water, other → Water consumption (m<sup>3</sup>)?
- Disturbance
  - Noise, light → Proximity to sensitive habitats (m)?
- Climate change
  - GHG emissions
- Invasive species
  - Introduction

# Impact evaluation

---



UNIVERSITY OF  
OXFORD

- Land conversion
  - Reduce natural habitats → Area habitat cleared (hectares)?
- Pollution
  - Waste → General waste produced (tonnes)?
- Resource use
  - Water, other → Water consumption (m<sup>3</sup>)?
- Disturbance
  - Noise, light → Proximity to sensitive habitats (m)?
- Climate change
  - GHG emissions → Greenhouse gas emissions (tCO<sub>2</sub>)
- Invasive species
  - Introduction

# Impact evaluation



UNIVERSITY OF  
OXFORD

- Land conversion
  - Reduce natural habitats → Area habitat cleared (hectares)?
- Pollution
  - Waste → General waste produced (tonnes)?
- Resource use
  - Water, other → Water consumption (m<sup>3</sup>)?
- Disturbance
  - Noise, light → Proximity to sensitive habitats (m)?
- Climate change
  - GHG emissions → Greenhouse gas emissions (tCO<sub>2</sub>)
- Invasive species
  - Introduction → Pathways for introduction (expert)?



# Impact mitigation

---



Arlidge et al. (2018) *BioScience*

# Impact mitigation

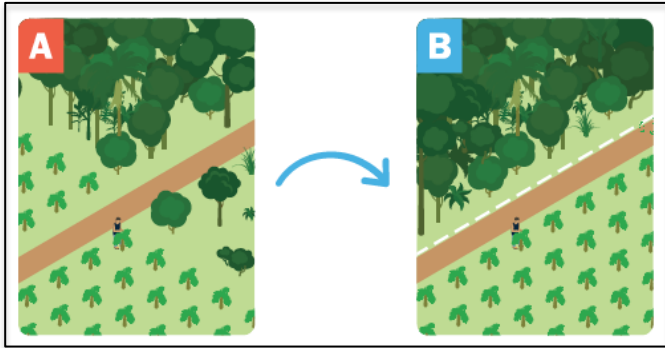
---



UNIVERSITY OF  
**OXFORD**

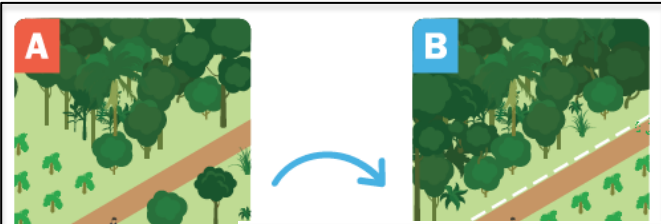
# Impact mitigation

---

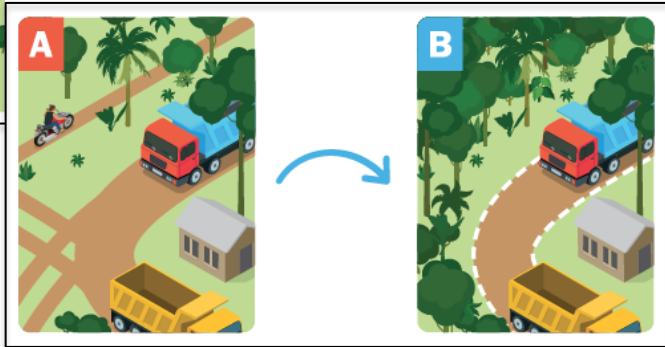


AVOID IMPACTS

# Impact mitigation

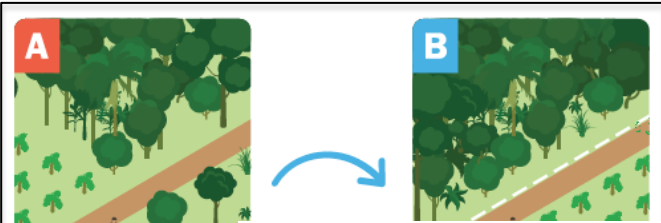


AVOID IMPACTS

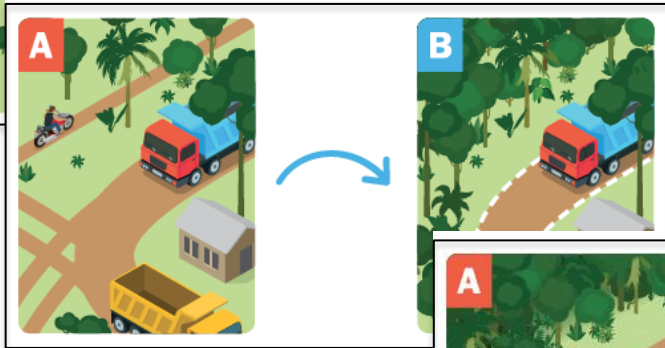


MINIMISE IMPACTS

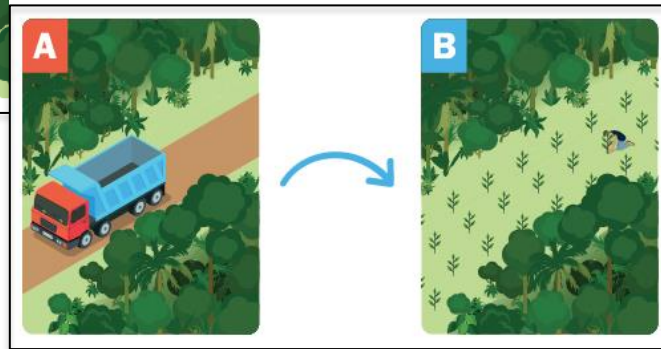
# Impact mitigation



AVOID IMPACTS

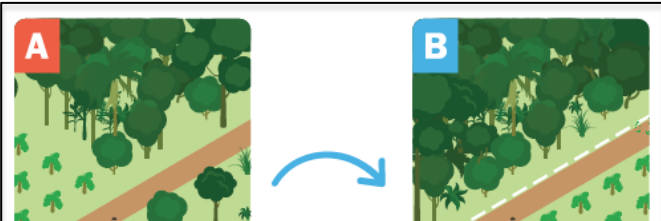


MINIMISE IMPACTS

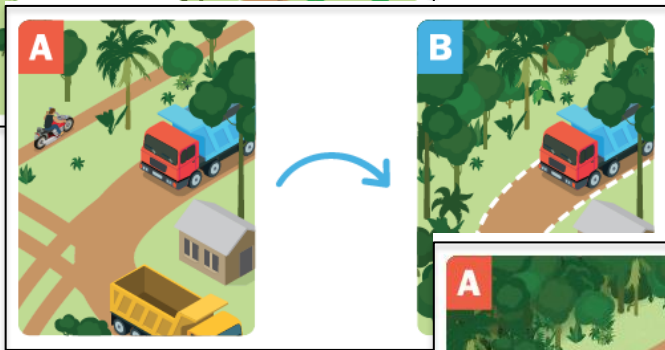


REVERSE IMPACTS

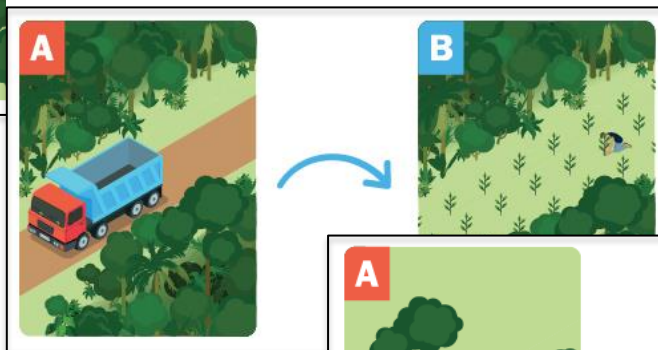
# Impact mitigation



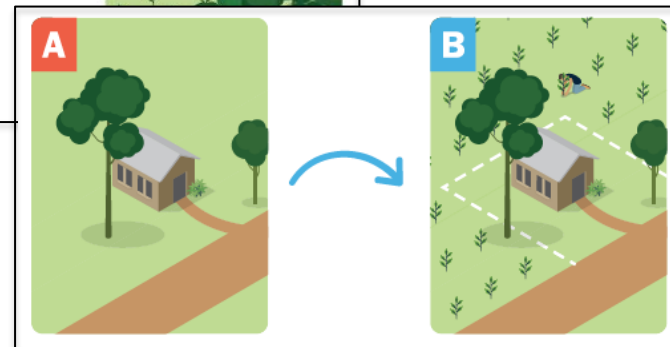
AVOID IMPACTS



MINIMISE IMPACTS



REVERSE IMPACTS



OFFSET IMPACTS



**Individual goal:** To reduce the biodiversity impact of my consumer choices as much as possible

**E.g. Fashion/textile choices**

**Target:** Reduce the environmental and social impact of my fashion/textile purchases as much as possible

<b>Refrain</b>	Avoid purchasing unnecessary items. Avoid purchasing the most environmentally and socially damaging products, such as cow leather, high-pesticide/high-water use cotton, and products made in sweatshops.
<b>Reduce</b>	Minimise the impact of fashion items that are purchased, by only purchasing from companies with socially and environmentally responsible supply chains. Wash clothes only when necessary, at low temperatures, using environmentally-friendly detergent. Mend items rather than purchasing new ones.
<b>Restore</b>	Recycle clothes into new items (e.g. cut down trousers to shorts), set up a clothes exchange, or take unused items to a charity shop or a fabric recycler so they can be used again.
<b>Renew</b>	Donate time or money towards a river clean-up project, to restore or improve resilience of waterways to pollution from detergents and micro-plastics. Encourage others to adopt '4 steps' actions, and refrain from fast fashion. Advocate for better regulation of the fashion industry and waste management.



**E.g. Diet/food choices**

**Target:** Reduce the biodiversity impact of my diet as much as possible and reduce my dietary CO<sub>2</sub> emissions by 30%

<b>Refrain</b>	Avoid consuming high biodiversity-footprint food items, such as beef sourced from cattle ranches in high biodiversity areas.
<b>Reduce</b>	Minimise the impacts of food that is consumed, by eating meat or fish less often, and purchasing locally produced or certified sustainable products.
<b>Restore</b>	Recycle food waste using methods that maximise its environmental benefit. Donate unused or unwanted food to food banks or food exchange platforms.
<b>Renew</b>	Implement personal actions to generate biodiversity and carbon gains, such as biodiversity-friendly gardening (e.g. mowing the lawn less often, planting native butterfly-friendly shrubs). Donate time or money towards a local or international wildlife charity, or carbon-offsetting scheme.

# Permitting: GSTC

---



## Global Sustainable Tourism Criteria (2016; UNEP, UNWTO, and others)

- Section A – Demonstrate effective sustainable management.
- Section B – Maximise social and economic benefits to the local community and minimise negative impacts.
- Section C – Maximise benefits to cultural heritage and minimise negative impacts.
- Section D – Maximise benefits to the environment and minimise negative impacts

# Permitting: GSTC

---



## Global Sustainable Tourism Criteria (2016; UNEP, UNWTO, and others)

- Section A – Demonstrate effective sustainable management.
- Section B – Maximise social and economic benefits to the local community and minimise negative impacts.
- Section C – Maximise benefits to cultural heritage and minimise negative impacts.
- Section D – Maximise benefits to the environment and minimise negative impacts

# Permitting: GSTC

---



Conserving biodiversity, ecosystems and landscapes (D3)

- Biodiversity conservation
- Invasive species
- Visits to natural sites
- Wildlife interactions
- Animal welfare
- Wildlife harvesting and trade



UNIVERSITY OF  
**OXFORD**

# **PRACTICAL SESSION**

# Practical session

---



- Split into groups
- Take a list of example tourist projects:
  - Stay in yurt camp (Aral Sea)
  - Stay in guesthouse (Muynak)
  - Aral Sea landscapes tour
  - Visit to protected area (Aral-kum)
  - Night sky observation services
  - Uzbek culinary experience
- List impacts (5 categories)
- Suggest impact mitigation measures
- Decide on permit (GSTC)
- Present after coffee





UNIVERSITY OF  
**OXFORD**

# **WRAP UP SESSION**

# Wrap up session

---



UNIVERSITY OF  
OXFORD

Each group present (5 minutes each)

# Wrap up session

---



Question and Answer session

# Finally: eco-tourism

---



Eco-tourism =

- Nature-based forms of tourism in which the main motivation of the tourists is the observation and appreciation of nature
- Minimises negative impacts upon the natural and socio-cultural environment
- Supports the maintenance of natural areas which are used as ecotourism attractions by generating economic benefits for host communities (UNWTO)

# Finally: eco-tourism

---



- Strategy for biodiversity conservation in the Republic of Uzbekistan for the period of 2019-2028 emphasizes “development of ecological tourism” as a key area
- This direction today is promising in terms of profitability
- In recent years, there has been a high demand among the population in recreational areas of natural parks, especially mountains and foothills near large cities
- The recreational loads have a significant impact on the structure of biodiversity



UNIVERSITY OF  
**OXFORD**

# Thank you

[joseph.bull@biology.ox.ac.uk](mailto:joseph.bull@biology.ox.ac.uk)

[www.darwininitiative.org.uk](http://www.darwininitiative.org.uk)

ResurrectionIslandProject

