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AWARE
Assessment on WAste
and REsources

ENVIRONMENTAL IMPACTS ANALYSIS OF EUROPEAN AND CHINESE BICYCLE PRODUCTION

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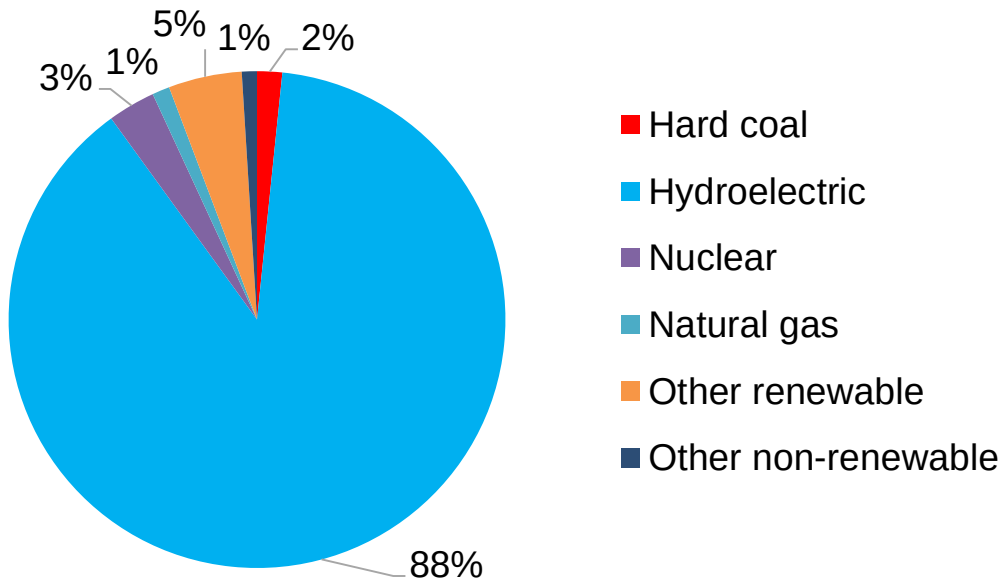
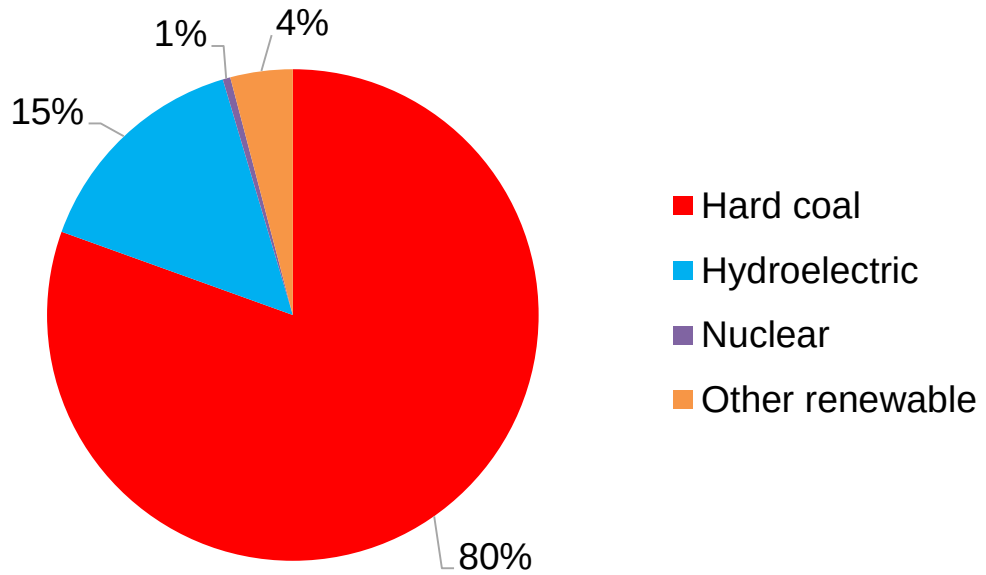
Modelling - ELECTRICITY

Aluminium electricity mix

Europe
(in each country for bicycle and each component)



China
(in each province)



Transportation (freight, sea): comparison of CO_2 emission intensities from different sources

kg CO_2 eq/bicycle

Transport, freight, sea, bulk carrier for dry goods	Transport, freight, sea, container ship	Transport, freight, sea, container ship with reefer, cooling	Transport, freight, sea, container ship with reefer, freezing	Transport, freight, sea, ferry	Transport, freight, sea, tanker for liquefied natural gas	Transport, freight, sea, tanker for liquid goods other than petroleum and liquefied natural gas	Transport, freight, sea, tanker for petroleum	Transport, freight, sea, transoceanic ship	Transport, freight, sea, transoceanic tanker
1.4	2.0	4.5	3.9	23.7	2.1	1.6	1.3	2.4	1.2

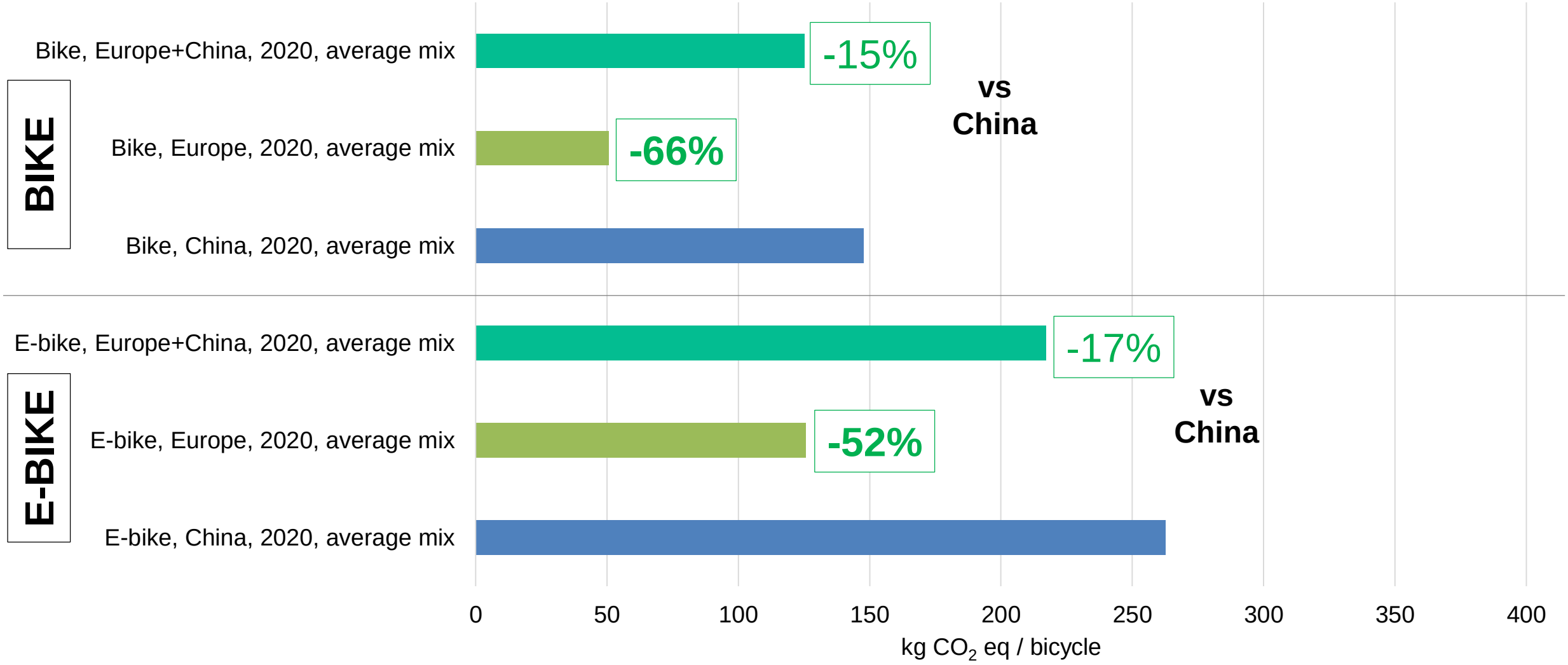
Average carrier dry container emission intensities for different routes
Asia to-from Mediterranean: 48 gCO_2/TEUxkm
Asia to-from Nord Europe: 42 gCO_2/TEUxkm

→ 90 gCO_2/(TEU x km)
Including empty return!

90 gCO_2/(TEU x km) x 17900 km / 84 bikes / TEU = 19.2 $kgCO_2$/bike

90 gCO_2/(TEU x km) x 17900 km / 65 e-bikes / TEU = 24.8 $kgCO_2$/e-bike

Results (climate change) - 2020 average electricity mix



Results (climate change) - contribution analysis