

CLIMATE EXPO

A fusion of Science and Policy. Advancing a resilient, zero-carbon world

The role of education in civil engineering to face climate change

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Climate change is one of the biggest threats in our world. Therefore, developing and learning solutions to face climate change must be central in the education of our Engineers. If we will tackle the reduction of CO₂ emissions to zero by 2050, the changes introduced in our educational system must be fundamental changes. Small adjustments won't be enough. It will be necessary a cultural change to design, reuse, remodel and recycle our existing infrastructure instead of knocking down and rebuilding.

Minimise/reduce the carbon footprint for building design and construction must be central in our educational programs.

Professional values and ethics are more important than ever since our decisions will produce a loss of hundreds of thousands of lives and the extinction of hundreds of species every year if we do not stop emitting CO₂ into our atmosphere.

Resilience is today the most important skill to face the global problems and changes of our way of life on this planet.

A more sustainable, effective, and zero-emission education is possible. This paper will present the necessary changes that the education system must implement to face climate change changing our culture developing a more resilient society.

Keywords: climate change, CO₂ emissions, carbon footprint, professional values, ethics, resilience, zero-emission.

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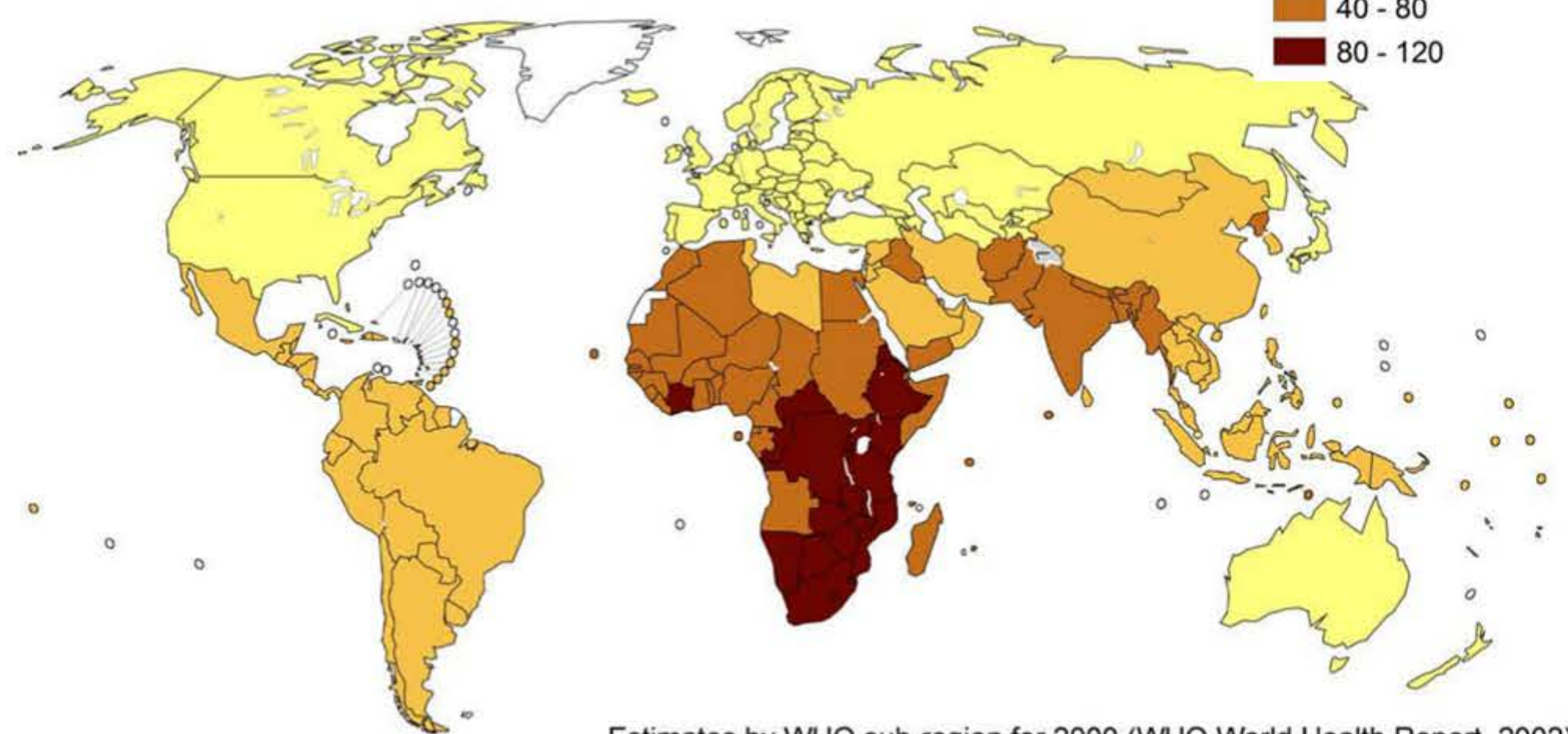
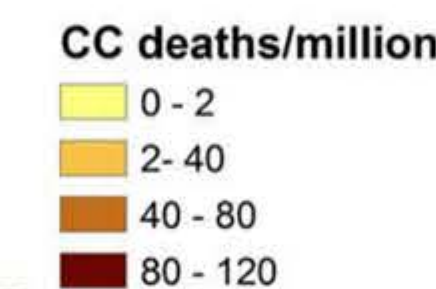
Adaptation and Resilience theme



Climate Change kills people and extinguish species

A worldwide problem requires a worldwide response

Deaths from climate change

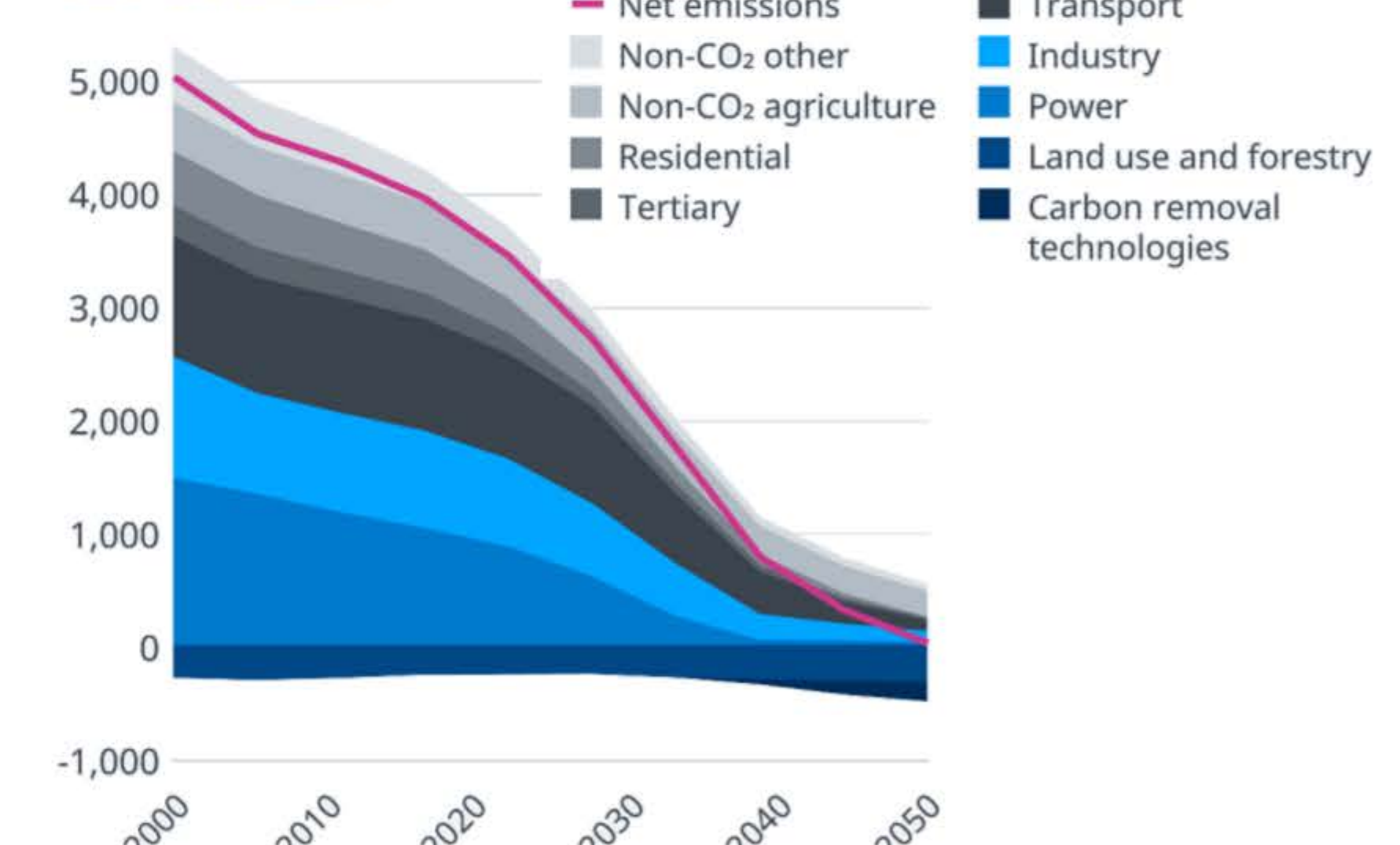


Estimates by WHO sub-region for 2000 (WHO World Health Report, 2002).
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Source: <https://www.who.int/heli/risks/climate/en/climmap0906.pdf?ua=1>

- We have been denying the problem for too long
- We are late, now, we can only minimise the impact of climate change
- We must reduce the emissions to zero by 2050
- **Climate emergency must be central in education of our civil engineers**

EU emissions trajectory in a 1.5 °C scenario



Source: European Commission 2050 strategic vision © DW

Source: <https://www.dw.com/en/net-zero-by-2050-what-does-it-mean/a-48958487>

Education must prioritise development of holistic soft skills, especially the ethics and the mindset to take the right decisions early in every project from the university to the professional life

- Creativity
- Resiliency
- Innovation
- Initiative
- Lateral thinking
- Leadership

- Culture change through education for students & academics
- We have an ethical responsibility with society
- Sustainability is more important than cost & technicalities
- Reduction of carbon emission is priority
- Restore instead of rebuild is more sustainable
- **We must change our course programs as soon as possible**

- Active learning
- Learning strategies
- Originality
- Technology
- Ideation

Soft skills are becoming the most important ones to tackle the climate change emergency in the framework of the technology disruption and pandemic

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