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From 3R Approach to 4C Systems: on the Road to Sustainable, Desirable and Resilient City

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A wider recognition of climate change enhances in the society the 3R approach – Reduce, Recycle and Reuse –, thus broadening the spectrum of Urban Geoscience topics. This strengthens also the consensus that business models of companies are often too focused on their financial value, to the detriment of social and environmental added value. It therefore seems timely to change this way of doing things so that their growth is built more as part of a sustainable development approach, by emphasising the paradigm shift of ‘shared value’.

‘Shared value’ means that by meeting the needs and challenges of society, businesses can create their economic value in a way that also benefits society, in direct link with COP21’s commitments and in response to energy, environmental and IT transition laws, hence bringing political ambition and market reality together. To highlight such opportunities, this presentation will capitalise on several research initiatives launched in Greater Paris during recent years related to this topic (<https://hmco.enpc.fr/portfolio-archive/>):

- (i) research to extend non-linear approaches in environment and geophysics;
- (ii) results on defining environmental indicators for our cities - considering their multimodal, multiscale and multifunctional structure - to quantify their environmental impacts (e.g., thermal, visual comfort, air quality, heat island mitigation, stormwater management etc.);
- (iii) numerous instrumentation and modelling experiments related to the impacts of climate change and to the means of their attenuation;
- (iv) results on the monetisation of amenities provided by Blue-Green Solutions in urban areas and their large-scale socio-economic contextualisation;
- (v) environmental assessment of many (infra)structures that take into account their design method, implementation, operation, maintenance and end-of-life.

All these research initiatives constitute the basis for the ‘shared value’ theoretical emergence in the 4C framework – Cognitive, Collaborative, Coevolutionary and Complex – systems, with a practical methodology towards the sustainable, desirable and resilient city and call for larger developments of Urban Geosciences.

