

### **Team 1: Green infrastructure to mitigate storm water effects**

Last year Toronto was heavily struck by a stormwater event. The existing urban infrastructure was not able to handle the massive rainfall. Large parts of the city were flooded and the damage was huge. 'Green Infrastructure' could be one of the answers for this problem. Green Infrastructure are designed areas of urban greenery which are able to retain stormwater. This should reduce the costs, improve the aesthetical value and leads to the efficient use of land. Toronto Water ask the team to design an area with the Green Infrastructure philosophy, to retain excess storm water. Focus lays on costs,.

### **Team 2: Reduction of phosphorus levels in urban runoff**

An excess of Phosphorus results in huge algae blooms and these blooms are harmful to the environment. The main sources of Phosphorus are agriculture run-off (manure and fertilizer for crops) and from industrial and domestic (detergents) waste streams. Another source of Phosphorus is the spillage of wastewater during heavy rainfall in urban areas. Environment Canada challenges the team to develop a concept of to reduce or even remove the phosphorus levels during heavy rainfall in urban area.

### **Team 3: Design of upgrade**

The world population is growing: in 2030 the human population will grow to 8 billion. A larger human population leads to larger wastewater flows. An increase of wastewater is a threat to the healthy livelihood and environment. To be able to coop with this increased wastewater flow the existing wastewater treatment plants need to be upgraded, but not only in quantity. It should also be upgraded in terms of quality. A consortium of three partners (XXX) would like to have an innovative design of the expansion to the wastewater treatment plant of Limoges, taking into account future scenarios and updated environmental regulations.

### **Team 4: monitoring of pollutions by the mining industry**

Canada has numerous of resources under the ground which can be utilized by the mining industry. The mining industry has been developed all over Canada's surface. Due to the mining industry harmful compounds, like heavy metals, come to the surface. These could leech into the environment. Authorities face difficulties on monitoring the levels of these harmful compounds and what levels harm the environment. Incas<sup>3</sup> and Can North challenge the team to come up with a device which is able to measure the harmful compounds and alarm the authorities when levels exceed certain harmful levels within an hour.

### **Team 5: Turning wastewater into useful resources**

Wastewater is traditionally considered waste. Recently this view has been changed: wastewater has a lot to offer. It is plentiful stream of useful nutrients and chemical energy. To make use of these resources the current infrastructure and wastewater treatment plants needs to be updated. DeSaR and Wageningen University challenge the team to design an innovative decentralized sanitation system which turns wastewater into useful and profitable resources by closing the cycles and harvesting all benefit.