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# LEAVES – Alternative Urban Bioenergy L.A.U.B.

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Autumnal leaf fall and its detritus in urban areas is widely considered to be at least a nuisance and even a hazard to local motorized traffic. It so follows, that the management and disposal of this particular waste, which comes in considerable quantities, usually poses quite a problem to cities' administrations.

Some large cities with much green space compost their leaf detritus to be used for maintaining the cities' gardens and parks. Often however the compost quantities produced exceed what is actually needed. Surplus urban leaf detritus could however be utilized sustainably and even profitably in another way. Amongst others, a striking new idea is to process the foliage to gain combustible biomass, which is consequently used to generate power in small and medium sized plants. The experience gained from an already operational plant in a small German town named Ibbenbüren might however be difficult to transfer to larger cities. Collection of raw material as well as methods of processing are to be analysed and evaluated, which requires particular knowledge of storage patterns, combustion behaviour, composition of fumes as well as ashes generated. This research will be guided scientifically and performed in such a way, that the results will, most certainly, generate new possibilities for the thermal usage of renewable energy resources. In the process, it would be highly desirable to prove if this particular kind of biomass fuel will be suitable for use in domestic stoves, which would add extra value to the project.

The use of dried leaf as a fuel in general has undisputable benefits. It is climate-neutral, sustainable and comes for free. The simple process of drying and pressing leaves could be carried out by mobile units, reducing transport distances, effort involved as well as emissions even further. It even offers to take advantage of the necessity of collecting and burning leaf detritus from infested trees to fight spreading vermin, which has become quite a problem in large cities, where trees are usually subject to all kinds of pests. Ultimately the resulting leaf ash suggests itself as a fertilizer.

Figures relating to the profitability of likely energy generation, the avoidance of surplus urban leaf detritus as well as substantial cost reductions indicate the feasibility of an idea already tried by test in situ in Germany:

It would be possible to collect 11-17 kt of biomass after taking into account the biomass used for compost production in a city like Vienna. This means an equivalent of 5-8 million litres of crude oil, saving 13-21 kt fossile CO<sub>2</sub>. Annual proceeds of € 2 million seem to be possible.

For further investigation on the usage of urban biomass resources we hopefully suggest, that the once established cooperation between civil engineering and academic bodies will continue to work together, while the main stakeholders (e.g. administration or industry) in this matter are kindly invited to join such promising a task.