

Lessons learned – 1st reporting period

<p>Management, financial reporting</p>	<p>Managing the work of a big consortium such as APPLAUSE's (formally 11 project partners, actually 16, a lot of activities (many of them are intelinked with each other), big project's budget) is a big task and a huge responsibility. A streamlined coordination structure helps to put the project in operation: (1) Operational decisions are taken by the project management group (representatives of all partners) who meets on a monthly basis, (2) the project is monitored by the project steering committee (senior representatives from all PP not involved in the project on a daily basis), which meets every three months, (3) policy guidance group that meets twice a year (composed of external advisors who are experts in relevant topics for the project, representatives of the civil society and decision-makers).</p> <p>In consortium with very diverse partners direct one-on-one open communication between partners is still the best approach for solving newly arisen problems.</p> <p>Cooperation with partners without experience with European projects and/or a small number of employees requires greater engagement of the lead partner and takes additional time and energy.</p> <p>Project requires monitoring lots of different processes (technological, practical, communication ...).</p> <p>Interdisciplinary projects require further harmonization due to different approaches/working methods in nature and social sciences. Be sure to reach uniform definitions before the start of the project, especially in terminology.</p> <p>From the project coordinator's perspective: each task requires a specific person(s) who is(are) responsible for its(their) implementation and must take responsibility for the timely realization of the activities.</p> <p>Partners with smaller number of employees should extra carefully plan their number of hours on the project and take in account time they'll spend for management, project and financial reporting.</p> <p>One of the aims of the project is also reconstructing production process of wood type production. Budget estimate was calculated before knowing the exact process. However only after the reconstruction we were able to know the exact budget. As a consequence production cost is higher than estimated.</p>
<p>Selection, harvesting, pre-preparation, primary wood processing</p>	<p>Selection of species included in project should be made more carefully. Some of very problematic invasive plant species (<i>Ambrosia artemisiifolia</i>, <i>Parthenocissus quinquefolia</i> ...) are missing on the list, and they cannot be used as source of material for different products. It would be better to finish the selection after approx. 6 months of the project, when partners already gathered enough information.</p>

	<p>The choice of plant material for chemical analysis is quite difficult, since many different factors affect the composition of plants, like habitat, season, weather... In addition, the differences between the plants themselves should be considered. All these factors also affect the results of chemical analyses and expected quantities of extracts, dyes etc.</p>
	<p>Some plant material is not available all year round. Therefore, some of the activities should be planned more carefully to take the development of plants into account.</p>
	<p>When planning harvesting and/or removal of plants, nature condition has to be taken into account (one can expect rain, mud, morning dew, wet plants, closed plant's flowers).</p>
	<p>It is the most efficient to first communicate IAPS needs with partners and then proceed with IAPS removal, collect the wood and transfer it to the partners. Collecting IAPS wood on stock is not recommended.</p>
	<p>When talking about the amount of biomass, partners should find common language. The amount of accumulated biomass is not equal to the actual quantity, since the biomass can contain a large amount of water. For example. ICP received 750 kg of biomass, but after calculation of dry matter content, there was only 300 kg.</p>
	<p>As far as paper production is concerned sampling and harvesting of IAPS should be performed in autumn and winter in order to ensure truly lignified biomass with as high as possible content of cellulose.</p>
	<p>As far as paper production is concerned only stem biomass should be considered as leaves and blossoms contain much less cellulose and thus do not contribute to overall yield of fibre production for papermaking.</p>
	<p>For the purpose of collecting enough material (leaves, flowers...) of invasive plant species before occurrence of plant harmful organisms, it is important to observe the landscape (surroundings) for determination of IAP's growth areas.</p>
	<p>There were much less trees available than planned for wood type production. Also, only later turned out much of these logs were generally in bad state, so only 1/3 of collected wood was usable.</p>
	<p>It is important to have special space for drying plant material, and place (dark, cold), where you can store the material.</p>
	<p>Pre-preparation is very important in the efficient collection of IAPS. It is necessary to study which plants are appropriate for dyes, food, then determine which parts of plants are most useful, and the methodology of preparing plant material for chemical analysis. IAPS collection is a lot of work and effort, which needs to be considered.</p>

	<p>Primary wood processing (timber cutting) of trees from urban environments needs special approach. Due to impact of people (vandalism, metal inclusions such as nails, screws etc.) cutting is difficult and can be very time consuming as well as it can damage saw blades. On the other side because of interesting texture that can be present inside wood, we have to take care to cut timber in sense of best value efficiency.</p>
	<p>For wood type, production trunks have to be cut in slabs. Most of the modern saw mills can't do that and we had troubles finding subcontractors still using old equipment. This was time consuming, challenging and more costly due to transportation.</p>
	<p>The design and development of prototypes requires a lot of information exchange and production planning, partners involved have different working dynamics so long-term work planning is needed to have a continuous production of prototypes.</p>
	<p>It happens quite often that the amount of usable wood in the collected woody IAPS is a lot smaller than anticipated due to a worse wood quality in collected urban trees.</p>
	<p>In order to have a learning community of partners and the improvement of production processes it is essential to have evaluating meetings where partners from same WP exchange their experiences.</p>
	<p>Using a biomass in the laboratory is quite different from buying pure chemical as we learnt through the project. It is like using fresh milk obtained directly from the farmer instead of already processed one from the shopping mall. Fresh one has everything in it and is changing over time. A taste is better, though.</p>
	<p>When dry plant material is being milled, you have to protect yourself with breathing mask</p>
Research	<p>According to our hypothesis, we observed during laboratory work that degrading plant materials harbour several bacterial strains able to degrade large polymers, such as lignin, starch, cellulose and inulin.</p>
	<p>The diversity of bacteria is probably larger as we have predicted, meaning that different biotechnological solutions, harnessing the potential of these organisms, are possible in the future.</p>
IT, digital platform, database	<p>Active cooperation in decision making in IT system design IT SW system in Applause will have to serve urban authority, experts, companies and public. Software development team must have clear users' requirements and specifications what different users expect from the system. The team had some problems in the early stage but then WP4 leader has organised regular workshops so that SW database and system functional requirements were specified and open issues were resolved quickly. The SW team on the other hand prepared potential user interface so that communication with other WP4 participants was easier and clearer.</p>

	<p>Detailed check of downloadable database resources for local region The initial analysis on internet confirmed the existence of resources (EASIN) that could be used for project. However, detailed analysis shown that data such as plant photos and database of plant locations for Slovenia/Ljubljana region were not plenty or easily available for the bulk download and re-use. In future, the existence of such resources should be done in more detail in advance.</p>
	<p>The detection of Japanese knotweed from aerial images (orthophotos) is not straightforward. The detection depends deeply from imagery characteristics and plant stage at the time of acquisition.</p>
	<p>The use other sources of imagery (<i>i.e.</i> freely available Sentinel-2 images) and therefore using temporally denser imagery is necessary, to explore in detail vegetation temporal phenological patterns.</p>
<p>Circular business model</p>	<p>IAPS are a serious environmental, economic and social problem for cities, even if this is an issue often overlooked by public authorities at local, national and European level.</p>
	<p>Circular models require planning and coordination, especially if the recovered material needs to be transferred from one organisation to another.</p>
	<p>Even the last bit of waste can be revalorised in a circular model. The challenge is how to find new uses for this recovered waste that are viable from a practical and economic perspective.</p>
	<p>After measuring the inputs and outputs we determined economic evaluation and concluded that not each specie of invasive alien plant is suitable for conversions to product for sell due to complex pre-treatment.</p>
	<p>In the process of development of several innovative products, it is necessary to have a detailed timetable for the development and implementation of individual products. The process of development should be reasonably limited regarding the project duration - the creation of a timetable (Gantt chart) is very useful.</p>
	<p>Printing paper with IAPS dyes is energetically and timely consuming. The output for producing printing dye from IAPS is small (large quantities of raw IAPS material is necessary for small quantity of dye).</p>
	<p>Water extracted dyes from the Japanese knotweed rhizome and leaves are excellent for dyeing textiles in various colours and hues.</p>
<p>Sharing information & knowledge</p>	<p>During the Festival of (re)use of invasive alien plants we have experienced first hand, how well young people (primary school, secondary school, students) absorb new information and how interested they are in learning how new technologies work. It takes little effort from the demonstrator to stimulate them in finding solutions of their own to the problems being presented.</p>