

APPLAUSE

– FROM HARMFUL TO USEFUL WITH
CITIZENS' LED ACTIVITIES



RECOGNIZE, REUSE OR HAND OVER.



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INTRODUCTION

THERE IS AN ABUNDANCE OF ALIEN PLANT SPECIES LIVING IN OUR ENVIRONMENT. THESE ARE THE SPECIES THE HUMAN BROUGHT INTO THE ENVIRONMENT WHERE THEY DID NOT THRIVE BEFORE.

Tomatoes, potatoes, peppers, corn, beans, sunflowers, tulips, African violets, cacti and many others belong to this category. Some alien species retreated from the gardens and fields, settled in a new environment and began to grow on their own thus endangering the ecosystems and native species; they became invasive. For several decades, invasive alien plants have been globally recognised as one of the most prominent reasons for the decline of biodiversity. They cause economic and environmental damage, and some are harmful to people's health as they can cause allergies, skin reactions and inflammations. They are found mainly on abandoned construction sites and deserted agricultural lands, along roads and railways, forest edges and river banks.

In Slovenia today, the removed invasive alien plants are composted or incinerated. With the pilot project of processing invasive species into paper in 2016, we have already demonstrated that they may be utilised for other useful purposes. We are advancing our current activities by implementing the APPLAUSE project as we would like to operate in line with the Zero Waste and circular economy principles through the active involvement of citizens.



Jerusalem artichoke (*Helianthus tuberosus*),
Photo: Simona Strgulc Krajšek

THE “URBAN INNOVATIVE ACTIONS” INITIATIVE

Urban Innovative Actions (UIA) is an initiative directly led by the European Commission under the European Regional Development Fund Regulation. It encourages innovative action in the field of sustainable urban development with resources intended for the local communities responsible for the development of urban areas with over 50,000 inhabitants.

The supported projects have to be daring, yet untested, of a high quality, planned, transferable, implemented through key stakeholders and focused on results. Through the UIA initiative, it is therefore possible to carry out those pilot projects that are too risky to be financed from conventional financing sources provided they are exceptionally innovative and experimental. The total value of the UIA budget amounts to approximately EUR 372 million for the period 2014–2020. From Slovenia, the two largest cities, Ljubljana and Maribor, were successful in the previous UIA tenders.

Today, UIA connects more than 30 European cities working in various fields:

- circular economy;
- air quality;
- climate change;
- sustainable use of land;
- culture and cultural heritage;
- demographic change;
- digital transition;
- energy transition;
- housing;
- jobs & skills in the local economy;
- urban mobility;
- urban poverty;
- urban security;
- integration of migrants and refugees.

Collective presentation of projects by the City of Ljubljana and City of Maribor.
Photo: Maribor Regional Archive



APPLAUSE PROJECT SELECTED AT UIA CALL FOR PROPOSALS IN OCTOBER 2017

In the second Call for Proposals in October 2017, the UIA initiative chose to co-finance the project by the City of Ljubljana called APPLAUSE (Alien PLAnt SpEcies) – from harmful to useful with citizens' led activities.

A total of 206 projects were submitted for the 2nd Call for Proposals, of which only 16 were selected for co-financing. The name or rather acronym "APPLAUSE" stems from the English words Alien PLAnt SpEcies. The project addresses the unsolved questions with regard to invasive alien plant species in terms of the Zero Waste approach and circular economy. Furthermore, APPLAUSE encompasses the widest circle of stakeholders: kindergartens, schools, high school and university students, senior citizens, households, landowners, businesses, tourists, professional organisations...

With APPLAUSE, we are introducing a new business model, which will also be transferable into the international environment.

The value of the APPLAUSE project is EUR 5,202,590 (eligible costs), of which the EU co-finances EUR 4,162,072 (80%). It is a 3-year-long project which will be implemented from 1 November 2017 to 31 October 2020.

PROJECT GOALS

- **Raising awareness and cooperating with citizens** in terms of the identification, collection and the potential of invasive alien plants for various purposes and activities.
- **Development of new tools** for the identification and inventory of the sites of invasive alien plant species through the analysis of orthophoto and satellite imagery, and the establishment of a public information platform and control system for identifying alien plant species.
- **Introducing new, unconventional procedures and techniques** for the production of paper from alien plant species using enzymes and residual materials in paper production and wood pre-treatment.
- **Analyses of suitability and the development of new products** – invasive alien plant species as a source for paper and wood products, food, production of dyes, hybrid coatings, for controlling of plant harmful organisms.
- **Establishing a circular business model in Ljubljana** in such a way that all raw materials within the process circulate and all waste materials are eliminated as they are used as starting raw materials elsewhere in the process.

Making paper from Japanese knotweed.

Photo: Branka Trčak



THE APPLAUSE PROJECT FOCUSES ON 25 INVASIVE ALIEN PLANT SPECIES; 17 ARE WOODY AND 8 ARE HERBACEOUS SPECIES

1. **box elder** (*Acer negundo*),

Photo: Branka Trčak

2. **horse chestnut** (*Aesculus hippocastanum*),

Photo: Branka Trčak

3. **tree of heaven** (*Ailanthus altissima*),

Photo: Simona Strgulc Krajšek

4. **false indigo bush** (*Amorpha fruticosa*),

Photo: Branka Trčak

5. **Thunberg's barberry** (*Berberis thunbergii*),

Photo: Simona Strgulc Krajšek

6. **David's butterfly bush** (*Buddleja davidii*),

Photo: Simona Strgulc Krajšek



7. **southern catalpa** (*Catalpa bignonioides*),

Photo: Branka Trčák

8. **red osier dogwood** (*Cornus sericea*),

Photo: Branka Trčák

9. **wall cotoneaster** (*Cotoneaster horizontalis*),

Photo: Petra Sladek

10. **stinkwort** (*Dittrichia graveolens*),

Photo: Simona Strgulc Krajšek

11. **Japanese knotweed** (*Fallopia japonica*),

Photo: Branka Trčák

12. **Bohemian knotweed** (*Fallopia × bohemica*),

Photo: Simona Strgulc Krajšek

13. **honey locust** (*Gleditsia triacanthos*),

Photo: Petra Sladek

14. **Jerusalem artichoke** (*Helianthus tuberosus*),

Photo: Simona Strgulc Krajšek

15. **Himalayan balsam** (*Impatiens glandulifera*),

Photo: Simona Strgulc Krajšek

16. **Amur honeysuckle** (*Lonicera maackii*)

Photo: Simona Strgulc Krajšek



17. **Oregon grape** (*Mahonia aquifolium*),

Photo: Branka Trčak

18. **cherry plum** (*Prunus cerasifera*),

Photo: Simona Strgulc Krajšek

19. **cherry laurel** (*Prunus laurocerasus*),

Photo: Branka Trčak

20. **staghorn sumac** (*Rhus typhina*),

Photo: Simona Strgulc Krajšek

21. **black locust** (*Robinia pseudacacia*),

Photo: Branka Trčak

22. **cutleaf coneflower** (*Rudbeckia*

laciniata),

Photo: Simona Strgulc Krajšek

23. **Canadian goldenrod** (*Solidago*

canadensis),

Photo: Branka Trčak

24. **giant goldenrod** (*Solidago gigantea*),

Photo: Branka Trčak

25. **Japanese spiraea** (*Spiraea japonica*),

Photo: Branka Trčak



INNOVATIVENESS OF THE APPLAUSE PROJECT

The APPLAUSE project is set up for innovation. For the purpose of monitoring the presence of invasive alien plants in Ljubljana, we will, in addition to ground survey, also make use of the data supplied by a new generation of European satellites for Earth observation: the Sentinel-2 satellites. The information and communication technology will also play an important role in the identification of invasive alien plants and public communication (automatic plant identification, 3D models and plant prints). In the project, we will develop a greener method for the pre-treatment of papermaking pulp – processing with the help of enzymes. The paper made from invasive alien plants will be produced both handmade and mechanically. The waste liquor from the pre-treatment of paper material will be processed into starting raw materials for industrial purposes, e.g. derivatives of vanillin, which is an intermediate product in the manufacture of pharmaceuticals, cosmetics and other fine chemicals as well as polymers for the storage of microorganisms. We will find a solution for wood residues, which now constitute an energy source and may also be processed into other useful 3D composites, for instance plates and cutlery, or liquified and added to coatings.

Within the project's framework, we will develop 10 wood products which citizens will be able to make at home on their own, and an additional 10 products with a greater added value which we will manufacture at the newly established Carpenter's laboratory at Povšetova ulica 6. From invasive alien plants, we will make wooden letters that will be used in relief printing.

We will examine the suitability of selected invasive alien plants as food source, make dyes from them, which will be incorporated into functional hybrid coatings, for example as absorbents for converting solar energy into electricity, and test them as extracts for controlling of plant harmful organisms.

The exhibition Unused Potentials of Invasive Alien Plant Species in the Stekljeni atrij of the City Hall, Ljubljana 2018.

Photo: Nik Rovar



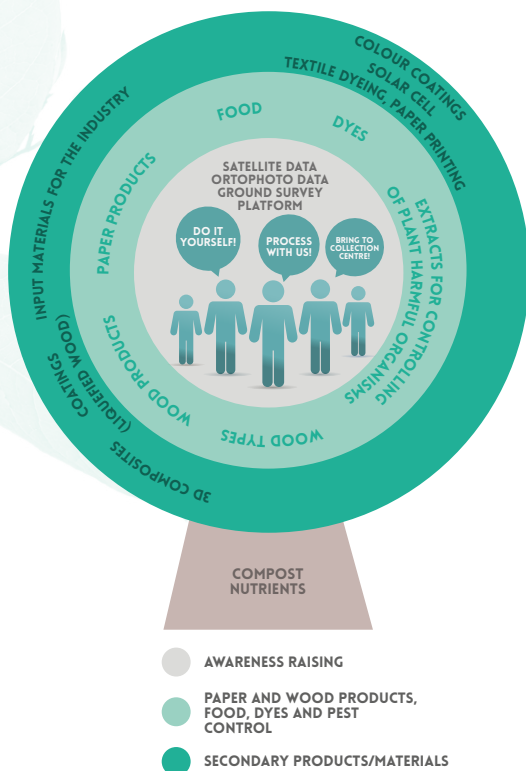
NEW MASTER CRAFTSMAN LABORATORIES FOR PAPER AND WOOD PROCESSING

In the project's framework, we will purchase the master craftsman laboratory in Vevče, whose beginnings date back to 1976, where the manual production of paper is performed following the medieval procedure. We will also establish a carpenter's laboratory to provide new green jobs and preserve traditional crafts, technical and cultural heritage, and knowledge.

CIRCULAR BUSINESS MODEL

The essence of the APPLAUSE circular business model is to:

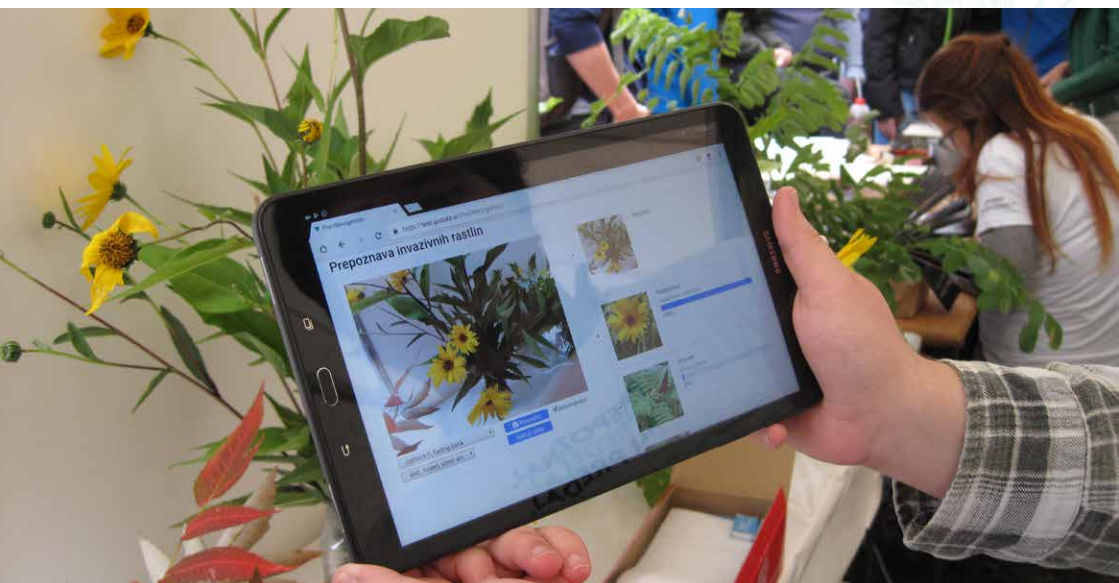
- **redefine waste materials;** products need to be designed in such a way that they stay useful longer, are repairable and may be used for various purposes;
- **keep raw materials in use for a longer period of time,** which can be achieved by maintaining the utility value of raw materials through effective reuse, renewal and processing procedures;
- **maintain and create added value of the removed biomass** with a rational approach towards the use of invasive alien plants.



Circular diagram of the APPLAUSE project;
authors: Darja Virjent, Zala Strojín Božič

RECOGNIZE, REUSE OR HAND OVER

ACTIVE ENGAGEMENT OF CITIZENS FORMS THE HEART OF THE PROJECT



▲ We are developing an application for the identification of invasive alien plants.
Photo: Simona Berden

RECOGNIZE

We want citizens to be able to independently recognise and properly harvest invasive alien plants and process them into useful products.

In order to assist citizens, we will record short video clips about all twenty-five selected invasive alien plant species in which we will present their basic characteristics and appropriate methods of eradication. For fifteen of these plant species, we also plan to make interactive 3D models. We will develop an application for identifying invasive alien plant species from photographs, which will operate by means of an artificial intelligence algorithm.

During the ongoing project, we will organise 60 voluntary actions in the area of the City of Ljubljana where participants will familiarise themselves with the issues of invasive alien plants, learn how to identify the most common species and eradicate them in a suitable manner. We did not forget about the children and senior citizens either; as the project takes place, we will organise 70 science days for kindergartens and primary schools, as well as 30 workshops for senior citizens where they will learn how to recognise alien plants and how to process them into useful products.

REUSE

If you need any help when processing invasive alien plants into useful products, you can join us at our paper and wood craftsman laboratories at Povšetova ulica 6, or at the locations of project partners, where we will perform various activities.

Every year, we organise three free of charge culinary workshops where participants learn how to prepare food and beverages from the Jerusalem artichoke and cherry plum. We also hold a public competition for the most creative dish prepared from Jerusalem artichokes and cherry plum fruits. From all the recipes chosen at the annual competitions, we will select the most innovative one at the end of the project (in 2020) and present the creator with the award for the most innovative dish made from Jerusalem artichokes and cherry plums at the Festival of (re)use of invasive alien plants. The selected recipes will be collected and published in printed and electronic recipe catalogues at the end of the project.

You can also participate in textile dyeing workshops, where you can learn how to prepare dye extracts from various invasive alien plants and colour the selected textile materials.



(from top to bottom) ►

Removing Japanese knotweed at Ljubljana Castle Hill.

Photo: Branka Trčak

Citizens learn how to prepare Jerusalem artichoke and cherry plum dishes at the culinary workshops.

Photo: Stela Špoljar

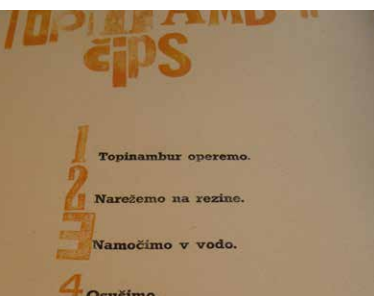
Kumo Shibori pattern on cotton fabric, dyed with Japanese knotweed leaf extracts. Photo: Klara Kostajnshek



If you are interested in the design basics, printing procedures of dye mixing, and relief printing, you are welcome to attend our educational workshops. We will use newly produced wooden letters to shape and print typographic posters on the paper made from Japanese knotweed.

Creative didactic workshops aim at discovering the traditional and experimental procedures of handmade paper production: from the preparation of pulp on a Dutch mill to the creation of a paper sheet or other useful products.

We will develop recipes for the homemade preparation of extracts for controlling of plant harmful organisms, such as insects, diseases, mites, snails and weeds. The results will also be presented at two workshops. The developed recipes will be published in a handbook.



HAND OVER

Within the framework of the APPLAUSE project, we have set up a temporary collection point at Povšetova ulica 2 in Ljubljana where citizens can bring the biomass of eleven invasive alien plant species and sort it in the marked containers. We gather the following plants: Japanese and Bohemian knotweed, giant and Canadian goldenrod, false indigo bush, David's butterfly bush, Amur honeysuckle, cherry laurel, red osier dogwood, Thunberg's barberry, and Himalayan balsam. Instructions for the delivery of biomass are available at the collection centre (in Slovene language only). You can also order them online at applause@ljubljana.si. In the scope of the project, we will attempt to convert as much as possible of the delivered plant material into useful products.

Each year in October, we present all project activities at the Festival of (re)use of invasive alien plants on Stritarjeva ulica in Ljubljana. We look forward to meeting you there!



◀ (from top to bottom)

You can learn about archaic printing techniques at the educational workshops.
Photo: Simona Berden

The recipe for Japanese artichoke crisps printed on paper made from Japanese knotweed. Photo: Simona Berden

Collection point for the biomass of invasive alien plants at Povšetova ulica 2.
Photo: Branka Trčak

Festival of (re)use of invasive alien plants on Stritarjeva ulica in Ljubljana, 2018.
Photo: Nik Rovani

You can read more about the **project** at
www.ljubljana.si/en/applause/.



E-mail:
applause@ljubljana.si



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