

# Development of an innovative value chain for land infested by an invasive plant, the Japanese knotweed



**SOILveR** European knowledge platform on soil and land management

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## Who is ISSeP ?

- ✓ **Public Administration Unit** (Walloon Minister of the Environment)
- ✓ **Walloon expert** in environmental monitoring, risk prevention and management, exploration of environment/health links
- ✓ **Recognized research organization**
- ✓ **Operating sites**

Liège – Head office



Colfontaine



- ✓ **Around 300 employees**

# The origin of the Japanese knotweed project

## Preliminary findings

- Environmental
  - Threat on biodiversity (watercourse, land...) and impact on development projects
  - Awareness following a decree on the management and traceability of excavated soil
  - But, high management costs for poor results after remediation
- Japanese knotweed extracts (cosmetics, agro-food complements...)
  - Importation of JK extracts from China (poor quality)
  - Expensive extracts from France (from vine branches)
  - Availability of rhizome deposits in infested land in Wallonia
  - ...

**Solution:** Development of a circular value chain combining environmental management of infested land and valorization of Japanese knotweed rhizomes (extraction of high added value substances) in Wallonia

## Collaborators and their expertise



- Soil management and traceability
- Management of polluted soils
- Circular economy
- Innovative project management

→ **Environnemental aspects**



- Food technologies extraction
- Adding value to local plant resources
- Use of vegetal extracts for diverse applications
- Innovative project management

→ **Valorisation and Commercialisation aspects**

# Collaborators and their expertise

With the support of :



Wallonie

## Interdepartmental invasive species unit

- Competent authority
- Publication of dedicated technical data sheets



Administrative aspects

## Decision tree for Japanese knotweed management



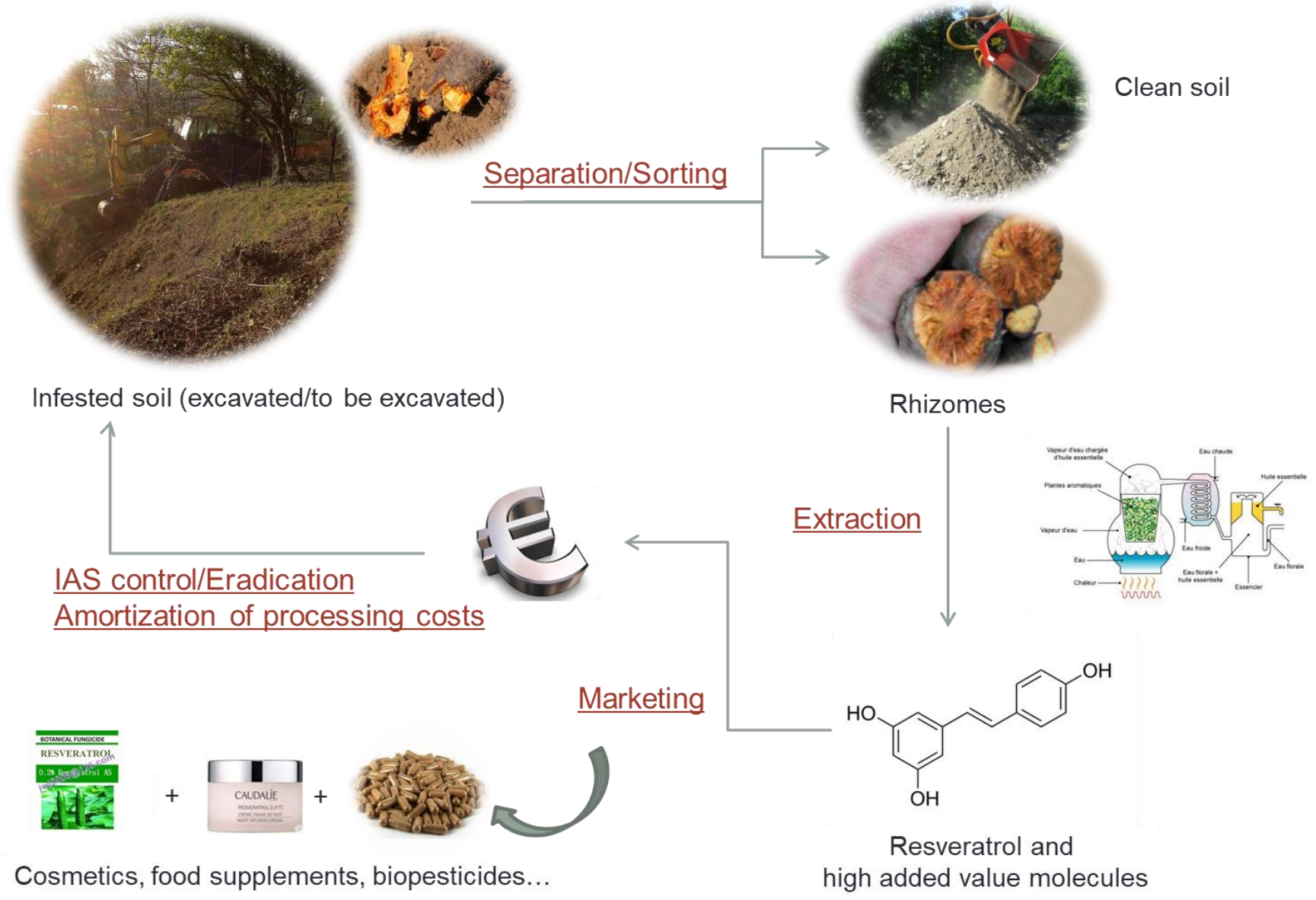
## Technical sheets for attenuation or eradication techniques



[http://biodiversite.wallonie.be/renouees\\_invasives@spw.wallonie.be](http://biodiversite.wallonie.be/renouees_invasives@spw.wallonie.be)

# Schematic diagram of the valorization process of Japanese knotweed infested land

Starting Point



## Circular approach: 2 main steps

- “*Upstream*” chain : from land excavation to isolation of Japanese knotweed rhizomes ready to be valorized.



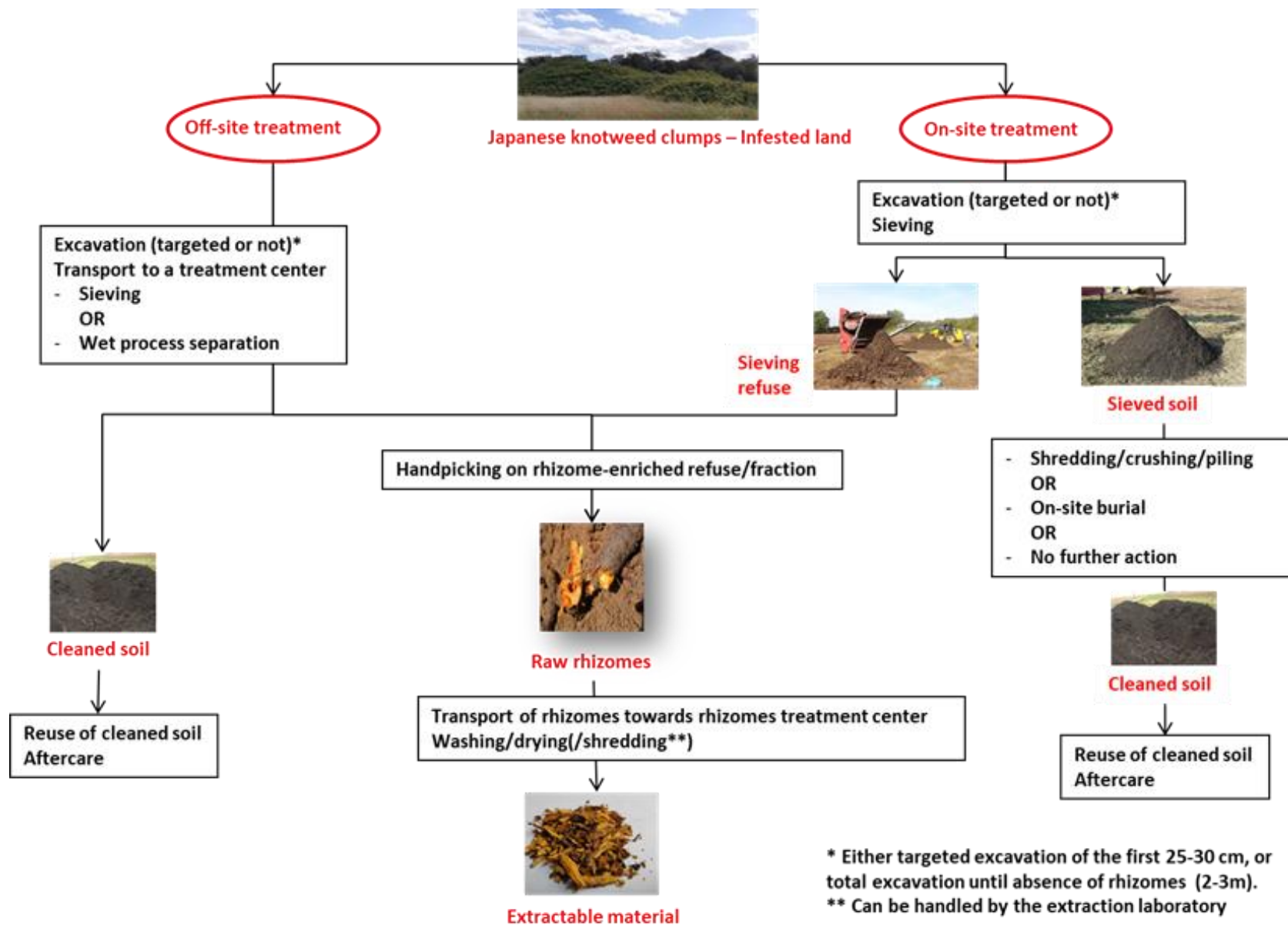
**Key matter** : Extractable material  
(shredded rhizomes)



- “*Downstream*” chain : from extraction of high added-value molecules contained in the extractable material to marketing of Japanese knotweed extracts in the agri-food industry.

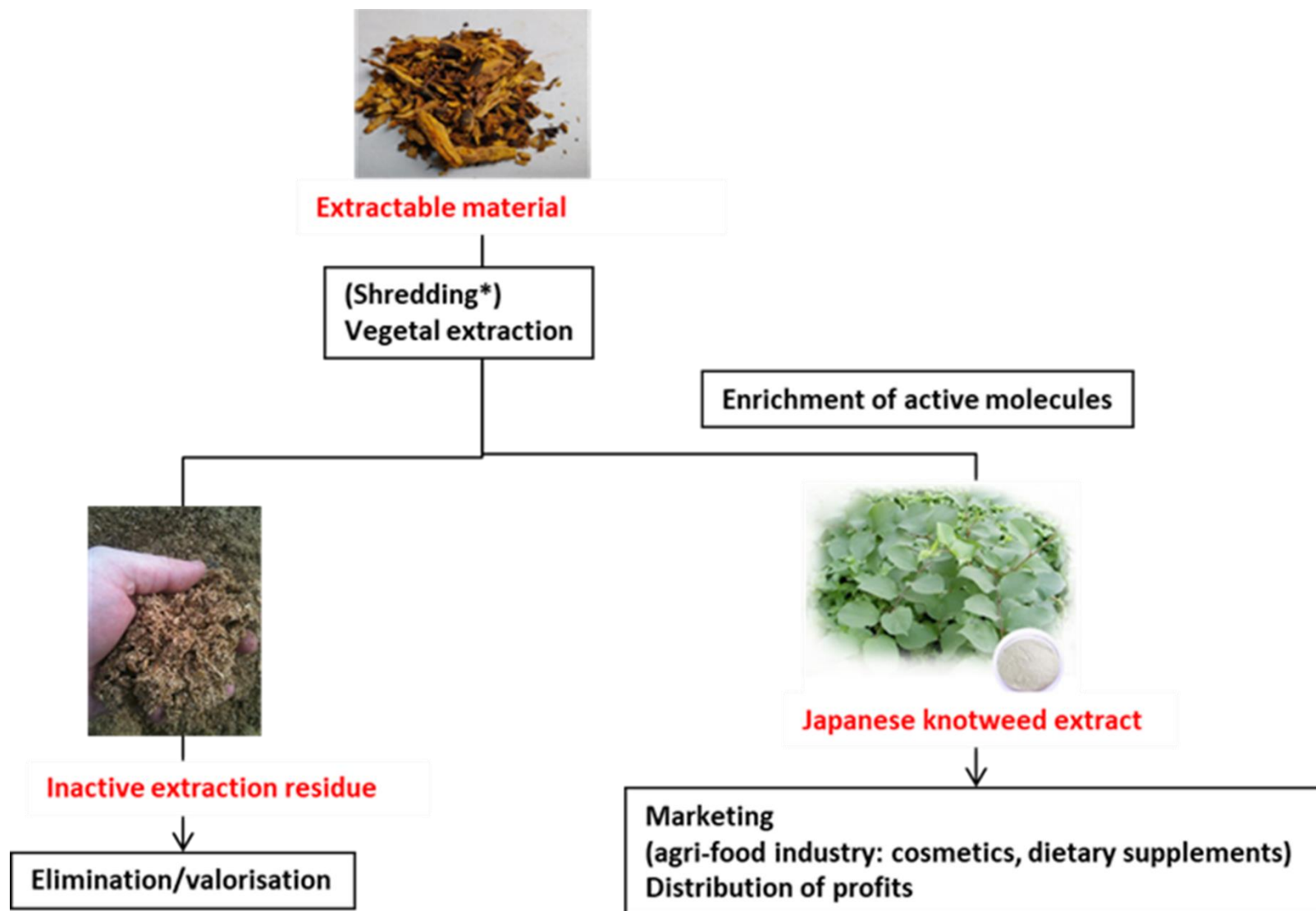
**Objective**: Assessment of the technical and economic feasibility of the proposed treatment process; comparison with the current situation; assessment of the relevance of the projected economic model in Wallonia.

# Circular approach: « Upstream" chain





# Circular approach: « Downstream" chain



\* If handled by the extraction laboratory

## Main reports from field investigation (“upstream” chain)

- Rhizomes are generally concentrated in the fringe 0-25cm of land



- 1,98 % weight and 2,38kg/m<sup>2</sup> of rhizomes in excavated soil (0-25cm)

- Techniques for separating rhizomes from infested excavated soil: excavation – sieving – handpicking



- Estimated cost for rhizome separation from infested land (2020)\* : 12 €/ton (vs 18 €/ton for conventional management)

- Additional costs: management of lightly infested land (deep soil)  
Best option: soil confinement

\*including excavation, sieving, handpicking, land management... and excluding deep fringe of the soil

## Main reports from field investigation (“downstream” chain)

- Loss of 30% weight from rhizomes to prepare extractable material



Washing, Drying, Shredding



- Optimized hydro-alcoholic extraction of high added value molecules, then enrichment of extracts
- Seasonal influence for high added value molecule concentration (+ Spring)
- 10g of enriched extracts containing 20% of active material (target molecules) from 1kg of extractable material
- Inactivation of the residue after extraction
- Cost for high added value molecules extraction: 5000 €/ton
- Profit margin from marketing the enriched extracts: 1500 – 10000 €/ton

## Example of case study

- Chemically contaminated site including 50-acre infested land by Japanese Knotweed
- Large building project after remediation



- Estimation : 20 tons of recovered raw rhizomes → 14 tons of extractable material
- “Downstream” chain profit margin : 20 000 – 140 000 € which must cover the “upstream” chain costs

## Take home message

- High potential for the entire value chain → Incentive for infested land remediation
- Financial support of infested land remediation by marketing of Japanese knotweed extracts
- Local production of high quality Japanese Knotweed extracts (no importation)
- Need to raise awareness among stakeholders to develop the value chain → Role of the administration/competent authorities!?

**Crucial:  
Linking both sectors !!**





## Save the date

L'Institut Scientifique de Service Public (ISSeP) en collaboration avec la Cellule interdépartementale des Espèces invasives du SPW (CiEi), vous convient à une journée thématique.

« Colloque sur la gestion de la **renouée du Japon** dans les chantiers de réaménagement : contraintes, solutions, perspectives. »

**Mardi 19 novembre 2024**

Auditorium des Moulins de Beez  
Rue du Moulin de Meuse, 5  
5000 Namur

Cette journée de partage d'expérience permettra notamment de connaître les pratiques mises en place en dehors des frontières wallonnes grâce à l'intervention d'orateurs internationaux.

Informations complémentaires : [a.starren@issep.be](mailto:a.starren@issep.be)



Wallonie

# Thanks for your attention !

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