

WP1: Global Strategy

Task 1.1 Strategy Development

Formulating a global strategy for transition from Herbicide based to non-herbicide-based vegetation control for railway track area.

The transition from herbicide based to non-herbicide-based vegetation control for the railway track area constitutes a great challenge for the railways, since herbicide-based methods – with Glyphosate as the most important active substance – are currently by far the most widely used and cost efficient as well as the most effective methods of vegetation control and all promising alternative methods still have to be professionalized and adapted to the railway track area. Nevertheless, looking at the high political and public pressure on the use of Glyphosate, the expiration of the Glyphosate license at EU level in December 2022 and the high probability of a Glyphosate phase-out as well as the severe restrictions or even total prohibition for the use of other chemical herbicides on certain surfaces including sensitive areas, this transition strategy has to be developed now in order to prepare the railways for these developments.

The global transition strategy for vegetation control will be developed focusing on seven principles:

- 1) Optimization of current use of herbicide-based methods with strong focus on application techniques for road-rail vehicles and small equipment,
- 2) Development and fast implementation of method combinations (herbicide-based combined with non-herbicides-based methods or combination of complementary non-herbicides-based methods) in order to further reduce the amounts of herbicides required and also herbicide dependency as well as to optimize alternative methods,
- 3) Support professionalization of alternative methods with high future potential for railways (organic acids, hot water, wet steam and electro weeding) or other innovative methods and boost adaptation to the specific requirements of the railway track area,
- 4) Integration of the relevant methods and application techniques into a new holistic approach and regime for vegetation control of the railway track supported by powerful IT tools,

- 5) Classification of track quality requirements in terms of vegetation, depending on type of track and use-specifications,
- 6) Preventive methods like the use of specific materials like asphalt, concrete, plastic sheets ... which can offer an alternative especially for safety paths will also be taken into consideration.
- 7) Follow up of the types of restrictions which are legally imposed or specified in exemptions in the different member states (total interdiction, only on the ballast bed or on the safety paths, ...)

This Integrated Vegetation Management (IVM) can be characterized as a systemic approach combining different methods of vegetation control and application technologies and also include hybrid methods. The concrete selection of a method or combination of methods for track areas will depend on the specific conditions (type of track/ railway line, topography, geography, geology, meteorological conditions, vegetation type, presence of sensible areas like water catchment or Natura 2000, etc.) of the concerned area. The global strategy should be future-proof in terms of legislation and regulation (on EU and national level).

The Global transition strategy will be developed within the framework of a consensus-oriented consultation process with the UIC SLU experts.

Output: UIC-Strategy Paper

Date of delivery: Mai/June 2019

Task 1.2 Parameters needed

Within this task the parameters needed for an IVM - Integrated Vegetation Management – approach - will be identified and documented. A solid basis for deriving relevant parameters is the multi-dimensional assessment tool developed within the Herbie project. Further parameters will be needed of course e. g. type of track and use specifications (speed,...) . In addition, constructional measures should also be taken into account as one part of an IVM.

Output: Parameter lists

Date of delivery: September 2019

WP 2 Information & Knowledge exchange

Task 2.1. Standard Documentation

Developing standardized documentation sheets to allow comparisons of running investigations and legal constraints of the different railways (taking into account that beside the documentation, the integrated management approach can be fed with the needed parameters): use of common units, ...

Result: Standardized documentation sheets according to the parameter lists of task 1.2 beside constructional measures in addition.

Date of delivery: September 2019

Task 2.2 Knowledge and Exchange platform

Setting up a computer-based exchange platform for the railways participating on TRISTRAM.

This platform will serve to document and keep track of the activities and projects carried out by the members and be an open access documentation on “Examples of best and effective practice” in different railways (including contact person for the relevant topic).

The platform will be developed as an easily accessible and easy-to-use knowledge base for UIC SLU members. It will have dedicated sections for theme clusters: for example – Alternative methods of vegetation management, IT Tools for IVM, Invasive species, legal constraints etc. It will also have a news section, a section for relevant upcoming events and a place for detailed information about running projects at member’s level. An area dedicated to meetings and work in progress will allow easy access to MoMs of SLU meetings and current versions of TRISTRAM reports.

Output: Implemented computer-based knowledge and exchange platform

Date of delivery: Starting from April 2019 to May 2020

Task 2.3 Reporting/ information exchange

Regular meetings to exchange and discuss experiences between the railways participating on TRISTRAM will be performed at least four times a year. The reporting and documentation of current activities and regulatory of legal evolution reported on these meetings will be realized based on standardized reporting templates. All findings will be integrated into the knowledge and exchange platform developed in task 2.2.

Date of delivery: continuously

WP 3 Technology Monitoring & Assessment

Task 3.1 Data collection

Collection of data on current and future operational and economic performance of relevant alternative methods of vegetation control outside the railway sector (organic agriculture, forest management, Integrated Pest Management methods, communal vegetation management...) and inside railway sector.

In addition to economic and operational data, there is a specific focus on

- development needs and development potential for each relevant alternative technology
- Needs and requirements for adaptation and transfer of alternative methods of vegetation control to the railway sector for each relevant method

All findings will be integrated into the knowledge and exchange platform developed in task 2.2.

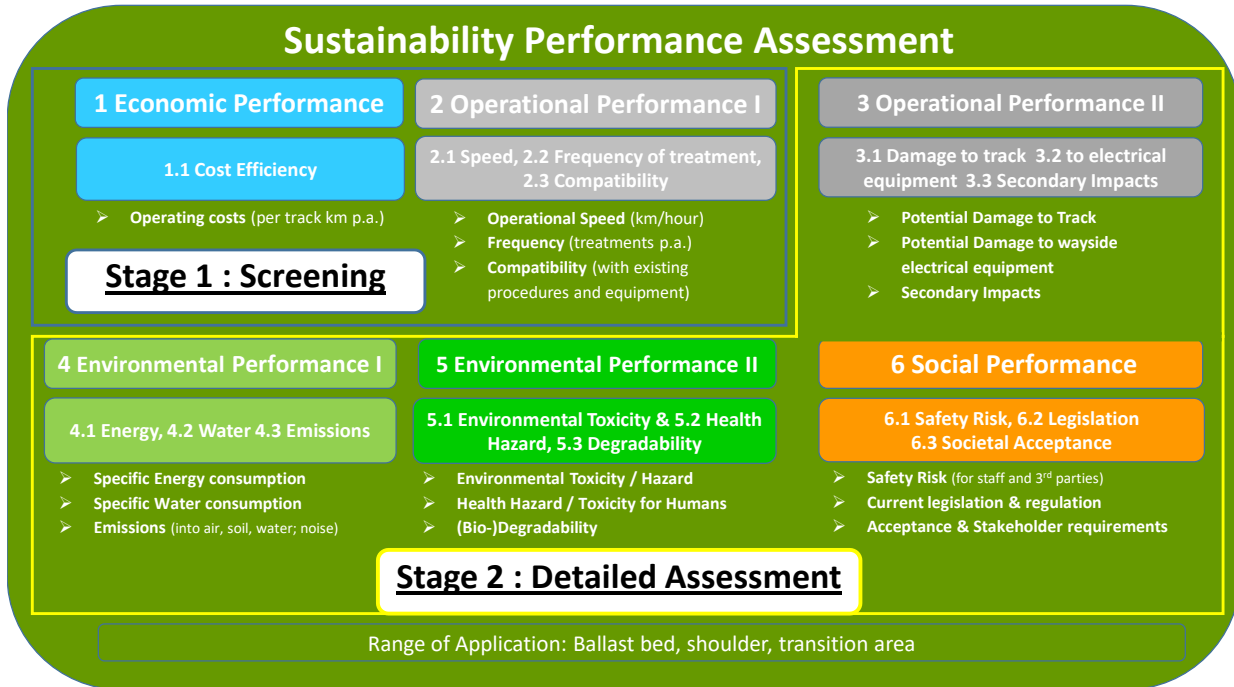
Date of delivery: continuously

Task 3.2. Upgrade of Assessment Tool

This task comprises the fine-tuning of the multi-dimensional assessment tool developed within the Herbie project.

Output: Improved multi-dimensional Assessment Tool for methods of vegetation management.

Date of delivery: October 2019



Task 3.3. Assessment of results

All data acquired in 3.1 about existing and new alternative methods of vegetation management for the railway track area will be assessed by means of the improved multi-dimensional assessment tool (see task 3.2). The assessment results will be integrated into the knowledge and exchange platform developed in task 2.2.

Date of delivery: continuously

WP 4 IT Tools for integrated Vegetation Management

The Integrated Vegetation Management of the future will be systematically supported by powerful IT tools. One of the most powerful drivers for this development is legislation and regulation. Legal and regulatory requirements for documentation and reporting as well as for application for exemptions for measures of vegetation control and especially herbicide-based measures are constantly increasing and becoming more complex. These requirements cannot be fulfilled any longer manually and in addition on a case by case level but have to be addressed in a coordinated way on system level. That means e.g. that applications for exemptions for herbicide-based treatment in sensible areas should be undertaken at company level by means of a complete list of sections with intended herbicide treatment to be handed over to the authorities well in advance of the start of the vegetation control period. In the future, relevant treatment data will be systematically linked to areas with specific protection requirements such as nature conservation and water protection areas e.g.

A systematic and coordinated approach to documentation, reporting and application for exemptions can be effectively supported by powerful IT tools such as tailored GIS solutions with integrated digital databases related to railway infrastructure, current and historic treatment data and plant inventories as well as different types of protection zones.

In addition to the three functions mentioned above

1. Documentation of current activities and measures for vegetation control (applied measures, exact locations, for herbicide-based measures: amount of herbicides used)
2. Reporting of activities towards the authorities and the public
3. Application for exemptions for treatment of sensitive or protected areas with e.g. herbicides, e-government

IT solutions supporting integrated vegetation management can also be used for

1. Mapping of locations & distribution patterns as well as treatment status for invasive species (see WP 5)

2. Continuous monitoring of vegetation control activities and mapping of plant growth status
3. Impact assessment and control of quality level and target fulfillment for the application of single measures or bundles of measures of vegetation control per track area and on aggregated level
4. Strategic planning of measures and activities for vegetation control on the basis of current and historic data from impact assessment as well as data concerning track type and use specifications (= track quality requirements)

The aim of WP 5 is to collect information, knowledge, best practices and future trends concerning IT solutions for integrated vegetation control and integrate the findings into the knowledge and exchange platform (WP 2). All documentation will be done on the basis of standardized fact sheets.

For the development of recommendations for IT solutions it should be taken into account that the developed new IT tools and solutions have to be either integrated with existing IT tools for reporting & documentation or at least linked via well-defined interfaces to allow for an optimized data flow and overall efficiency of the IT systems.

Output: Overview over and requirements for IT tools and solutions for supporting IVM – Integrated Vegetation Management strategies and approaches (report)

Date of delivery: October May 2020 (draft report: December 2019)

WP 5 Evaluation of Funding options

5.1. Identification of needs

Within this task, common know-how gaps and research interests are identified and consolidated. The outcome of the consultations will be translated into a common research agenda.

Output: common research agenda.

Date of delivery: Jun 2019

5.2 Identification of possible funding options

Within this task, common research interests of the SLU group will be matched with existing funding options. The validation of funding options will be undertaken by means of direct consultation with funding institutions (e.g. European Commission).

Output: List of verified funding options

Date of delivery: September 2019

5.3 Preparing the demand for funding

If there is consensus about the preparation of a joint proposal on the SLU Expert Group level, the outline for a funding proposal will be developed including the documentation of concrete funding options, possible timeline and next steps to be undertaken for submission of the proposal.

Output: Outline of funding proposal

WP 6 Evaluation of Funding Options

6.1. Identification of needs

Within this task, common know-how gaps and research interests are identified and consolidated. The outcome of the consultations will be translated into a common research agenda.

Output: *common research agenda.*

Date of delivery: *Jun 2019*

6.2 Identification of possible funding options

Within this task, common research interests of the SLU group will be matched with existing funding options. The validation of funding options will be undertaken by means of direct consultation with funding institutions (e.g. European Commission).

Output: *List of verified funding options*

Date of delivery: *September 2019*

6.3 Preparing the demand for funding

If there is consensus about the preparation of a joint proposal on the SLU Expert Group level, the outline for a funding proposal will be developed including the documentation of concrete funding options, possible timeline and next steps to be undertaken for submission of the proposal.

Output: *Outline of funding proposal*

Date of delivery: *December 2019*

WP 7 Supporting the SLU Group

This work package comprises the continuous support of the SLU Expert Group. Main tasks are preparation, organization and documentation of SLU meetings including meeting agenda and minutes of meeting, the information of SLU members about new activities and projects regarding alternative methods of vegetation control as well as information about interesting upcoming events (workshops, conferences, stakeholder meetings) relevant for the project.