DOCKSTHEFUTURE

defining the concept of "Port of the Future"

WP5 Exploitation of Results
D5.3 Transferability Analysis

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Abbreviations/Acronyms

ADAPTOR port	The receiving or targeted port of an already or to be implemented innovative project/concept from a donor port, where the context may be different. An adaptor port can also be part of a port peering initiative between various ports.
AIVP	Association International des Villes Portuaires / Worldwide Network of Port Cities – for more details, see DtF D3.4 – Projects Common Index: Analysis and Monitoring Results (PCI Assessment).
BCR	Benefit Cost Ratio.
BPO	Baltic Port Organisation
CEF	Connecting Europe Facility.
DIP	Detailed Implementation Plan (MoS – Motorways of the Seas).

DONOR or “CHAMPION” **port**	The initiating port of an innovative project/concept provides assistance/guidance to 1 or more adaptor port(s) where the context may be different, or to promote the collaborative peering of ports to combine its resources. The collaboration efforts of peering between ports and dissemination for best practices around innovative concepts, allows multiple ports to jointly lead the implementation as best in class or assist other adaptor ports in implementing same scaled solution, considering the transferability analysis outcome through risk management of recognized barriers and constraints.
DSS tool	Decision Support System.
DtF	Docks the Future (CSA project under the EU PoF program call) – this project.
EoT	Ease of transferability, expressed as TA-index.
E/IPCSA	European / International Port Community Systems Association
ESPO	European Sea Ports Organisation
IAPH	International Association of Ports and Harbors
IC	Innovative Concept.
I-score	Innovativeness Score (DtF D3.2 – Adequacy).
ICC	DtF ICC Independent Consultative Committee
IMO	International Maritime Organisation
IWW	Inland WaterWays.
KPI	Key Performance Indicator.
MCA	Multi-Criteria Analysis.
MoS	Motorway of the Seas.
NoE	Network of Excellence.
PCI	Project Common Index (DtF D3.3 – Project Common index).
PCT	Potential Contribution towards Transferability (PoF-adapted Motorways of the Seas’ DIP approach to “adequacy”), expressed as TA-score.
PI	Performance Indicator(s).
PoF	EU Port of the Future Program (DtF context: vision 2030).
PoF-DtF NoE	Docks the Future Network of Excellence – refers to the community of EU ports forming a board of excellence for strategy, advise and recommendations to the EU Commission.
PoF Network	Port of the Future Network (CSA+RIA projects + future calls and projects identified, proposed and/or approved under the PoF Program).
Port PEERING	Collaborative efforts between ports to combine its resources to realize an innovative concept or project or the efforts between DONOR and ADAPTOR ports to realize the implementation of an innovative solution already or to be implemented in the DONOR port and the dissemination of best practices around innovative concepts in a DONOR port. The collaboration efforts of peering between ports, allows multiple ports to jointly lead the implementation as best in class or assist other adaptor ports in implementing same scaled solution, considering the transferability analysis outcome through risk management of recognized barriers and constraints.
RoI	Return on Investment – relative to PoF projects this relates to the contribution of the outcome of a project towards its overall goals and strategic vision by the initiating port – potentially to be used by ADAPTOR ports to identify how the project outcome may address their strategic vision and goals.
SO(s)	Strategic Objectives
TA	Transferability Analysis.

TA-score	Transferability Score (DtF D3.5 and D5.3 – Transferability Analysis).
TA-index	Transferability Index (DtF D5.3 Transferability Analysis).
TEN-T	EU Corridor network of core and comprehensive ports linked through short sea shipping, ocean lines and in-land transportation (road, rail and IWW).
TO(s)	Tactical Objectives
UN SDG(s)	UN Sustainable Development Goal(s).
WP	Work Package (main parts or steps in the overall project).
WP1 (DtF)	"Port of the Future": definition of the concept and Desktop Analysis
WP2 (DtF)	Selection and Clustering of Projects and Initiatives of interest
WP3 (DtF)	Evaluation Results: analysis of the clustered Projects and activities of interest
WP4 (DtF)	Dissemination and Exploitation
WP5 (DtF)	Exploitation of Results
WP6 (DtF)	Project Management
WP7 (DtF)	Ethics Requirements
WPSP	World Ports Sustainability Program (by IAPH and other maritime and port organisations) providing the structured approach to the 17 UN SDG's though the 5 WPSP Focus Areas: 1) Climate and Energy 2) Community outreach and Port-City dialogue 3) Governance and Ethics 4) Resilient Infrastructure 5) Safety and Security (for more details see DtF WP2&3).

Executive Summary

The **Port of the Future vision 2030** promotes the implementation of projects with innovative concepts (IC) – expressed as the I-score in the DtF D3.2 (Defining Adequacy) – across multiple targeted ports, to realise a larger potential impact, called the ***potential contribution for transferability*** (PCT), introduced as the TA-score in the DtF D3.4 (PCI Assessment).

Transferability requires qualification and quantification of transfer objectives through identified risks, challenges, constraints / barriers and success factors involved in such a solution transfer in targeted ports, where the context, type of port, transport modes and operations may be different. The full Transferability Analysis (TA) promotes the uptake of the most promising innovative concepts, in order to transfer them from their current "niche" position to a mainstream application.

While the TA-score is a high-level perception of a project or its deliverables / solutions identified for implementation in other ports, it requires qualification and quantification of transfer objectives through identified risks, challenges and constraints/barriers involved in such a solution transfer and implementation in targeted ports, where the context may be different.

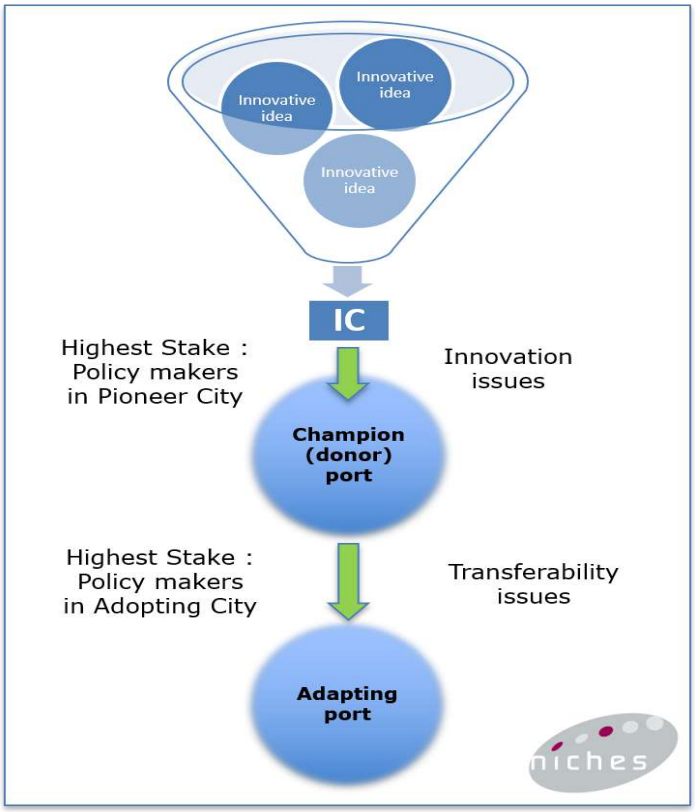


***Figure 1**: Implementation of innovative concepts in context of their transferability*

For this reason it is essential that a project management approach is applied, which defines the approach to specific strategic and operational objectives while being translated towards the unique performance indicators of the port(s) or port operations targeted. Consequently, project owners need to resolve the constraints and consider the solutions and adapted alternatives, together with anticipated risk management approach to ensure the expected success factors of a transfer of an innovative concept as best practice for other ports, preferably across a wider range of multiple targeted ports. This will be done through a collaborative effort between ports or as part of initiated project deliverables. This process is referred to as defining the ***ease of transferability*** (EoT), expressed as the TA-index.

This notion of managed transferability can have different scenarios for purpose and promotion:

- **Multi-port participation projects:** based on collaboration in living labs or pilots
- **"CHAMPION" approach:** proven port projects can provide their expertise and experience as **donor port** (offered or requested) to assist/guide an **adaptor port**
- **Port peering**: (voluntary) collaborative engagement between ports to combine its resources during the (entire) life cycle of a project development and deployment.

All three approaches require a proven methodology, adapted to the port and transportation sector that facilitates the process and the partners involved in the project. A thorough Transferability Analysis will allow multiple ports to collaborate and ultimately develop a best-in-class solution, and/or assist other (adaptor) ports in implementing same scaled solution, considering the various topics and outcome through risk management and the pre-defined resolution of recognized barriers and constraints.

As identified in the DtF WP2&3 deliverables (Clustered Project List, Adequacy, Port Common Index and PCI Assessment), projects are evaluated and indexed relative to the 17 UN-SDG's and/or their sub-goals – based on the proposed measures – following the approach by the World Ports Sustainability Program, using the **5 WPSP Focus Areas**, related to 35 strategic objectives. Dependencies between different DtF WPs are illustrated in Figure 3: overview of flow of deliverables between DtF WPs (Chapter 1. From Potential Contribution to Ease of Transferability).

The 5 WPSP Focus Areas:
1. Sustainability (combat global warming, save natural resources, …)
2. Port-City relationship (inclusive cities, employment, …)
3. Governance (transparency, equal opportunities, …)
4. Resiliency (economic growth, higher productivity, …)
5. Safety & Security (safe working conditions, …)

An outline of the DtF SOs is provided in Annex I - DtF High-level strategic objectives and KPIs.

In this study of the Transferability Analysis (TA), the DtF project is delivering a methodology to facilitate the 'transfer'-process and to guide project owners to adapt to a proven methodology developed by **POLIS**, known as the **NICHES+ 6-step methodology**[1], aligned to the specific needs of Port of the Future projects, referred to as the **PoF TA Methodology**.

Where appropriate the DtF project recommends this approach as adapted to the specific character and complexity of port environments. Running a project through the PoF TA Methodology results in the **TA-index** which will be reflected in future releases of the DtF DSS tool[2].

+2	strong support for transferability
+1	modest support for transferability
0	neutral
-1	modest constraint for transferability
-2	strong constraint for transferability

Table 2: *Scale for the Transferability Index (TA-index)*

The TA-index is obtained from an overall assessment of the results from processing the project through the PoF TA Methodology, which includes a number of measured indexes as well as proper documented assessments of the constraints and success factors relative to a transfer of the solution(s) to other targeted or interested ports, together with defined risk management and other

[1] **NICHES+ 6 step methodology** developed by **POLIS** (a Coordination Action funded by the European Commission under the Seventh Framework Programme for R&D, Sustainable Surface Transport – 02/2011). NICHES+ promoted the most promising new concepts with the aim to move them from their current 'niche' position to a mainstream urban transport policy application

[2] The Docks The Future **DSS tool** is provided through its deliverable D5.2 where more information on its use and future releases can be obtained.

project management protocols supporting the transfer. In case the constraints (modest or strong) cannot be accurately assessed and addressed, a project will achieve a respective negative TA-index.

The Transferability Analysis also provides facilitation suggestions for collaboration and transferability between EU projects – e.g.: potentials for PoF RIA projects on mutual areas of focus, such as sustainability and digitalisation). Further the DtF TA and PoF TA Methodology also promotes the collaboration between EU ports and neighbouring countries in different regions, such as the Baltic, Balkan, Mediterranean and between EU and the UK in future collaborative efforts. More information can be found in Chapter 1 - From Potential Contribution to Ease of Transferability under sections of Transferability Scenarios, Collaboration between EU projects and Facilitation of port and project collaboration between EU and neighbouring countries. Furthermore, the DtF TA Evaluation Worksheet (Annex I – TA WORKSHEET – practical guide and instructions) reflect these potentials to be informed as part of the project assessments.

Projects that fully support the measures and risk management approach in place for transferability will achieve a respective positive TA-index. The explanation of the TA-index scale is further outlined in chapter 8 - Transferability Index (TA-index).

1. From Potential Contribution to Ease of Transferability

This chapter covers the following sections to provide the reader an understanding of the basic principles of the TA and the difference between the TA-score and the TA-index:

- Intro to DtF WP5 and D5.3 - TA
- WPSP Focus Areas as the foundation for TA
- Scenarios of transferability
- Proven methodology for Transferability Analysis for the Port of the Future
- Differentiating the TA-score from the TA-index
- Main outcomes of the Transferability Analysis

Intro to the DtF WP5 – Exploitation Results

As reflected in the DtF D5.1 – Plan for the Exploitation of the Action Results, the purpose of WP5 is to ensure the transfer of project results beyond the project's duration, with a series of activities developed to ensure maximum impact in terms of both public dissemination and exploitation of results.

Figure 1 shows the general strategy behind WP5, linking different steps of the overall project.

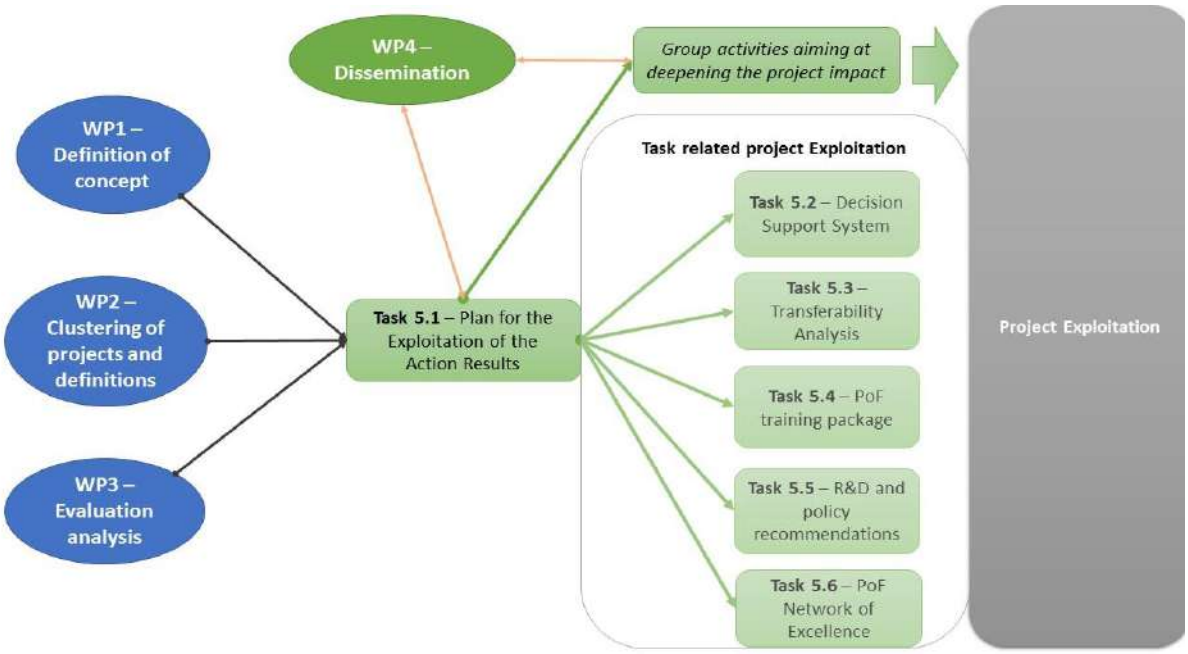


Figure 2: *Exploitation strategy (DtF WP5 – Exploitation of Results)*

WP5 – Exploitation of Results, is organised in the following six tasks:

- Task 5.1 – Plan for the exploitation of the action results
- Task 5.2 – Decision Support System
- **Task 5.3 – Transferability Analysis**
- Task 5.4 – PoF training package
- Task 5.5 – R&D and Policy recommendations
- Task 5.6 – PoF network of excellence
- Task 5.7 – PoF Road Map 2030

The deliverables of WP5 by the Docks The Future project – in line with the H2020 Programme recommendations – describe how its outcomes facilitate the dissemination (transfer) of action results in the **Port of the Future Road Map, vision 2030**. This includes a number of exploitation tools, methodologies and training packages for evaluation of ongoing and future projects under the EU PoF framework. The DtF DSS Tool (D5.2 – Decision Support System) is the tool where a combination of scales and indexes proposed by Docks The Future – based on ongoing built historical data of past projects - are reflected to facilitate and/or guide port-related investments through a series of suggestions. The outcome of the Transferability Analysis – TA-score and TA-index – are to be embedded in the DSS Tool (where project scoring has been achieved, i.e. projects have adapted to the recommended approach using the DtF methodologies and tools). Based on the project evaluations performed under the DtF D3.4 – PCI Assessment, no projects where found eligible based on the available information to the DtF team, it is therefore anticipated that incorporation of the TA-score and TA-Index as a result of the Transferability Analysis are not reflected in the current version of the DtF DSS tool. Future releases to the DtF DSS Tool may reflect these scores as more results from ongoing and future projects become available. This will facilitate collaboration across the TEN-T Corridor Network of Core and Comprehensive Ports, together with R&D and policy recommendations as well as the PoF training packages and assistance by the **PoF DtF Network of Excellence (PoF DtF-NoE)**.

Intro to the DtF D5.3 – Transferability Analysis

The concepts of innovativeness and potential contribution towards transferability have been initiated in the methodology of the Project Common Index (D3.3) and an initial high-level appraisal in the format of a TA-score was introduced in WP3 and used in the project evaluations performed for the DtF D3.4 – PCI Assessment.

A key aspect in determining and effectively implement the port of the future concepts (and related measures) is the possibility to transfer an innovative concept – originally applied in a specific situation – to alternative environments. The aim of the Task 5.3 is to identify main issues in the transferability of port related innovative concepts and to assess different ways to implement such concept in differentiated environments.

The Transferability Analysis will therefore be based on:

- the identification of the issues, and particularly the success factors and barriers that will affect the implementation of a new concept in a particular context
- an assessment of the issues to show if implementation in an adopter port with a different context will be practical
- an evaluation to enable peering with other targeted ports, enabling resource and knowledge sharing while succeeding in implementing the innovative solution in multiple ports.

The final goal of the analysis will be to determine potential barriers to the transfer of different innovative concepts among as many ports as possible and to identify potential patterns that could facilitate such transfer. Thus, the analysis will show the success factors to implementation and, in particular, if it is practical to try and transfer an innovative concept implemented in one port to another where the context may be different. This can be done under different scenarios as explained further, such as Champion approach or port peering.

The **"Transferability Analysis"** (TA) is linked to the progress of the overall Port of the Future concept and approach as defined by INEA / DG MOVE and related EU institutions and programs, such as the Motorways of the Sea (MoS) and the TEN-T Corridor Network.

This way the Docks The Future project enables **project portfolio management**, avoiding the limited resources (to be) assigned to initiatives and project proposals with same or similar goals, while other goals for the Port of the Future Vision 2030 are not or inadequately covered and achieved through the EU programs relative to the PoF. Extensive efforts and resources consumed on innovative concepts that do not meet the goals set forward by EU policy and programs can be avoided.

The TA utilises outcomes of previous and current WP's in order to target activities that can maximise their impacts. These concepts have been outlined in the DtF WP3 deliverables (Evaluation Results) and further detailed in WP5 (Exploitation of Results). There are several inputs and outputs identified which require synchronisation:

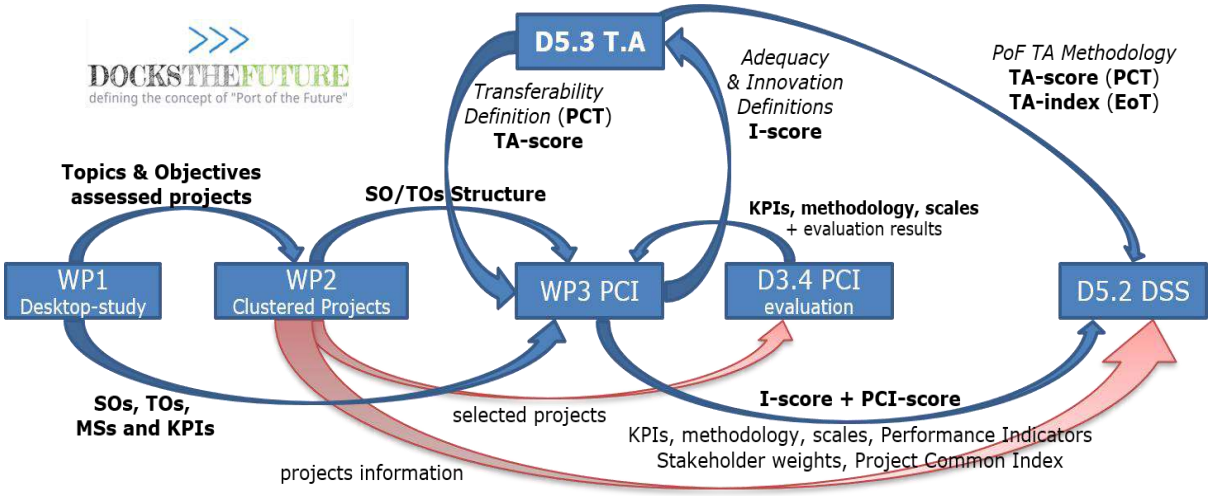


Figure 3: overview of the flow of deliverables between the DtF Work Packages

The DtF D5.3 – Transferability Analysis reflects the building blocks of the full TA from the I-score and TA-score (WP3 D3.3 -PCI tool) towards the criteria and use of the PoF TA Methodology, resulting in the TA-index.

The tools for Port of the Future Vision 2030, developed by the Docks The Future (Clustered Projects, PCI tool, DSS tool, and Transferability Analysis) require various parameters and calculation performed at different stages of projects by the project owners and their stakeholders. The consistency is important on all levels in order to have both the possibility to use them as independent indicators as well as to have them synchronised within the various DtF tools and their outputs. However expectation setting on the outcome of the evaluation of each tool is dependent on the completeness of required data/information available from the evaluated projects.

While incompleteness of required data/information or full insights available from the evaluated (past) projects, does not provide accurate / realistic results from the tools in the assessments, these tools are robust and methodology profound to enable accurate assessment of future projects. The use of the tools will become an integral exercise undertaken by project owners to enable surfacing potentials of innovativeness and transferability.

WPSP Focus Areas as the foundation for TA

Since WP2 (Selection of Clustered Projects and Initiatives of Interest) the DtF has adapted its design for the relevant port performance indicators (for more details see D3.1 – Port of the Future

KPI set), indexed to the **5 WPSP Focus Areas of the World Port Sustainability Program**, and condensed in 17 high-level strategic objectives.
An overview of the DtF Strategic Objectives is provided in Annex I - DtF High-level Strategic Objectives and KPIs. It is provided in an editable table format so it can be used by project owners to reflect their project strategic objectives, deliverables and KPI's to the selection of DtF Strategic Objectives.

As referred to in the DtF WP 3 (Evaluation Results), the 10 goals for port-city relationship – known as the **AIVP Agenda 2030 Program** – are incorporated in the DtF Strategic Objectives and KPI's, to enable ports to consider also to adapt to best-practices and proven solutions. In this perspective the Transferability Analysis also encourages to evaluate the balancing of the relationship between ports and their host cities. Thus, the DtF applied KPI-set covers the essentials of the KPIs identified by AIVP through the use of the 5 WPSP Focus Areas and the assigned Key Performance Indicators.

Figure 4: *The relationship between the PoF DtF HLSO and the UNSDG's*

While identifying the potential contribution towards transferability (TA-score) during the initiation phase of the project, it is beneficial to project owners to assess the relevance of their targeted objectives with a clear vision and approach towards achieving alignment with the UN SDG's to obtain recognition and ownership by the relevant stakeholders to the project. This approach also facilitates an unbiased motivation and reporting facilitation (sectorial, national and international compliance) of the contribution of a project for its beneficiary stakeholders towards the 17 UN SDG's. The 17 DtF High-level I Strategic Objectives provide guidance on how ports can contribute to the different UN SDG's (e.g.: improving port-city relationship to SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable).

The Annex I format is an editable table format. Project owners can reflect their project strategic objectives, deliverables and KPIs to the selection of DtF Strategic Objectives. This is a voluntary indexing of the project outcomes by means of the suggested weighing of the targeted expectations

and realised outcomes towards each of the 5 WPSP Focus Areas and the 17 DtF High-level Strategic Objectives and KPIs.

Scenarios of transferability

Within the maritime, port and supply chain sectors, it is a well-known fact that some ports and port actors are frontrunners in innovation and in applying innovative concepts in their operations and/or have realised competitive advantage through engaging partners and stakeholders or even their wider community engagement to realise the benefits of collaborative efforts. They enable a wider influence role within the cluster they operate and lead the process of adapting to innovation, realising the benefits across the port community stakeholders.

Strong potential towards transferability, together with presenting the project as an innovative concept will be essential to increase the alignment of a project to the relevant EU policies and goals of EU Program Calls. For projects with 'medium PCT' (TA-score) anticipated, limited or specific conditions may apply. In order to extend the potential contribution of a project beyond one port, the project owner, team and stakeholders should identify the potentials for transferability to other ports, considering the characteristics of different categories of transferability.

To understand the complexity involved in transferability of a project and to ensure a collaborative approach between ports to manage both the potentials and risks in adapting and deploying same/similar solution(s) in other port(s), transferability has the following scenarios to manage the constraints, barriers and risk related to the transfer process, using appropriate tools presented in this document:

- **Single-port projects**: though an IC may apply, there is no intention to engage other ports in the development and deployment, therefore projects receive a ZERO-weight scoring. However, such projects can still make use of the PoF TA Methodology for other purposes
  ⇨ *no TA-score - no TA-index (no need for PoF TA Methodology)*
- **Innovative multi-port participation projects:** based on collaborative development of a transferable IC in living labs or pilots (e.g.: current PoF RIA projects)
  ⇨ *for port projects with an IC or collaborative development of an IC*
  During the built-up and deployment in living labs or pilots by a lead port project participant, other port participant(s) are involved, engaged and/or informed during the entire process and anticipate the potentials and possible shortcomings and/or alternative solutions for their port environment, or they agree on adapting the solution to accommodate multiple ports (examples: PoF RIA projects, AEOLIX, …). In most cases – certainly for more recent projects – multi-port participation projects under INEA and H2020 (HorizonEU) involve living labs for each of the multiple deliverables, assigned to one or more ports. Ports participating in a project consortium, but not directly involved in a particular living lab, are engaged through information and deliverable awareness and can provide inputs relative to their port environment.
- **"CHAMPION" approach:** proven port projects can provide their expertise and experience as **donor port** (offered or requested) to assist/guide an **adaptor port** in implementing same or similar solution (up- or down scaled)
  ⇨ *for donor ports: ports with an innovative concept (IC) to offer*
  ⇨ *for ports wishing to adopt an IC implemented in a donor port*
- **Port peering:** (voluntary) collaborative engagement between ports to combine its resources during the (entire) life cycle of a project development and deployment, whereby peering ports define their shared resources (knowledge, skills, solution + time and cost) to implement (preference to projects with an IC) across multiple ports
  ⇨ *for ports sharing their resources to implement a new IC across multiple ports*

The latter scenario of port peering is further outlined under Chapter 3 - Peering Strategy

A thorough Transferability Analysis will allow multiple ports to collaborate and ultimately develop a best-in-class solution, and/or assist other (adaptor) ports in successfully implement same scaled solution through port-peering, considering the outcome from the PoF TA Methodology, through agreed risk management of constraints and barriers, risk assessment and management provisions, together with pre-defined resolutions of recognised components and their characteristics, highlighting the success factors of an identified project or project deliverable transfer. The full DtF TA provides project owners and their stakeholders with an MS Excel TA Worksheet to evaluate their alignment to the adequacy conditions of innovativeness and transferability and/ or evaluate impacts towards its hosting city and served hinterland (as outlined in the introduction).

Facilitate the collaboration and transferability between EU projects (PoF RIA and other projects)

Any of the above scenarios of Transferability – certainly the EU multi-port participation projects – may also apply the principles of transferability and use the proposed PoF TA Methodology to initiate and promote the collaboration between different projects. The current three PoF RIA projects present potential opportunities to collaborate. For example: these projects work individual (by project but in multi-port participation scenario) on similar areas, such as IoT and sensor capacities and solutions, sustainability (environmental improvement and optimisation of renewable energy sources, and possible other areas. Collaboration through exchanging and evaluating mutual scope, focus, approach and solutions, may provide potentials for collaboration, wide-spread innovation concept implementation and apply the transferability principles and methodology across their projects. Besides the port-peering scenario, similar transferability cases may appear in the near future on project peering.

The PoF RIA project representatives have participated in each of the 2 Expert Workshops in Porto and Trieste, and are also invited to the general introduction workshop on the DtF tools. They also have participated in the dedicated workshops in which the RIA projects were able to prepare their project using the TA Worksheet and have received further guidance in the use of the DtF tools to establish / adapt their project management processes and reporting. From the analysis of their specific measures, it will then be possible for the RIA projects to obtain the different scorings and indexes established the DtF project. As an outcome of these RIA Workshops in June, the D5.3 TA and the TA Worksheet have been updated to reflect comments and recommendations.

Facilitate port and project collaboration with EU neighbouring countries

The DtF is empowered by the EU Commission to devote more effort to the neighbouring countries. As such, the DtF recommends that in building long-lasting relationships with neighbouring countries can set the example for embracing the re-use of successful measures through, among others, the tools described in this Transferability Analysis. The PoF TA Methodology therefore promotes and facilitate the collaboration between EU ports and ports from the neighbouring EU countries.

Neighbouring countries may be easier engaged in the various cooperation forms as described elsewhere in this document (Port Peering, Multi-port Participation, …). The DtF actively promotes the uptake of the described methodologies among the various regional port cooperative organisations such as such as the BPO (Baltic Ports Organisation – focusing on the Baltic ports and neighbouring countries outside the EU, such as Ukraine, Russia, …), MEDports Assoc. (collaboration between a majority of ports in the north and south Mediterranean basin, linking EU

and North African ports and participation from Middle-East based ports). Also the Balkan ports in the Adriatic Mediterranean has potentials for collaboration with countries such as with Turkey and Black Sea hinterlands and sourcing countries. Also future free/custom trade zone between the EU and UK may consider the principles of transferability between ports and projects at both ends to ensure robust partnership between the two areas.

The promotion of such collaboration has mutual benefits in coordinated, optimised and digitalised trade between the EU and its neighbouring countries.

To this objective, MEDports Assoc. is invited to the DtF ICC (Independent Consultative Committee) and together with various representatives from its port-membership engaged in the DtF Expert Workshops, along with the three RIA projects partnerships (ports, R&D institutions and technology providers) that are mainly located in the Mediterranean area (France, Spain, Italy, Portugal, Greece, Malta, Baltic countries, …) and some of the major ports in Northern Europe (Antwerp, Rotterdam and Hamburg). Also representation from other associations (BPO, ESPO, E/IPCSA, IMO, IAPH, …) and from port and stakeholder from both EU and other (neighbouring) countries have attended various of the DtF Workshops, contributing valuable expertise and exchange of interest to further promote collaboration across EU and neighbouring countries.

Proven methodology for Transferability Analysis for the Port of the Future

All three approaches require a proven methodology, adapted to the port and transportation sector that facilitates the process and the partners involved in the project. A thorough Transferability Analysis will allow multiple ports to collaborate and ultimately develop a best-in-class solution, and/or assist other (adaptor) ports in implementing same scaled solutions, considering the various topics and outcome through risk management and pre-defined resolution of recognized barriers and constraints.

The DtF approach to Transferability Analysis (TA) has evaluated proven methodologies to facilitate the 'transfer'-process and to guide project owners to adapt to a concept of transferability as an integral part of proposing and delivering port projects under the framework of the Port of the Future, Vision 2030. At the same time, the methodology should enable quick evaluation towards *potential* transferability of projects and *full-scope* assessment and risk management to evaluate project's feasibility to be transferred under the 3 identified port collaboration scenarios identified in the previous section.
Such a proven methodology developed by **POLIS** was selected, known as the **NICHES+ 6-step methodology**[3], aligned to the specific needs of Port of the Future projects. Therefore it is referred to as the **PoF TA Methodology** but has similar basic principles applied as in the standard NICHES+ approach. Another advantage related to this selection has its purpose in the fact that it has been widely used and recognised within EU projects to date. This facilitates the ease of adapting to the PoF TA Methodology by many consortium partners familiar with the NICHES+ methodology.

As part of the DtF requirements to enable quick evaluation on potential transferability at the initiation of a project and to evaluate projects on its related scoring in the DtF Project Common Index (D.3.3 – PCI), the PoF TA Methodology includes the TA-score, independent from a project's approach to adequacy as defined by the '**Potential Contribution towards Transferability'** (PCT). This is further explained in a below section (From TA-score to TA-index).

[3] **NICHES+ 6 step methodology** developed by **POLIS** (a Coordination Action funded by the European Commission under the Seventh Framework Programme for R&D, Sustainable Surface Transport)

At the same time, the full TA can be used independent from a project's innovativeness, enabling deeper assessment of project owners' objectives, such as: Return on Investment (RoI) of the project or in line with strategic vision for initiating/donor port, adapting ports and peering ports. However, it is to be noticed that projects not aiming for the IC (Innovative concept), remain referenced as **single-port** projects. This allows for project stakeholders to further interrogate their project through future releases of the DtF DSS-tool for solutions which obtained a ***ZERO-weight*** on the TA-score as part of the Transferability Analysis. These projects can still run a full TA and obtain a value in the TA-index (see further under the below section - **From TA-score to TA-index**). Besides the aforementioned reasons, these projects can still be assessed for their contribution towards the DtF High-level Strategic Objectives, using the PoF TA Methodology and additional supported indexes, therefore supporting the objectives of the Port of the Future.

It is very well possible that ports opt to go through the full PoF TA Methodology for other reasons then the above mentioned, to further understand the impact of their project deliverables within their operational environment or to evaluate the potentials for addressing strategic targets for the project owners and targeted stakeholders or impacted communities. Furthermore, project owners and ports may also decide upon a later stage or even when the project has been delivered, to offer their assistance as Champion donor port or participate in port peering collaboration, providing their obtained expertise as initiator and implementor of a project with a recognised IC, even if it was initiated as single-port project.

Differentiating the TA-score from the TA-index

As aforementioned, the TA-score – as evaluated and reflected in the DtF **PCI** (Project Common Index D3.3 and PCI Assessment D3.4) – is a high-level evaluation based on preliminary information about the project's goals and objectives, certainly in the initiation phase. More in-depth knowledge of the project is needed to understand the full extent and impact of approach and risks involved in the different formats / categories of for experts.

While innovativeness is paramount for Ports of the Future, not all stakeholders or users of the DtF tool will necessarily look at innovative projects only. Therefore, the weight given to innovativeness can be adjusted by the user or deactivated completely.

Understanding the relevance and relationship from TA-score to knowledgeable defining the TA-index, using the PoF TA Methodology and engaging experts in the different fields of analysis, anticipates project owners to take ownership of the PoF TA Methodology and its outcome, including the regular measurement of the objectives set out through the performance indicators and risk management approach adapted. Only the project owners – and relevant stakeholders – understand the complexity of their operations and value the impact of solutions in their convoluted environment.

The two dimensions of the TA, differentiate in the following definitions:

While the prime recommendation by the Port of the Future applies the compliance to the PoF definition of adequacy (as explained above) relative to innovativeness and transferability, any project owner and their project stakeholders may make use of the full TA and its PoF TA Methodology. This enables project owners to make use of the full TA and will be referenced in the DtF DSS tool, while the project may obtain a ZERO-weight scoring on its innovativeness and transferability.

Therefore the DtF has identified 2 levels of compliance towards transferability:

1. Potential Contribution towards Transferability (PCT): high-level assessment (anticipation or expectations) of a potential transferability, expressed as the ***TA-score***.
   Assessing whether a project or initiative has the potential to transfer its solutions to other ports or for ports to peer/collaborate in same project (based on goals and strategic objectives) – the TA-score is standard available in the PCI tool, where it is initially evaluated, but can be reviewed through the TA Worksheet for further updates as a project or its deliverables evolve towards realisation and deployment.

2. Ease of Transferability (EoT): defining the adequacy of transferring of peered solutions in other ports, making use of **PoF TA Methodology** with a detailed knowledge assessment and resolution provisions. The methodology and tools can be used by project owners and stakeholders independent from the project' innovativeness. Full TA for ease of transfer is expressed as ***TA-index***.
   The assessment takes place in the full Transferability Analysis through the use of the PoF TA Methodology, defining the implementation expectations, evaluated measures and risk management as well as specific resolutions to local situations. T*he TA-index can potentially be reflected in future releases of the DSS Tool.*

The transferability assessment provides for a 5-band scale to evaluate the **Potential Contribution towards Transferability** (**TA-score**). As this TA-score is used in the Project Common Index it may have a ZERO-weight score when a project is identified as not innovative as similar solutions already exist (a ZERO I-score for innovativeness, also results in a **ZERO-weight** TA-score) or when information is not available (not measured) or the project is targeted as a **single port** initiative (no goal established to make its solution available for wider implementation in other port environment).

Note: for projects presenting a similar solution already realised in another port, may still be validated as innovative in case an improved solution or implementation practice is proven.

For more information on the TA-score, see chapter 4 - Transferability Score (TA-score).

While the TA-score assumes a ***potential*** contribution through a high-level assessment, where a higher score is achieved based on the number of ports to which the project deliverables can be transferred, it is essential to also evaluate the constraints and success factors for such a transfer. This is where the full Transferability Analysis has a deeper definition through the application of its outlined PoF TA Methodology, based on task-assigned proven assessment, resulting in a **Transferability Index (TA-index)**.

Through the use of the PoF TA Methodology, projects are evaluated by the project owners, based on the feasibility to transfer a project deliverable from one port to another port where the situation may be different. Such an assessment – **Ease of Transferability** (EoT) – can only be performed by people involved in the project, having not only expertise in such an evaluation and the necessary project management experience, but who also have a deep knowledge of the overall project strategic objectives and the detailed performance indicators associated to each of the deliverables and the implemented solutions. Of course, at any stage, specific field experts can be involved to facilitate the whole process of assessment and detailing the criteria requirements for minimising and managing risk.
For more information on the TA-index, see chapter 7 - Transferability Index (TA-index).

Main outcomes of the Transferability Analysis (TA)

As an integral part of the Transferability Analysis, the ***potential contribution towards transferability*** (PCT) and its related TA-score is developed independently from the PoF TA Methodology. It is a first high-level evaluation by the project owner in terms of relevancy for transferability.

The full Transferability Analysis, making use of the PoF TA Methodology, provides the conditions and measures put in place relative to the ***ease of transferability*** (EoT), in order to successfully transfer a project deliverable from their current "niche" position to a mainstream application, using any of the 3 different scenarios for collaboration between donor and adaptor ports or through port peering.

The Transferability Analysis concludes in the following outcomes:

- **Transferability Score** (TA-score): high-level anticipation on the "*potential contribution towards transferability*" (PCT), independent from innovativeness, expressed as the number of targeted ports for which a specific project 'fits' or may fit and is reflected in the DtF Project Common Index (PCI D3.3) – details under Chapter 4 - Transferability Score (TA-score)
- **TA Risk Assessment and Management Provisions** using PoF TA Methodology to evaluate the "*ease of transferability*" (EoT): identified strategic and operational objectives, evaluated barriers/constraints, recognised success factors and measured performance indicators (target and actuals), resulting in a project management script for transferring a solution from one port to another – details under Chapter 6 - TA Risk Assessment and Management
- **Transferability Index** (TA-index): is the outcome of the full Transferability Analysis, using the recommended methodology, reflecting the *ease of transferability* – details under Chapter 7 - Transferability Index (TA-index)

2. Practical guide to Transferability Analysis

The DtF project recognizes the importance and impact of the Transferability Analysis. The aim of innovation is that the solutions are used by as many ports as possible (transferability / port peering). Current or past closed projects may not have done the evaluation on transferability or considered the potentials of port peering – Current Port of the Future RIA projects are the best example of current ongoing projects using port peering to achieve better results on their deliverables across the ports involved or making the benefits and potentials for using the same or adapted solution (as implemented in the pilot or lab) in other ports that participate in the project consortium of the RIA project.

The following recommended approach is adapted from the proven structured approach of the NICHES+ (by POLIS) methodology and guidelines, used in assessing the Transferability of an Innovative Concept.

While many of the standard features of the NICHES+ methodology still apply within the context of port environments, the approach for the Port of the Future, Vision 2030, has specific needs and guidelines for ports and port communities adapted and transformed into the **PoF TA Methodology**. Some of these deviations to the approach have already been described in Chapter 1 - From Potential Contribution to Ease of Transferability. The PoF TA Methodology is further outlined in this and the next chapters, to enable projects and the implementation of port and port related supply chain solutions to adapt to the concept of transferability. While there are 3 differentiating outcomes of the TA, from defining the **potential contribution to transferability (PCT)**, valued in the TA-score, developing a truly port-geared **Risk Assessment and Management** approach, which ultimately results in the **Ease of Transferability** (EoT), valued in the TA-index, the DtF Transferability Analysis addresses all port-related projects and intends to motivate formulation and presentation of proposed projects under future funding instruments, work programs or call proposals. At the same time, as addressed in the introduction of this document, the TA outcomes also enable project owners, stakeholders and authorities to identify and address project proposals for potential EU funding, while managing the best opportunities for EU funds assignments to the most likely successful and innovative projects. Besides the DtF assigned High-level Strategic Objectives, the TA outcomes can also address the specific needs for ports to align with other UN SDG's and/or to respond to stakeholder strategic visions, requirements and expectations.

How to facilitate transferability

The deliverables from WP3 (Evaluation Results) have provided an insight in a given project whether it is adequate or not, relative to the DtF concept of innovativeness (I-score). While independent from innovativeness, the TA has already assigned an indication of how much a measured solution is transferable, expressed as the high-level evaluation of a solution's transferability, referenced as ***the Potential Contribution towards Transferability*** (PCT), valued as the TA-score. This is the indication for a project or solutions to be further verified on its ***Ease of Transferability*** (EoT). In other words, a project that has the potential to be transferred across other (targeted) ports, requires further attention relative to the complexity of such a transfer, identification of different parameters and modes of operation and how involved parties will facilitate the ease of such cross-port implementation of the solution(s).

The transferability evaluation considers the principles of an innovative concept (IC) – under the **Port of the Future Vision 2030**, defined in DtF D3.2 – whereby a port wishes to adopt an IC already implemented. By implication, the donor port (the innovator) has already considered the issues surrounding the implementation of its IC and is willing to assist the adapting port in the

identification of the barriers and facilitation of implementing appropriate measures for risk assessment and management provisions of its IC at the targeted or adaptor port, in a voluntary collaborative effort. It is up to the participants in the port peering projects to agree on which parts and on the extend of the collaborative effort the parties prefer to cooperate and define the need for successful transfer. The PoF TA Methodology is a first part of that process to facilitate the transfer, involving:

- Identify and asses the issues and barriers or constraints that will affect the implementation of a new concept in a particular context,
- Identify and asses the success factors to achieve the expectations and targeted goals for the transfer of the solutions across other port(s),
- assign appropriate risk and project management approaches to the identified issues and constraints to show if implementation in an adopter port with a different context will be feasible, and
- recognise patterns to facilitate the transfer from the donor port to the adaptor port

The PoF TA Methodology brings both the **success factors and barriers** to implementation to the forefront and in particular indicates if it is feasible to transfer an IC implemented in one port to another where the context may be different. By implication, the same approach can be used to show if it is practical to try and implement a brand-new concept in an innovative port and aligned to its own particular context.

The success of the implementation of an IC will depend on many factors, some related to the project planning, implementation and operation of the concept, while other conditions relate more to the context of the concept in terms of the physical, organisational and institutional aspects. It is therefore important to identify those factors which are key to the success of the concept and which must also be addressed in any new location. Equally important it is also valuable to identify those factors which have proved difficult and have created barriers to success so that they can either be overcome or avoided where such factors exist in the transfer process (preparation and deployment).

The concept of **"adequacy"** – based on the methodology developed under the Detailed Implementation Plan (DIP) of the **Motorways of the Sea** (MoS) – has been developed as an analogy to 'compliance', used widely in TEN-T policies and projects. In the MoS context "Adequacy" is therefore an evaluation of the status quo with regard to specific objectives.

One prerequisite for transferability is hence a gap to be filled, so that solutions developed, e.g., in one port, can contribute to an improvement elsewhere. The potential overall contribution of a project or new solution can then be expressed as the contribution it promises to bring for this one port times the number of ports where it can bring a similar improvement.

While the MoS focuses on mature solutions, the focus of PoF is on innovative project proposals. Therefore, the DtF and its methodology for Transferability have adapted the concept of adequacy as the **Potential Contribution to Transferability** (PCT) **in PoF** projects – i.e. target is to promote innovative new solutions across as much as possible targeted ports[4]. Besides the concept of adequacy (aka innovativeness), the PoF TA Methodology allows for identification of other aspects relative to the need or desire to transfer a proven outcome in one port into other port(s).

The **PCT** cannot always be defined, because in many cases it is not yet known how innovative a proposed project is at the initiation stage. While anticipation of a project's transferability may be

[4] **targeted port(s)** refer to comparable ports (to the peering ports or between donor and adaptor ports), such as coverage of modes (containers, breakbulk, liquids, …), modus operandi, core and comprehensive ports versus dedicated smaller ports (for example: fishery ports).

observed during initiation phase, there may neither be enough information and knowledge available to adjudicate the detailed requirements for dissemination. Therefore running a project through the PoF TA Methodology is recommended to be done at regular intervals during the project, to ensure all parameters for potential constraints and barriers towards transferability to other ports and the appropriate risk management are considered at the time the different project deliverables are defined, and appropriate measures can be assigned. The ultimate result of applying the PoF TA Methodology at regular intervals through-out the project duration, provides the needed recommendations and reasons for project owners, teams and stakeholders to acknowledge the potentials to extend experience and expertise into port collaboration or what is referred to as **port peering**.

For Port of the Future, innovativeness and transferability are of greatest importance. Therefore the PCT within the context of the PoF vision 2030, is the probability (quantitative measure) that an innovative proposal will be adapted by other ports. That highlights the significance to adapt a more scientific approach or methodology to transferability in which risks and success factors are observed and managed as further outlined in this DtF D5.3 - Transferability Analysis.

How to profile your project as an IC or your port as a Champion

Transferability is a key issue for the Port of the Future program, which is why the Docks The Future aims at identifying the number of ports and terminals that are potential users of a project. Some of the framework data that is needed for this exercise is clear from the very beginning of activities. For example, a differentiation between cargo types handled in a port, as some solutions may apply, e.g., to container ports only. Some size indicators (handled volume in tonnes or TEU's) and traffic density indicators (number of ship calls) will also be needed. This type of information is available from Eurostat[5].

The methodology used by NICHES+ studies promotes the uptake of the most promising innovative concepts, in order to transfer them from their current "niche" position to a mainstream application. Each concept is illustrated with good practice examples, key benefits, decision criteria for implementation, and useful references, outlining the following aims:

- **Networking opportunities**: stimulate exchange between a wide range of stakeholders from all over Europe
- **Publishing effective guidance for all stakeholders**: brochures including key information on how to successfully implement the selected innovations
- **Spreading the word**: European and national events to effectively disseminate the project results and to encourage uptake of the innovative concepts
- **Groundwork for establishing the projects with supply chain actors**: additional resources and support available to develop concrete implementation plans for innovative concepts.

By implication, the donor ports may also be the innovators or pioneer ports, who have had to look at the issues surrounding the implementation of a new IC for the first time. The context in the donor

[5] **Eurostat**: statistical office of the European Union providing statistics at European level that enable comparisons between countries and regions. While the statistics focus on a wide area of topics, for specific maritime and port transport information, see www.ec.europa.eu/eurostat/data/database (Database by themes - Transport - Maritime transport).
Glossary for transport statistics: www.ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-19-004
more info at: www.ec.europa.eu/eurostat/data/browse-statistics-by-theme

and adopter ports is likely to be different in several respects, e.g. size, different modes of operations, connected networks (maritime and hinterland), legal and institutional structures, etc. The PoF TA Methodology for assessing transferability involves conditions of relevancy (potential contribution) to transferability relating to both PCT Level AND IC:

- The identification of issues, constraints and barriers affecting the implementation of a new innovative concept in a particular to other port(s)
- Assessment of these issues and constraints, recognizing a transfer to be practical in (an) adaptor port(s) with a different context and conditions
- Identify patterns and solutions to facilitate a transfer, including donor support
- Overcoming constraints through adequate project management policy in place
- Risk management inclusion at the target port

Detailed analysis of the above and reflecting the measures for risk management put in place, will result in success factors to transfer an innovative concept implemented in one port to another port where the context may be different.

3. Peering Strategy

A key aspect in determining and effectively implement the PoF concepts (and related measures) is the possibility to transfer an innovative concept – originally applied in a specific situation – to alternative environments. The aim of the Task 5.3 is therefore to identify the main issues or constraints in the transferability of port-related innovative concepts and to assess different ways to implement such a concept in differentiated environments.

In the transferability process, ports may be

- **donor port** – i.e. ports with an innovative concept (IC) to offer
- **adopter port** – i.e. ports wishing to adopt an IC already implemented in a donor port
- **peering ports** – i.e. ports sharing their resources to implement a new IC across multiple ports

As Port Peering, together with Multi-port Participation, are probably the most inherent approach to collaboration between ports, certainly in the light of the PoF vision 2030, well defined strategies agreed upon between participating ports are essential in the realisation of successful collaboration, transition and deployment of the solutions defined, considering the common and unique characteristics of the peering ports. Through extensive assessment by the parties, using the PoF TA Methodology – from concept to realisation – the project owners and stakeholders may conclude whether the project is

- **complementary** (partially or entirely)
- alternative «**in competition**»
- **excluding each other**

and ultimately, promotes innovations aligned towards PoF Roadmap 2030, increasing the means for transferability.

The innovative concept of a proposed project is transferable from a "CHAMPION" **donor** port to **adaptor** port(s) or through **port peering** in collaborative projects, when the project proposal differentiates itself through its relevancy towards the definition of transferability, referred to as the '**PCT**' (Potential Contribution to Transferability) to other ports.

The ultimate goal is to provide exploitation tools for both the EU Policy and Program Officers as well as for project owners and stakeholders wishing to apply their project proposals to the EU program calls, or to make use of these tools to assess the predicted outcomes of their project for both internal and external stakeholders, independent from its innovativeness and/or transferability.

The final goal of the TA is to determine potential barriers to the transfer of different innovative concepts among ports as well as the identification of potential patterns that could facilitate such transfer. The assessment and measures to be put in place are governed through the use of the **PoF TA Methodology**.

Based on previous Docks The Future WP topics, deliverables, methodologies, specific Port of the Future Key Performance Indicators (DtF D3.1 - KPI-set) for ports / projects and related targets defined, the PoF TA Methodology provides the means to evaluate and transfer the concepts of **EoT** (Ease of Transfer) of a project with an innovative concept among EU ports, considering its recognized barriers and constraints through risk management. This is actually what **"project peering"** necessitates.

The Transferability Analysis of a project may have to be fine-tuned at regular intervals of the project duration. This is necessary as project strategic objectives and aims, result in changes at the lower levels when defining the operational objectives and when performance indicators starting to

provide actual measured KPI's versus the expected/targeted measures. This is why the TA provides for an initial PCT evaluation, resulting in the TA-score and during the project duration and afterwards during deployment and integration in operational environment enables for evaluating the EoT of project deliverables. This approach, together with the project risk management provisions of the PoF TA Methodology warranties capturing the various aspects and complexity of Port of the Future projects and how the PoF TA Methodology surfaces the relevancy towards 'potential contribution' and promotion of solution transferability and/or project peering at their initial development and proposition phases, maturing into the TA-index on 'ease of transfer', providing the required measures and project management protocols to ensure successful transferability of its solutions to targeted / interested ports. Such an approach also promotes and facilitates the readiness for ports to peer up and collaborate on equal knowledge footing to increase the pace of the process of transferring same/adapted solutions to the adapting ports.

As part of the collaboration efforts between ports and dissemination for best practices around innovative concepts, multiple ports may jointly lead the implementation as best in class or assist other adaptor ports (same size or smaller adaptor ports) in implementing same, possible scaled solution, considering the transferability analysis outcome through risk management of recognized barriers and constraints. This is developing the Peering Strategy or realizing a "buddy system".

TA project-peering across borders aligned with the PoF Roadmap 2030

Another crucial aspect of the PoF framework is to promote collaboration and partnerships between ports and other participants across the EU ports and to facilitate such partnerships also with EU neighbouring countries:

- **EU cross-border projects**: INEA promotes collaboration within & across EU countries
- **Neighbouring countries**: EU Commission promotes project partnerships through multiple programs (HorizonEU, InterReg/COR, CBC, …)

Enabling **peering strategies** between ports and projects, through assessing the transferability from concept to realisation, concludes in whether the project promotes innovations aligned towards PoF Roadmap 2030, enabling EU funding on specific IC projects and for transferability on scope related areas and collaboration between EU and its neighbouring countries on project partnerships.

The Transferability Analysis provides this facilitation for collaboration and transferability between EU projects and EU ports, as well as promoting the collaboration of partnerships between EU ports and project partners in neighbouring countries in different regions, such as the Baltic, the Balkan, the Adriatic Mediterranean, the Western Mediterranean, and the EFTA/EEA (European Free Trade Association/European Economic Area: Switzerland, Norway, Iceland and Lichtenstein) special treaties with the UK, Turkey and Ukraine + other countries of ex-Yugoslavia. The EU establishes multiple program calls to promote such efforts.

4. Transferability Score (TA-score)

In this chapter the definition and application of the TA-score as briefly described in Chapter 1 - From Potential Contribution to Ease of Transferability, is further accommodated with the needed details for the donor (champion) port and/or peering ports to evaluate the feasibility of transferring their solutions to other ports.

The innovative concept of a proposed project is transferable when the project proposal differentiates itself through its relevancy towards the definition of adequacy. This is referred to as the '**potential contribution of transferability' (PCT)** to other ports, independent from its innovativeness, ROI of the project or in line with strategic vision for an initiating port.
A high potential contribution towards transferability, means new, innovative solutions filling a perceived gap, has therefore a high transferability.

Qualitative and quantitative measure of transferability

In this context, WP3 (Evaluation Results) has introduced "potential contribution" as the impact of a project on different KPI's (objective-related), and innovativeness. So it is anticipated to evaluate all dimensions, including innovativeness as an integrated but independent part of the Transferability Analysis.

Similar as experienced during the project evaluations of the DtF D3.4 – PCI Assessment, it is essential that project owners ensure the required information is available and ensure its compliance to conditions as specified in this deliverable. The analysis requires full access to the targets and actuals measured performance indicators related to the strategic objectives of the project.

The PCT (Potential Contribution towards Transferability) therefore reflects the **quantitative "probability of transfer"**. The probability can be planned or not, and/or it can be defined at any stage of the project life cycle or after realisation of the project, as to enable the decision to allow for transferring the delivered solutions to other ports at any time. This decision is taken by the project or solution owners beyond donor and adaptor ports scenarios, allowing projects to be initiated as multiple port projects = port-peering.

The probability of transfer of a project or solution is expressed as the number of ports to which it can be transferred, reflected in the **Transferability SCORE** (TA-score). The higher the potential contribution, the more it should be considered. This enables a multiplier for the single project's impact. The potential contribution is then the contribution of a project in one port times the number of ports that are likely to apply this solution, or logarithmic presented:

PCT of a new solution **= contribution in a pilot port**
x **number of ports in which the solution will be used**
x **probability** (potential) **of ports in which the solution can be used**

The independent dimension related to the innovative concept – referred to as "**single-port**" projects or initiatives, without any horizontal aim to transferability – obtain a ***ZERO-weight*** value in the **TA-score**.

While the innovativeness of a project may have an independent dimension (receiving a '**zero weight**' in the TA-score, it can still be processed through the full Transferability Analysis to evaluate

its relevant contribution towards the 17 DtF High-level Strategic Objectives (see Chapter 7 - Transferability Index (TA-index)).

The initial evaluation on the potential contribution to transferability of a project deliverable (solution(s)) concludes in the **Transferability Score** (**TA-score**) whereby a project is scored on its **PCT** and is reported in the DtF PCI Tool (D3.3), unless there is no scoring made possible, due to missing information about the project.

As the probability of transferability (PCT) has a fully independent dimension from objectives and from innovativeness, project stakeholders can interrogate future releases of the DSS tool (D5.2 – Decision Support System) for solutions that perhaps are not as innovative as defined in the PoF environment. See further in Chapter 7 - Transferability Index (TA-index) for more information.

The **Potential Contribution towards Transferability** (**TA-score**). provides for a 5-band scale to evaluate the project stakeholders with a high-level interrogation of the targeted solution:

scale	PCT	definition of transferability contribution
0	ZERO-weight	**transferability NOT measured**[6]: project has an innovative aspect, but is only applied to a **single port**, *OR* similar solution(s) already implemented in other ports *AND/OR* has no horizontal applicability (no efforts undertaken to peering the solution in other ports – by either donor or adaptor port(s))
1	LOW	**No to low support or high constraint for transferability**: project supports an innovative aspect, is applicable to other potential ports identified, but no barriers/constraints considered or investigated for implementation in other ports *OR* barriers/constraints for transferability have identified impossibility or high risk to apply solution in other ports
2	MEDIUM	**Modest support for transferability**: project supports an innovative aspect, is applicable to targeted ports, has identified constraints/barriers and suggested resolutions, but NO peered resources to implement the solution in other ports
3	HIGH	**limited potential for transferability:** project supports an innovative aspect, is applicable at some (1 to 4) targeted ports, has identified constraints/barriers and suggested resolutions, AND has peered resources across a minimum of 3 ports to implement the solution (simultaneous project through port peering and/or assistance in transfer from donor to adaptor port(s))
4	STRONG	**wide support for transferability:** project supports an innovative aspect, is applicable at multiple targeted ports (5 or more), has identified constraints/barriers and suggested resolutions and risk management provisions established *AND* has peered resources across many ports (3 or more) to implement the solution(simultaneous project through port peering and/or assistance in transfer from donor to adaptor port(s)

Table 1: Scale for the Transferability Score (TA-score)

[6] (*) **zero weight** means "0" or no transferability in Project Common Index (PCI) and Transferability Analysis (TA), but project can still be evaluated further in the DSS-tool as relevant for stakeholders to comply for example to various UN-SDG's.

While the EU Commission may have specific targets to fund mature solutions, a project may receive Port of the Future funding only if transferable = it has an innovative concept AND contributes to potential successful transferability AND/OR indicates the ease to realise and implement the solutions in multiple ports through port peering.
It is to be noted that the use of the DtF tools is not only relevant for or eligibility to EU funding, The DtF tools, including the TA and its PoF TA Methodology can be used independently by project owners and stakeholders to ensure their specific objectives can be met by the project under review.

The obtained score in the Transferability Score – not applicable to ZERO-weight - scale 0-weight projects – may likely obtain EU-funding within an open program call relative to Port of the Future vision 2030, enabling EU funding on specific IC projects and for transferability on scope related areas and collaboration between EU and its neighbouring countries.. Projects with a Transferability Score:

1. Score of 4 may obtain evaluation phase with unconditional approval to fund the project if all other conditions are met
2. Score 2 or 3 may result in conditional approval with limited funding based on the efforts put forward relative to the transferability of the innovative concept and/or project results to other ports
3. Score 0 or 1 will receive NO approval and thus no funding under the EU program calls for Port of the Future vision 2030.

Questions that can be asked by the project team and project owners to evaluate their project for innovativeness and transferability:

- Is it about a pilot port, single port (with transferability potential) or multiple peering ports at time of the project initiation?
- Does the project present an innovative aspect? In how far has it already been implemented through other projects / ports and is there room for improvement in the new proposed project?
- Will the project be presented as a stand-alone proposal or whether it peers up with multiple ports for the realization and whether the barriers / constraints for implementation will be / have been identified AND addressed (whether for all the targeted participating ports or whether as a project from a donor to a receiving port(s))
- How many ports are participating in the project consortium?
- …

The answers to these questions may require necessary research and in-depth knowledge of the strategic and operational objectives of the port environment, including clear insights of the project proposed or to be implemented. When projects use peered resources across targeted ports or donor and adaptor ports are collaborating in sharing their expertise, the answers can be obtained from brainstorming sessions among the stakeholders. In other case, a thorough market research may be essential, while sources and analysis provided by Docks The Future and other EU initiatives may bring the relevant information to understand whether a proposed project has potential contribution for transferability. When the results of such a research reflect that the assumed IC of the project has been implemented already in one to many ports, it still may be possible that the approach of the proposed project has an improved innovation concept. At the same time, the project team may decide to obtain assistance from the port having already implemented such an innovative concept and consider becoming a donor or advising port in the new project.

It is up to the project proponents and other ports to monitor the projects and interest from other ports and identify potentials for peering amongst multiple ports. The current 3 RIA projects under the PoF Network are good examples to show the potentials of peering among ports. A role can be put in place for the PoF Network of Excellence to take on board such a facilitation of the process, including promotion of existing projects and communication / dissemination of collaboration initiatives and projects among ports across EU and neighbouring cross-border countries. As part of the initiation of the PoF NoE, it is anticipated that DtF will provide the necessary tools to promote the concepts of transferability, innovativeness and building a project dBase, including the DtF WP1 (PoF Definition of the Concept) deliverables of implemented, current and proposed projects related to the Port of the Future vision 2030.

Conditions of **potential contribution** relating to both PCT Level *AND* Innovative Concept:

- Identified issues, constraints and barriers affecting the transfer of a solution to another port
- Assessment of the issues and constraints, recognizing such a transfer would be practical
- Identified patterns and solutions to facilitate such a transfer, including donor support
- Overcoming constraints through adequate project management policy in place
- Risk management inclusion at the target port.

As part of the Transferability Analysis, the evaluation of the solution or project will also consider dealing with risk in the target port. This touches on concepts of enterprise risk management as defined e.g. in ISO 31000.
Resulting in success factors to transfer an innovative concept implemented in one port to another where the context may be different.

As part of the collaboration efforts (**peering**) between ports and dissemination for best practices around innovative concepts, multiple ports may jointly lead the implementation as best in class or assist other adaptor ports in implementing same scaled solution, considering the transferability analysis outcome through risk management of recognized barriers and constraints.

The TA score will feed the probability or “ease of transfer” (see chapter 7 - Transferability Index – TA-index).

DtF proposes to maintain a minimum **project management plan** for which the details are to be defined by the project owners and their PM protocols in place to include:

- risk management approach,
- proposed PoF TA Methodology,
- examples of good practice,
- key benefits,
- decision criteria for implementation, and
- useful references.

5. Detailed Analysis using the PoF TA Methodology

The aim of the Transferability Analysis is centred on its methodology that is developed for assessing the ease transferability of Port of the Future **innovative concepts**. The ease of transferability approach is the centrepiece of the Transferability Analysis, using the **NICHES+ 6-step**, developed by **POLIS**, adapted to the specific requirements for port environments, referenced as the **PoF TA** Methodology. It assesses how specific solutions can be applied in different ports as well as other transport nodes such as inland waterway ports or inland terminals. As an outcome, the TA results in a **Transferability Index** (**TA-index**), which is a more in-depth revision of the initial potential contribution towards transferability (PCT) as was established at the level of the Project Common Index (PCI). The compilation to obtain the Transferability Index is described in this chapter of the PoF TA Methodology and documented in the results below.

The PoF TA Methodology developed for assessing the transferability of an IC from concept to realisation uses the 6-step approach, concluding in whether the project is:

- **complementary** (partially or entirely)
- alternative «**in competition**»
- **excluding each other**

Compared to the initial potential contribution towards transferability (PCT), this in-depth review, running a project through the PoF TA Methodology, identifying the components and characteristics to provide the **qualitative** and **quantitative** measures and risk management provisions, to define **"ease of transferability"**, expressed as the **Transferability Index** (**TA-index**).

As stated in Chapter 1, the notion of innovativeness relative to the TA-index assessment, using the full transferability analysis and its PoF TA Methodology, is independent from the transferability relevancy. This means a project owner can realize a proposed project to enable the following purposes of the applied methodology:

- analyse its compliance as a **single port solution/project** to:
    - realize compliance with its strategic vision
    - improve its operational effectiveness, and/or
    - realize identified ROI from the project for its own operations only

  OR to
- establish a potentially EU-funded initiative by
    - **peering up with other (multiple) "targeted"** (7) **port(s)** to develop and implement the project deliverables under a project consortium arrangement, or
    - profiling as a **donor port towards "targeted" adaptor port(s)**, through
        - initiating a project as a donor port to potential adaptor port(s), or
        - facilitating an adaptor port with a proven implemented project

  in each use-cases, the donor port, donor and adaptor ports, or the peering ports identify and evaluate the challenges, constraints/barriers and success factors to transfer an innovative concept implemented or to be implemented in the donor port to another port where the context may be different.

Enabling transferability scenarios between ports and projects, through assessing the transferability from concept to realisation, concludes in whether the project promotes innovations aligned

[7] **targeted port(s)** refer to comparable ports (to the peering ports or between donor and adaptor ports), such as coverage of modes (containers, breakbulk, liquids, …), modus operandi, core and comprehensive ports versus dedicated smaller ports (for example: fishery ports).

towards PoF Roadmap 2030, enabling EU funding on specific IC projects and for transferability on scope related areas and collaboration between EU and its neighbouring countries.

In multi-port participation projects and for scenarios of port peering on projects, this can be achieved through collaboration during the project, exchanging and evaluating best-in-class practice in defining the needs, measures and risk management applicable to the ports involved in the project as outlined in the PoF TA Methodology. For the 'Champion' scenario, this will be introduced by the donor port, but will need equally similar expertise and knowledge about specific environment and situation by the project owner at the adaptor port. In this case the donor port will play the champion role and facilitates/assists the adaptor port with the obtained knowledge and experience from its own implementation.

Independent from a projects TA-score, any projects can interrogate their solutions through the full Transferability Analysis, making use of the PoF TA Methodology for deeper evaluation and benchmarking their solutions against other objectives to be achieved by the project owners for its stakeholders, such as:

- the compliance of a project towards one or more of the UN-SDG's, reflected through its scoring on one of the 17 DtF High-level Strategic Objectives
- specific project owner' objectives such as: project financing, ROI of the project or in line with strategic vision set by the port and its stakeholders
- assessing the validity of financing a proposed project, through internal and/or external financing
- appraising the predicted outcomes of their project for both internal and external stakeholders
- …

The NICHES+ 6-step approach applied in the PoF TA Methodology

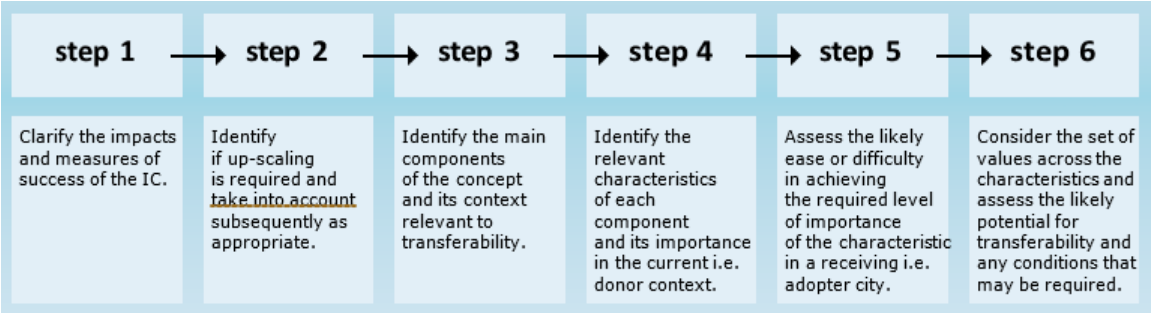


Figure 5: Niches+ 6-step approach for transferability assessment

The aim is to promote innovations aligned towards PoF Roadmap 2030, enabling EU funding for transferability. Again, use of the TA and its PoF Methodology is not limited to obtain EU funding under a targeted program call. The tools can be used independently by project owners and stakeholders to ensure their specific objectives can be met by the project under review.

This distinction in project proposals, combined with the level of transferability and innovative characteristics, defines the transferability of a project proposal, therefore determines if a proposed project has a higher potential success rate than others. The first 4 steps define the potentials for transferability of an innovative project:

- **Step 1.** define **impacts and measures of success**
- **Step 2.** decide on **up- or down-scaling** (different port conditions may apply)

- **Step 3.** identify **components of IC** and its relevancy towards the **TA context**
- **Step 4.** identify **relevant characteristics** and its **achievement in the current context** to be aligned to the **adaptor port(s)** situation (consider both alignment of port operations as well as adapting the solution to fit the specific port environment + adapting the implementation approach and integration with other existing systems and data)

The successful implementation and integration of the proposed solutions, using the NICHES+ approach, further depends on the engagement of multiple, closely cooperating partners (ports, port terminals and other supply chain actors and authority agencies, such as Customs, Health and Safety, …), together with European port and supply chain innovation experts.

Using the NICHES+ approach of Innovative Concepts, the following is a recommended best practice structure, by defining:

1. Adapting to the PoF defined concept of **PCT**
2. Innovative concepts to enhance accessibility
3. Efficient planning and use of infrastructure
4. Operations management centres
5. Automated and efficient equipment resources
6. Setting up training programs for all parties and their employees
7. Defining the key benefits, improvement of KPI's and ROI.

Step 1. Impacts and measures of success

Impacts and measures of success provide the essential justification and supporting evidence for why an IC should be considered for application by another port and hence for transferability. Generally, only successful innovative concepts will be considered as candidates for transfer to another ports. However within the Port of the Future principles this may be by-passed for reasons of implementing an improved version or approach to implementation in the adaptor port. The question of "what is a 'successful' concept?" is obviously debatable, but ideally, success should be measurable, e.g.:

- in terms of the extent to which particular objectives and/or targets are achieved, such as reduced energy consumption and emissions by a specified percentage (quantifiable measures)
- whether positive socio-economic benefits are achieved in terms of a benefit cost ratio or a multi-criteria analysis.

The results may need to be substantiated as statistically robust, or the judgement of experts taken. It is obviously important that there is clear evidence of success in terms of positive change in order to warrant effort on transferability. Identifying these impacts and success factors is therefore an important first step.

Step 2. Is up-scaling required?

Determine if scaling up (or, in some cases, scaling down) of the innovative concept is required for transferability. If it is, recognise the requirement and implications in the subsequent steps.
A port that is seeking an innovative approach to improve its operational situation or address a problem will generally be looking for a concept that can be applied across the port area serviced or at least a significant part thereof. This means that generally a concept needs to be considered in its fullest form where possible, so for concepts where up-scaling is appropriate the up-scaled version of the concept should be considered for transferability.

For instance, where an innovative concept (such as access control) has been applied to the whole

of the central area, up-scaling is not required as the concept is applied at the port level already. Where an innovative concept is applied along a specific route, port area or corridor, up-scaling may or may not be applicable depending on the nature of the concept and the uniqueness of the route or corridor. Where an innovative concept has only been partially applied, then up-scaling should generally be readily applicable.
In a few instances, it may be appropriate to consider down- as opposed to up-scaling, e.g.: where an implementation in a large port is to be transferred to a smaller city, and/or perhaps, reduced in scope.

The requirements and possible implications for up- or down- scaling must be born in mind in the subsequent steps used in the PoF TA Methodology.

Step 3. Identify the main components of the innovative concept and its context relevant to transferability

Many factors can contribute to the success (or failure) of an innovative concept including the components of the concept itself, transport/traffic conditions, geographical, environmental, demographic, socio-economic, cultural backgrounds, institutional and legal frameworks, etc. Some of these factors may already have been identified as success factors and barriers from an evaluation exercise conducted in the donor port, but there may be other aspects of the innovative concept or its context which have had an influence on its success or caused problems. These need to be identified so that their relevance or necessity concerning transferability can be assessed. The list of components/characteristics for consideration, published in Annex II - PoF TA Methodology in the context of PoF projects for assessing the transferability should be revised as necessary to make it appropriate to the particular IC being considered or relative to the adaptor port environment.

Step 4. Identify the relevant characteristics of each component and its achievement in the current context

This step simply breaks down the main components or characteristics relevant to transferability and notes the relative level of importance (see TA-index scale: +2, +1, 0, -1, -2 – Chapter 7. Transferability Index (TA-index)) of each characteristic as perceived by the donor port. Examples of characteristics as shown in Annex II may relate to strategies and policies, pollution reduction policy, mode of maritime and hinterland transport policy, accessibility policy, etc… These should be revised if necessary, so they are appropriate to characteristics relevant to the IC concerned or the solution being transferred to another port environment.

The **"champion (donor) port"** or the lead in – through the collaborative effort of **"peering ports"** – develops an implementation scenario to prepare for the local introduction of selected innovative port and port-related supply chain measures, providing the needed information / outcome towards key characteristics of a successful project using the following criteria:

- **Key stakeholders involved** and/or selected target port(s) and supply chain actors
- **Port size, type and modus operandi**: multiple essential port criteria differentiators + sizing of the involved supply chain actors (linking to the database of 'quantitative' or 'theoretical' transferability (defined in D3.3 – PCI)
- **Key characteristics** for implementation and/or user needs
- **Key benefits** for the involved stakeholders and/or other affected supply chain parties
- Establishing **good/best practices** (benchmarking)

- **Undesirable secondary effects**: negative implications for targeted stakeholders and/or affected supply chain parties at implementation
- **Costs**: overall project cost and specific cost of the participating stakeholders and/or affected supply chain parties (benefiting not-participating supply chain parties may have benefits from the project outcome and may participate in the use of the solutions for which service pricing can be developed)
- **Time horizon** of the project development, implementation and testing phases
- **Crucial factors** along and after the project process and implementation, including risk management
- **Excluding factors**: defining in/out of scope and scope management.

At the end of the analysis, the donor and adaptor ports or peering ports will be able to draw conclusions about the potential for transferability through consideration of the factors identified and the assessment ascribed to each:

- If there are one or more strong constraints to transferability, it is likely that the innovative concept is not generally transferable, unless the constraining conditions can be overcome in the new port.
- If there are no strong constraints, but one or two modest constraints, it is likely to be difficult to transfer the innovative concept, unless the constraining conditions can be properly addressed.
- If there are no constraints at all, it is likely that the innovative concept could be successfully transferred, particularly where supporting factors can be put in place
- If, on the other hand, serious constraints and issues are identified, what kind of adequate project management policy can be put in place to overcome the barriers and still be successful in transferring the innovative concept to other ports.
- The analysis will also include the transferability of solutions to multimodal hubs such as rail freight terminals, inter-ports, airports and dry ports.

For more information, see “Overcoming barriers to mainstreaming urban transport innovation” by Ivo Cre, POLIS (see Resources and publications of reference recommended - 5).

The PoF TA Methodology recommends following steps as outlined below, which will provide a more detailed analysis outcome to proceed to the next step of piloting and roll-out of the implementation:

- show how an IC could be implemented successfully in another port
- encourage the transfer of good practice
- assess whether the success of an IC is dependent on any particular conditions, and whether the success achieved, and lessons learnt in one port can be transferred to other ports.

For stakeholders and users in the port eco-system, the implementation of innovative concepts as projects, roles, milestones and outcomes or deliverables will differ. It is therefore essential to engage and involve users and stakeholders at the earliest stage in the process in order to address their needs and concerns and try to win their support. Therefore, clearly identify and study the following topics, considering that no ports are alike, but share many common challenges and needs, by defining the following:

- Benefits, costs and challenges
- Users and stakeholders.

Once the project owners have clearly identified the potential contribution to transferability, the actual transferability assessment is performed, which will result in the Transferability Index (TA-

index) see Chapter 7 - Transferability Index (TA-index), which provides more details on step 5 and 6 of the PoF TA Methodology.

Steps 5 and 6 of the NICHES+ 6-step approach are outlined in Chapter 7. Transferability Index (TA-index) as those steps can only be confirmed after the processes defined in Chapter 8. TA Risk Assessment and Management Provisions and an understanding how the TA-index is achieved for a project.

6. TA Risk Assessment and Management Provisions

As part of the full Transferability Analysis using the PoF TA Methodology, the evaluation of the solution or project will consider risk managing provisions in the targeted adaptor port(s), based on the experience built at the donor port. This touches on concepts of enterprise risk management as defined e.g. in ISO 31000.

The Docks The Future project shall not maintain a project management plan, rather reference to existing tools, which will contain a set of references to risk management plans. A project owner or the assigned project office (PO) assesses risks, maintained in its risk register, based on the protocols and procedures put in place for Project Management and Project Portfolio Management. While standard PM protocols may already exist, potentially adapted from standard market PM and PO tools (such as ITIL, PM Bock and others), peering port partners or ports participating in a project consortium of multi-port participation projects, have to agree on the PM tools to be used for the project under assessment and execution. This may well be other PM tools for a number of ports then what they use internally. It is essential that dual dialogue protocols are put in place to manage the expectations, execution and outcomes of the project, both at project and at participant level, to ensure all stakeholders and their management are aligned and agreed to the project strategic and operational objectives and that measures on performance indicators can be compared within the project and at the strategic and operational level of the stakeholders affected by the project deliverables.

Project management plan to include:

- Use of a proven project management and reporting tool (resources, timing, cost, benefits, project finances, PM office protocols, ...)
- Identified and committed knowledge and skills available from internal resources and/or external experts for each of the partners involved
- Thorough run-through of the PoF TA methodology with unambiguous details agreed upon between project owners and at least the prime stakeholders
- Evaluated business models, data models and operational practices towards best practice (As-Is to To-Be Analysis)
- Key benefits identified at company and user level
- Decision criteria for development, implementation and roll-out deployment and integration

TA Risk Assessment & Management Provisions include the definition, assessment and agreement among the project owners and their prime or key stakeholders, towards:

- Identification of **expectations** from all or at least key stakeholders to the projects (may include the wider port community impact assessment)
- Adapt or ensure synchronisation between multiple or a **common Project Management & Reporting system** among project owners and primary stakeholders
- **Knowledge & skills**: assess the availability of resources across the engaged ports and partners or ensure for the insourcing of experts to provide guidance and assistance in the port-peering project
- Obtain **insights & recommendations** from stakeholders and involve the wider port community in realising the project impacts and resolutions
- Define and agree d**etailed planning of ALL resources** across project participants
- Identified ***components*** of the **barriers & constraints** in the new environment

- Identified ***characteristics*** of the **risks or barriers** at development, deployment and integration (data, business models, operations, …)
- Define/agree costs & benefits for ALL parties involved

From the process analysis, using the PoF TA Methodology, a full transferability assessment table can now be constructed, which comprises of two parts:

1. The scope of the Innovative Concept and its context, with impacts and measure of success towards contributing to the DtF KPI-set, DtF PCI and DtF TA
2. The components, their characteristics, ease of achieving level and contributions required to successful implementation, completed from the appropriate perspectives

The full TA assessment of the transferability of a project is recommendable and covered when the evaluation and risk involved with the peering and/or collaboration between donor and adaptor ports are assessed and resolutions provided. In the latter scenario (port-peering) it is to be recognised as a mandatory process where port-peering within the same project (collaboration of multiple ports on the same project, as identified in the higher TA-score) is pursued.
While there are no standard solutions to overcome barriers and constraints in any of the three scenarios presented in the DtF Transferability Analysis, the following list of possible pitfalls or risks that can exist in a port-peering or in a champion scenario can be considered by both the donor and adaptor ports as well as between peering ports[8]:

- No clearly defined expectations among the peering ports and/or with the stakeholders engaged, possible not all stakeholders involved
- Benefits unclear or not quantified – qualified measures only do not result in comparable measures
- Cost of adaption, testing and implementation not clearly defined – detailed and size of the investments needed
- Legal framework and liability issues not identified or defined with local and international regulations and commitments
- Lack of cooperation among peering and champion ports, and/or with stakeholders - creates uncertainties and communication risks
- The nature of the innovative concept may cause unidentified barriers to uptake, or may not have been aware of or minimised during the assessment
- The port peering or champion scenario may not have identified hidden requirements and expectations or not enough quantifiable measures to have identified the true complexity and barriers for the transfer
- Stakeholders may not have been informed properly to evaluate the risk and impacts involved with the transfer
- Ports strive to efficiently engage in innovative concepts and solutions if they can be adapted in a systemic approach, applicable in an acceptable level of adaptability across port actors
- Incorrect choice of lead stakeholder and project partners
- Changing partners and stakeholders during the process of transfer of the solution
- Other inconsistencies not considered during assessment and/or at time of transfer and implementation

[8] The list has been adapted from the ***Guidelines for Assessing the Transferability of an Innovative Urban Transport Concept*** (**NICHES+ by Polis** - www.niches-transport.org) and complemented with specific characteristics applicable in port environment.

- Improper consideration of existing systems and practices may complicate existing operations and initial defined cost may be inadequate to realise the overall benefits of the transfer
- No full impact analysis on technological advancements to which the adaptor port may not be ready for, or not anticipated surrounding technology in the adaptor port, different from the donor port
- Besides the operational environment differences, there may be differences in foundational infrastructure and financing potentials or saturation at the adaptor port, quite different from the donor port
- Qualified resources and technical knowledge may be at quite different levels between ports, including young trained resources who may have different level of knowledge about recent technologies.

Other risks or barriers at deployment and integration of the solution in the real-world environment[9]:

- Inconsistencies or unknowns related to data and resource readiness for the innovative concept to be transferred (including functional training and adapting process)
- Additional data collection and process digitalisation required to obtain the envisioned results comparable to the realised benefits in the donor port
- Ensure quantification of the benefits (better information, improved, safety, improved traffic flow, reduced environmental, impact, etc…)
- Disseminate the benefits broadly
- Solve liability and legal issues
- Develop more applications if necessary
- Involve more stakeholders if required and ready for adapting the new solutions
- When 'selling' solutions to other ports under the champion scenario, be aware that there are always alternative measures that – at least in the short term – might appear more promising with regard to policy objectives, observed or expected to be less expensive and less complicated, while local conditions and characteristics may change the entire setting and integration of the proven solution from the donor to the adaptor port
- Uptake of innovation is sometimes hindered by the concepts themselves, which are not designed for or adapted to the environment or the policies and procedures in place at the adaptor port, or context and/or capacity to adapt are not equal across ports, which includes existing systems and solutions, qualified resources and knowledge, etc…
- Tools to overcome operational, technological and legal barriers to the uptake and initiation of innovation by the adaptor port may not be available.

The most essential in the entire process of the champion and the peering scenarios is to ensure qualitative dialogue among the qualified resources available at either end, to ensure the local expertise is provided, gained or passed on or shared between the engaging ports, with clear upfront protocols on information and competitive advantage dissemination during the life-cycle of the project. While certain sensitive information may be withheld for obvious reasons, this should be clearly identified and communicated with the engaged parties.

As an integral part of any project and risk management approach, agreed resource management and a clear timely communication management and responsibility among the peering ports, partners and with the stakeholders, ensures everyone is informed and can provide their corrective actions where needed.

[9] The list has been adapted from the ***Guidelines for Assessing the Transferability of an Innovative Urban Transport Concept*** (**NICHES+ by Polis** - www.niches-transport.org) and complemented with specific characteristics applicable in port environment.

The following outline of the NICHES+ approach for transferability methodology applied by several EU projects (including CIVITAS), reflects the procedures and protocols applied for city authorities to adapt to proven and transferable solutions from one city to another city, can easily be adapted to the port environments, considering the specific requirements to be considered for port champion and port peering scenarios:

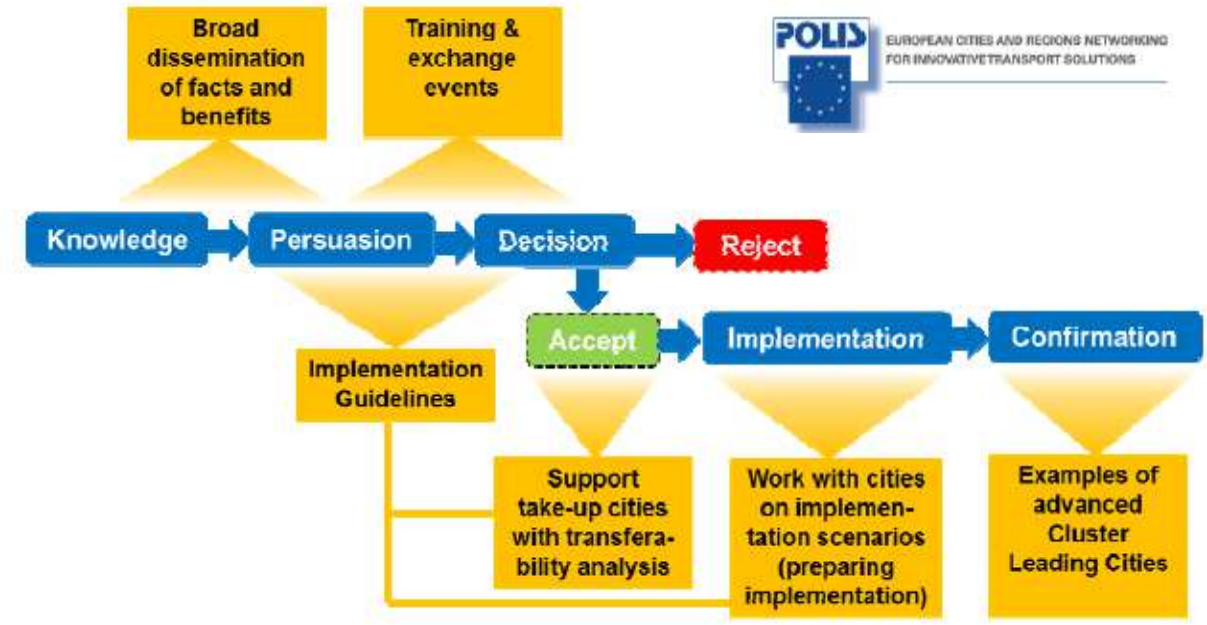


***Figure 6**: Project Management approach for NICHES+ transferability methodology*

At the same time, continuous awareness across project team and its stakeholders has to be ensured along the project life-cycle:

- Engage into **stakeholder** dialogue and **impact assessment** (including non-direct parties)
- Set **well-defined quantifiable** and **realistic SMART measured KPIs** aligned with **SO/TO**

It is essential that dual dialogue protocols are put in place – Involving project owners and stakeholders – to manage the expectations, execution and outcomes of the project, both at project and at participant level, to ensure all stakeholders and their management are aligned and agreed to the project strategic and operational objectives and that measures on performance indicators can be compared within the project and at the strategic and operational level of the stakeholders affected by the project deliverables.

The importance of well-defined quantifiable and realistic SMART specified KPIs are of outmost importance in a successful understanding of a transferable solution as well as the transfer of such solution in another environment where the conditions may be different. The role of well-defined performance indicators enables:

- Clear and unbiased assessment of the benefits as well as the impacts or resiliency to acceptance of the introduced solution
- Assessment of the usefulness of a solution as a whole, as well as the adaption in a different environment
- Evaluation of costs versus benefits of the expected investment
- Identification of the limitations such a transferred solution may result in (barriers and constraints to be managed at the adaptor port, different from the experience at the donor port)

- Assisting decision makers to take well-informed decisions on the decision to peer and collaborate with other ports as well as take necessary choices during the project implementation and ensure acceptance at the time of deployment by a maximum of stakeholders involved and/or affected
- Promotion and understanding of the interests and expectations from all parties and stakeholders involved.

While a known practice the notions of SMART KPIs, the following prerequisites are essential in defining quantifiable measures to KPIs:

- Make use of existing, known and familiar real-time data and results from comparable implementations
- KPIs should be easy to use and communicate to decision makers at each of the project partners and with project and deliverable stakeholders
- KPIs can be adapted (while still comparable) to specific requirements or settings at the adaptor port
- Identified need for decision-support based on KPIs to assess impact pre-deployment
- Allow for comparison of alternative solutions which may address similar resolutions to the same situation
- KPIs need to be scalable
- KPIs at best should be predictable relative to setting expectations or predicted measurement of those expectations.

Action planning with the PoF TA Methodology and the use of the NICHES+ approach will bring together tailored recommendations in port-specific implementation scenarios:

- Specification of activities and responsibilities (to cover items such as contracting and the identification of the project management team
- Specification of works, feasibility study, tendering etc. – all if required
- Timeline and budget plan
- Innovative stakeholder relations and involvement schemes
- Awareness raising and branding, target-group specific marketing
- Innovative packaging of services by different parties
- Innovative funding and financing mechanisms for transfer of innovative concepts
- Guidelines for monitoring and evaluation.

For the above reasons, the DtF does not force for projects and stakeholders to adapt to another PM and PO tools, specific tailored for TA Risk Assessment and Management Provisions. It is up to the project owners and the peering port partners to identify the best fit protocols and tools to be put in place and eventually ensure the information reporting is aligned to the internal tools used by the stakeholder companies. For a typical transferability assessment exercise the viewpoint of the adopter port will be considered, but in the light of the experience of the donor port and with support from experts as appropriate. For an innovation city considering the implementation of a brand-new IC for the first time, it will be from the viewpoint of that port with advice from experts as appropriate.

The role of the PoF DtF-NoE can play a guiding role in identifying the proper experts to assist in the transferability process. This context will be addressed in the related DtF deliverables of the Network of Excellence and the DtF D.5.8 - Final Report on Exploitation Activities and Update of the Exploitation Plan (PER). In addition, the availability of publications, access to knowledge databases and support for specific activities like development of methodologies, each consortium partner is in charge of the two key activities of Exploitation of Project results namely DSS Software tool and Transferability Analysis.

7. Transferability Index (TA-index)

The result of running the full Transferability Analysis, using the PoF TA Methodology, is outlined below. Its outcome is visualised in the below scale of the ***Transferability Index*** *(**TA-index**)*, reflecting how projects are recognised adequate and transferable or peered with other ports – independent from their innovativeness – having processed the multiple facets of the methodology in their evaluation.

While both the Transferability Score (TA-score - potential contribution to transferability) and Transferability Index (TA-index – ease of transferability) are part of the definition of Transferability, they are calculated independently at various stages, whereby the TA Score reflected in the PCI-tool, only reflects the potential probability of use in other ports. It is therefore different from the TA Index to be used after going through the full transferability analysis using the PoF TA Methodology, reflecting the "ease" of transferability and the evaluated measures/risk-management put in place to actually transfer the solution to other ports or to peer with other ports in the proposed project.

As the TA-score was defined on a scale from 0 to 4, whereby a project defined with a 0-score is used for stand-alone (one-port-implementation) projects, there is still possible at any stage for project owners to revise their strategic intent with their project and decide to open up the solutions or parts thereof for transfer to other ports. Also, as the evaluation can be done independent from the innovativeness of a solution, any project can run its potential and ease of transferability using the PoF TA Methodology beyond its initial purpose, allowing projects to be initiated at any time as multiple port projects (port-peering), or to obtain relevant insight of the project from results obtained in the full TA as explained in other sections of this document.

Regardless of its innovative character (a non-future-oriented project having a ZERO-score for innovativeness can still be run through the DSS tool) – a project can still be considered on its full transferability assessment through the evaluation of the potentials of acting as donor-to-adaptor port proposals and/or to propose a project using the innovative concept of an implemented project in another port project redesigned in such a way that it may become an innovative project in its own existence.

The ease of transfer will not be reflected in the PCI-tool, as it requires the project owners (donor, adaptor or peering ports) to run through the PoF TA methodology using the PoF TA Methodology, defining the scenarios for risk avoidance and success across a given number of ports. This will result in the TA-index.

From the process analysis, using the NICHES+ 6-step approach as defined in Chapter 5. Detailed Analysis using the PoF TA Methodology (step 5 and 6 are outlined below in this chapter), adapted into the PoF TA Methodology, a full transferability assessment table can now be constructed, which comprises of two parts:

3. **The scope of the Innovative Concept and its context, with impacts and measure of success towards contributing to the DtF KPI-set, DtF PCI and DtF TA, such as:**
   - Efficiency towards capacity restraints and possible expansions
   - Safety
   - Environment
   - Accessibility
   - Use – port(s), terminals, port-related supply chain actors and authorities
   - Measured statistics and KPI's by ports & port-related supply chain actors
   - Benefits (Cost Ratio Value) for the participating partners and the wider user community
   - Multi-criteria Analysis results, reflecting the outcome of related port KPI's.

4. **The components, their characteristics, ease of achieving level and contributions required to successful implementation, completed from the appropriate perspectives of:**
   - Strategies and policies
   - Services offered
   - Target users
   - Geographical coverage (port(s) + connected maritime and hinterland)
   - Funding for IC projects, collaboration on focus areas between PoF projects and for collaboration in port projects between EU and neighbouring countries
   - Project human and other resources required
   - Stakeholder involvement
   - Legal and contractual requirements
   - Organisational or institutional aspects
   - Technical requirements
   - Implementation and management aspects, including project, scope and risk management approach
   - Awareness and communication approach
   - Demographic issues and challenges approach
   - Wider perspective potential issues and challenges
   - Conclusions on potential transferability or roll-out of the innovative concept proposal or solution that will be implemented.

The full TA assessment of the transferability of a project is recommendable and covered when the evaluation and risk involved with the peering and/or collaboration between donor and adaptor ports are assessed and resolutions provided. In the latter scenario (port-peering) it is to be recognised as a mandatory process where port-peering within the same project (collaboration of multiple ports on the same project, as identified in the higher TA-score) is pursued. For a typical transferability assessment exercise, this will be from the viewpoint of the adopter port, while from the perspective of the donor port the experience matters. This can be guided with support from experts as appropriate. For an innovation port, considering the implementation of a new IC for the first time, it will be from the viewpoint of that port with advice from experts as appropriate.

When all the above steps are satisfiable developed and agreed upon by the stakeholders, the 2 last steps of the Niches+ 6 steps approach can be completed as part of the PoF TA Methodology. These steps are performed during and concluded after the project management and risk provisions of the components are identified, running the PoF TA Methodology, which will result in individual weighing (using same scale as the overall TA-index – see below) for each of the components and their characteristics as outlined in the DtF TA Worksheet:

- **step 5:** Assess the **ease of transferability** or difficulty in achieving the indicated level of importance of each component and their characteristic in the adopter port, resulting in the **TA-index (Transferability Index)**

+2	strong support for transferability
+1	modest support for transferability
0	neutral
-1	modest constraint for transferability
-2	strong constraint for transferability

Table 2: Scale for the Transferability Index (TA-index)

- It is recommended that assessment should be made using the scale from +2 to -2 results in the TI-index for reasons of recognising the true transferable projects
- This assessment may also result in changed levels of importance if the adopter port perceives particular characteristics as more or less important than indicated by the donor port.

Step 5. Assess the likely ease or difficulty in achieving the indicated level of importance of each characteristic in the adopter port

This is a subjective assessment informed by the ease or difficulty experienced in implementing the innovative concept in the donor port but modified by potential beneficial changes that could be made to ease implementation in the adopter port.
This assessment may also result in changed levels of importance if the adopter port perceives particular characteristics as more or less important than indicated by the donor port.

The outcome of Step 5 (anticipation of the TA-index) visualises how projects are recognised adequate and transferable or peered in other ports, independent from their innovativeness.

Relative to the TA-score reflected in the PCI-tool, it is very well possible that an initial evaluation through the PCT assessment (probability) has an apparent higher scale of possible transfer then or even conflict with the reflected TA-Index. The latter reflects the evaluated potentials through the PoF TA Methodology, turning the probability into ease of transfer and/or effective implementation at adaptor ports or peering ports for the proposed or realised project and its deliverables and/or solutions. In case of clear conflict or absolute difference between TA-score and TA-index, it is recommended to adapt the initial high-level TA-score to reflect the evaluated, risk-assessed and resolution-detailed project, reflected in the TA-index.

Whether or not a project can be transferred under a well-defined and managed environment will depend on the result – a positive TA-index (preferably +2) – of running the full transferability analysis, using the **PoF TA methodology** passing a set of analysed criteria and offered resolutions to proof the Ease of Transferability (EoT).

- **step 6:** Consider the set of values across the characteristics and assess the **ease of transferability** and any conditions that may be required

In the last step of the NICHES+ 6 Steps approach it is then recommended to define and agree the detailed characteristics, areas and targets of measurement to comply with the expectations set by the project consortium and/or stakeholders to the project deliverables:

- While it is essential to establish a set of expectations based on the strategic objectives and targets by the stakeholders, parts of this step can/will be performed during the actual execution of the project in a port-peering scenario or by the donor and adaptor port in case of a champion scenario, such as:
  - the actual reporting on risks successful managed,
  - reporting of meeting the targeted / expected measures, and
  - achieving the implementation and integration of the solution in the adaptor port as per stakeholder expectations.
- The detailed outline of this step is documented in the project (proposal) conclusions and recommendations from the donor port to the potential adaptor port or among the peering ports, considering constraints for transferability. These are the impacts of

transferability, bringing those components and characteristics with low or modest support (-1 and -2 marks) to the surface as the main issues or challenges:

- **Stakeholder involvement:** their specific needs and expectations, including benefits and possible sharing of benefits, and costs
- **Barriers towards project deliverable adaption and consequences** (possible not) identified or perceived at the donor port. These are the negatives (-1) and should be accompanied with the identification of the need for acceptance towards those barriers or alternative solutions to overcome those barriers
- **Balance the barriers and possible alternative resolutions** specific to the adapting port (to overcome the objections), **with the benefits** of the outcome or solution implemented.

- The reporting on the actual versus targeted measures and achieving the expectations will be part of the project management reporting during the actual transfer.

Step 6. Consider the set of values across the characteristics and assess the likely potential for transferability and any conditions that may be required

This final step is to draw conclusions about the potential for transferability through consideration of the factors identified and the assessment values ascribed to each.

- If there are one or more strong constraints to transferability, it is likely that the innovative concept is not generally transferable, unless the constraining conditions can be overcome in the adaptor port
- If there are no strong constraints, but one or two modest constraints, it is likely to be difficult to transfer the innovative concept, unless the constraining conditions can be properly addressed
- If there are no constraints at all, it is likely that the innovative concept could be successfully transferred, particularly where supporting factors can be put in place.

Potential considerations may be:

- Positive impacts and measures of success, particularly cost benefits, which suggest that the solution under consideration for transfer should substantially cover its costs
- High degree of compatibility with prevailing strategies and policies, including pollution reduction, transport modes, accessibility and sustainability
- Services offered, particularly improvements in quality, frequency (and reliability), information and accessibility
- Target population
- Geographic area
- Financing the transfer
- Technical facilities
- Demographic issues.

When considering constraints for transferability, i.e. impacts or those components and characteristics with low and -2 marks, the main issues are seen to be related to:

- Stakeholder involvement: particularly the difficulty to include all stakeholder requirements and expectations in the project
- Further potential barriers are seen as negatives (-1).

It can be concluded that there are a number of barriers to the implementation, however manageable. In such scenario it is essential that mitigating strategies are put in place, stakeholder awareness programs promote the transfer and the process of transfer confirming the strategic visions of the parties involved, and users of the solutions are invited to attractive and clear

motivational training and follow-up approaches during testing and deployment of the adapted solution. This can be conducted by assigned experts or by resources from both the donor and the adaptor port – for example through a train-the-trainer approach. These steps should be part of a transferability process to overcome the objections and allow implementation to proceed.

Relative to conditions that may be required under step 6, DtF may support potential initiatives through the PoF NoE. These support actions can facilitate the project teams during the transfer and the concluding phase of projects, enabling follow-up and guidance during the actual implementation of the innovative concept.
In this respect the Transferability Index (TA-index) can also be useful during and after the implementation of a transferred IC.

The outcome of the consolidate reflection of KPI contribution (PCI-score), innovativeness (I-score), potential contribution towards transferability (PCT: TA-score) and ease of transferability (EoT: TA-index), combined visualise how projects are recognized adequate and transferable or peered in other targeted ports, based on an innovative concept (IC) or independent from their innovativeness.

The TA-index is currently not evaluated in the PCI Tool, but its result can be reflected in future releases of both the DtF PCI and DSS tools – once they are actively updated with available data from ongoing and delivered projects. This will then provide a clear overview on where projects position in terms of their overall PCI-score, I-score, TA-score and TA-index.

This distinction in project proposals, combined with the level of TA-score and innovative characteristics, defines the transferability of a project proposal, therefore increases the potential success rate of a project. In other words: *promote innovations that are aligned towards the Port of the Future, vision 2030, so that projects can implement these innovations under the various program calls set by the EU Commission.*

The TA and its PoF TA Methodology can also be used by project owners and stakeholders to ensure that their specific objectives can be met by the project under review and align their project objectives with the UN SDGs. Other examples of the use of the PoF TA Methodology are outline in various areas of this document.

As part of the collaboration efforts between ports and dissemination for best practices around innovative concepts, multiple ports may jointly lead the implementation as best in class or assist other adaptor ports in implementing same scaled solution, considering the transferability analysis outcome through risk management of recognized barriers and constraints.

The exercise of the full TA and use and outcome of the PoF TA Methodology may result in a required update of the initial TA-score on the potential contribution to transferability. Also for adaptor ports, they need to evaluate if the measures for risk management adapting the IC or innovative solution in their port environment fits the requirements and aims they target in line with their strategic and operational Objectives. Adaptor ports will have to go through a thorough assessment of these measure put in place by the donor (Champion) port, from their perspective and expectations, involving the stakeholders to which impact is to be anticipated. It may well be that the projected measures established by the donor port, are not adequate or sufficient for a donor port to confidently commence the process of transfer. In collaboration with the donor port, they may therefore have to establish additional and/or adapted measures and risk management provisions aligned to the expectations of their port environment. At the adaptor port it is therefore of ultimate importance that the measures for performance indicators are well defined, expectations of improvement agreed and set with the stakeholders and actuals regularly aligned with the

expectations, as part of the execution of the Risk Management Provisions agreed upon between the donor and adaptor port, within the boundaries agreed upon in the peering agreement.

As different ports, port actors and other stakeholders may have differing visions and strategic objectives reflected through their operations, it is essential to consider mutual and individual benefits at both ends (donor and adaptor port or among peering ports). The successful realization of an innovative concept or – in the context of the TA – of a recognised transferable solution, will depend on many factors as outlined in the TA and its recommendations of the PoF TA Methodology. These factors need to be addressed in any new location as port operate in differing markets and environments (hinterland, stakeholders, port and supply chain actors, …). In this process it is essential to collect quantitative data before, during and after the implementation of the deliverables. The approach should

- Define parameters to be measured (what), best approach to measure and their metrics (how)
- Measure and analyse the starting point (As-Is)
- Establish a clear action plan, including targets/expectations and recommendations to minimize its negative impact (To-Be)
- Measure at different phases of the project implementation of deliverables, during the test phases and the actual 'in-operation' of the integrated solutions for an agreed period or permanently.

Challenges:

There are no ports with exactly the same conditions. Ports can be different from each other in many aspects of transport modes and connections on the maritime (ocean carriers, short sea shipping, mother vessels and feeders, …) and hinterland served (road, rail, inland waterways, hoover loops, …), handling characteristics and operations up to essential differences such as a mixture of bulk, gearbulk, containers and liquids), volumes handled and types of handling equipment and capacities. Further differences can be identified relative to the role of ports (core and comprehensive ports, local niche market / commodity(ies), maritime and hinterland cluster roles, private owned and operated versus public authority run ports, independent port terminal operators and industry operated terminals, …), as well as industry-linked ports, city-hosted ports, infrastructure level and technology, and many other factors including geographical, environmental, demographic and socio-economic conditions, experience and knowledge capacities, institutional and legal frameworks. In most cases it will also be necessary to liaise with stakeholders and ensure their engagement and support along the process of transferring a solution under various scenarios. Therefore, it is a challenging task to make sure that success in one port can be replicated in another port.

For more details on the NICHES+ approach, see the above 6 steps outlined or obtain practical views of how the NICHES Guidelines for Transferability (Annex III) are used in project environments which provide an in-depth analysis strategy with examples along the 6 steps.
In Annex II - PoF TA Methodology in the context of PoF projects an overview of critical factors and risk management areas is outlined as a guide to during the specific process of transferability assessment of a project or to establish the parameters required between peering ports and/or donor and adaptor port in a champion scenario.
Annex I facilitates project owners and stakeholders to establish a relational view of the project strategic objectives with the 17 DtF High-level strategic objectives and KPI's, which in turn relate to the 5 WPSP Focus Areas – and/or a relationship with the 10 AIVP Agenda 2030 Goals, and ultimately aligned with the UN SDGs. This table is a handy reporting tool for internal documentation and stakeholder reporting, as well as enabling swift evaluation of past, ongoing and future projects by the PoF DtF-NoE and the EU Commission and Program Call owners (INEA, DG MOVE and other involved EU institutions).

8. Key Benefits of the PoF TA Methodology

The PoF TA Methodology shows the **success factors and barriers** to implementation and in particular, if it is practical to transfer an IC implemented in one port to another where the context may be different. By implication, the same approach can be used to show if it is practical to implement a brand-new concept in an innovation port and in the donor port, within its own particular context. Stakeholders at both ends of the equation want to understand the success factors and barriers to implementation before proceeding.

Successful implementation of an innovative concept or package of concepts in a given port should provide grounds for transferring the concepts to other ports if the right conditions are met. However, the replication of a success in a different context is subject to certain conditions.

Engagement, motivation and ongoing communication with all stakeholders involved, are essential to keep buy-in and realisation of the project(s) as per targeted expectations. In this context it is opportune to relate both on positive and negative experiences along the replication of the deliverable from donor to adaptor port or in a port-peering scenario.

The PoF TA Methodology and its use of the NICHES+ 6 steps approach, provide the following unlimited list of benefits which individual and peering ports can use as a reference[10]:

- Self-assessment tool to be used by individual partners and in collaborative context of port-peering
- Encourages the upscaling of local, national and transborder innovation processes and solutions
- Facilitating successful transfer of proven solutions in the donor port to multiple adaptor ports
- Share the experience of innovation concepts implemented in the donor port
- Practical approach based on the NICHES+ 6 steps approach, adapted and expanded as the PoF TA Methodology for port environments and their connected stakeholders
- Realise effective port clustering within their corridor and across the TEN-T Corridor Network
- Enable port projects that go beyond successful realisation of technical planning, but proof realisation of transferable and innovative concepts
- Clear upfront modelling and financial forecasting
- Well-defined deliverables and their context in the operational environment, up to the necessary detail of its components and impacts in both donor and adaptor port, where the conditions may be different
- Verifiable assessment of the ease or difficulty in achieving successful transfer of the solution at each level of its characteristics at the adaptor port
- Consider quantifiable measures and values across the solution components in the adaptor port, comparable with the evaluations realised in the donor port, through the upfront assessment the likely potential and ease for transferability of a solution that can be demonstrated from the donor ports into adaptor ports, enabling the further upscaling of its transferability
- Shared and agreed upon financing of the project in case of port peering
- Shared knowledge from the donor port with the adaptor port
- Shared knowledge by the unified team of the peering ports, or at least an advisory role and/or an observer role to ensure future roll-out to other ports

[10] The list has been adapted from the ***Guidelines for Assessing the Transferability of an Innovative Urban Transport Concept*** (**NICHES+ by Polis** - www.niches-transport.org) and complemented with specific characteristics applicable in port environment.

- When adapting the PoF TA Methodology, organisational and institutional aspects will be improved or even simplified
- For Innovative Concepts involving significant infrastructure or technological developments some major constraints and barriers upon transferability are identified upfront and managed
- The greater the costs and impacts associated with the intervention the greater the likelihood of barriers to transferability being identified.
- The more radical the intervention the greater the likelihood of barriers to transferability being identified
- Share high investment costs, while benefits are realised at each of the local environments
- Improved market penetration after realisation or establishing new markets with optimised efficiencies in the improved or widened service of the operational environment
- Market improvements can be considered as competitive advantage, but learning from the competitor in a collaborative peering environment opens the potentials for operational collaboration and establish improved and/or new services
- Faster and wider realisation of cost-effective, operational efficient, safety and security improved, sustainable and environmentally friendly and ultimately economic and social adaptable solutions implemented across multiple ports, realising national, regional and international benchmark for comparison as best-in-class situation
- Shortening of the implementation path
- Promote Innovative financing strategies
- No standard solutions to overcome barriers to mainstreaming port and port related innovation
- Enables a qualitative dialogue between ports and ports with their local stakeholders and host cities.

For a donor port or peering ports, there is considerable prestige in holding the status of a pioneer or catalyst for a transferable solution which makes a significant contribution to more sustainable and economically efficient port operations. This status may result in direct benefits for the donor port, particularly when seeking funding for projects and solutions with an innovative concept where the track record of success – both in its own context and as a catalyst to wider implementation benefits) may prove persuasive. Donor ports may also benefit from being in a position to sell their experience to future adopting ports.

For an adopter port, there are clear benefits when seeking to introduce an innovative concept from being able to demonstrate feasibility by reference to an acknowledged existing successful application. It also reduces the risk of implementation to be able to point to proven success. Equally, an adopter port can learn the lessons from the donor port's experience of implementation to hopefully avoid mistakes and better exploit opportunities associated with implementation.

9. Conclusions and Recommendations

The TA-index will assist to identify innovative projects, with a potential for transferability to other ports. It allows to draw conclusions or recommendations about whether a project is applicable/practical in other ports (i.e. success factors and barriers or patterns to facilitate the transfer), using the PoF TA Methodology as a practical tool to identify the project (deliverables / solutions) potentials and ease for transferability.

While the use of the TA and its PoF Methodology is not limited to increasing the score in an EU call for projects, the tools can be used independently by project owners and stakeholders to ensure their specific objectives can be met by the project under review.

The following use of the Transferability Analysis – as an unlimited list – provides an overview of multiple purposes for users to make use of the PoF TA Methodology and Indexing:

- EU Commission / Policy and Program Officers for assessment of validity as a proposed PoF project
- project proponent or consortium for validating the relative EU calls, both to evaluate their relevance on the terms set and transferability of their project among multiple targeted ports in the EU or with neighbouring countries
- for private commercial purposes by the project initiator(s) to evaluate their innovativeness of a project and eventually to decide whether they want or should peer up with other ports who may have similar needs and/or resource available to complement the successful realization of the innovative project.

In conclusion the main purpose of the Transferability Analysis is to promote peering-up between ports to collaborate on innovative projects so that the solutions and innovation can be applied in as much as possible multiple targeted ports which fit the criteria for implementation. This can be at the time of proposing the project to involve more ports or facilitate the evaluation of transferring the solution to other ports based on the conditions of feasibility and constraint analysis. The DtF Transferability Analysis provides the means to recognize the **potential contribution to transferability** and recognize the targeted ports to peer with or to act as a donor port for interested adaptor port(s). These objectives apply for single-port, peering ports and donor/adaptor ports for transnational, cross-border and initiatives with neighbouring countries.

Assessment of past projects using the PoF TA Methodology

While there may be innovative ways to implement or adapt existing solutions which may also increase the transferability, the specific goals and complexity of projects and their targeted port environments, make it difficult for the DtF team to evaluate past projects on their potentials for transferability, without having an in-depth knowledge of those projects and access to the engagement of the project owners in such an evaluation. As observed during the project evaluations of the DtF D3.4 PCI Assessment, either the information is not made publicly available and/or many project teams have closed the project consortium based on realisation of their projects and deliverables, or the required information is not publicly available to perform a detailed assessment. The DtF team cannot assess the validity and aims of the projects relative to their intentions to enable transferability of their (innovative) solutions. An evaluation of projects towards their transferability potential and effective realisation of such an aim, can only be assessed in consultation with the team, as would be practical for evaluation of the results.

On the other hand, published experiences by project owners or facilitation by sector associations, shows the potential and the commercial success of various initiatives, such as for example:

- In early stages of implementing cold ironing in the port areas, only few ports were interested. Thanks to its beneficial results, more and more ports started or are considering the installation for cold ironing facilities in their port environment,
- AIVP's research on cruise line passenger information resulted in a wide acceptance by passenger terminals to adapt using the proposed common passengers list as a common standard across their operations

This shows that one does not always require to have access to in-depth knowledge of projects to identify the success stories. Identifying trends whereby same or similar solutions and/or approaches show up in various port environments, proof the success of the initiator.

However, it does not take away that future projects, should consider the potential and the ease of transferability of their project and solutions, using the full transferability analysis and methodology as proposed by DtF for new projects under the PoF vision 2030 programs. This will promote wider applicability of the efforts and – independently from funding these projects – at the same time promote port peering and collaboration between ports under the Champion approach scenario.

The closest project evaluated in the DtF D3.4 (PCI Assessment), defining its potentials for transferability, was AEOLIX. While various areas of the project documentation initiate information and readiness for transferring the developed and deployed solutions in project partner's environments and possible other ports, outside of the project consortium and living labs, there is not sufficient detail and knowledge available to use the PoF TA Methodology, to allow for a realistic TA-index assessment. As mentioned above, it is essential to perform the evaluation of a full transferability analysis using the below outline, including outcomes, in collaboration and presence with the project team, which in this case is no longer available as the project was closed mid-2019.

Otherwise, there are a lot of reference materials (see annex II – Publications and References) which not always pattern the requirements for typical PoF projects, but may provide good samples on how to approach a detailed TA using the NICHES+ methodology as adapted to specific requirements for ports and port actors outlined in this document. The samples provided in the reference Annex II relative to urban transportation definitely are worth to look at.

Over time, various projects have used the POLIS NICHES+ methodology to identify and assess their project deliverables on the ease of transferability. Many of these projects are InterReg projects focusing on solutions across a variety of topics of essence to cultural, coastal, local and cross-border EU communities. Many of these projects focus on urban transportation (including cargo movements and other issues related to road, rail and IWW), none of them have a real emphasis on maritime and port related environments, which resulted in the DtF approach to adapt the NICHES+ methodology to a more aligned PoF TA Methodology. However, the published examples by POLIS and the project owners provide for a wealth on insights on how to approach the transferability methodology. A list of these can be find in Annex III - Publications and References.

As a more PoF related example the following project is illustrated which has an impact analysis, in part related to cruise terminals, making optimal use of the NICHES+ methodology.

The **InterReg project co-Evolve**: *Transferability plan at pilot area and regional scale (country and transboundary level), developed and published by - Fundación Instituto Portuario de Estudios y Cooperación de la Comunidad Valencia, covering human activities and natural systems in touristic coastal areas, allowing sustainable development of touristic activities (including cruise ship*

destinations) based on the principles of Integrated Coastal Zone Management (ICZM) and Maritime Spatial Planning (MSP).

Figure 7:
In this transferability plan a definition of different indicators are defined and related to the environmental, societal and economic impact areas, from where the project defined its approach to balanced governance.

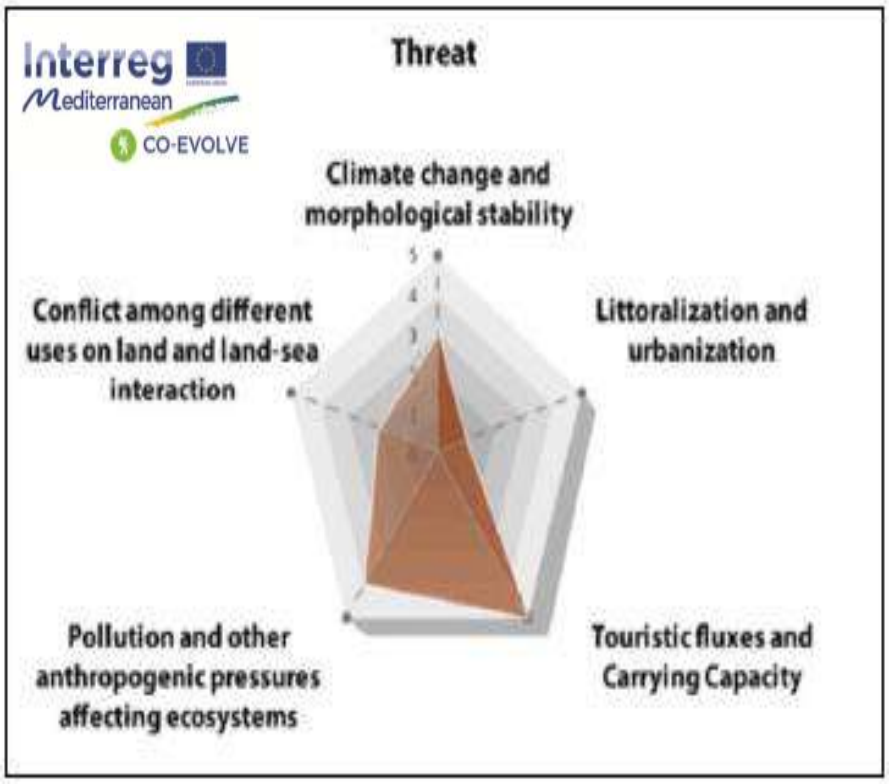


Figure 8:
The diagram to the left depicts the impact analysis of a specific threat, enabling the monitoring of potential multiple risks relative to implementation of the project deliverables, providing a clear view on where the impact areas matter in the deployment of the solutions to different coastal areas and port-cities with cruise line facilities.

Guidance and facilitation by the PoF DtF Network of Excellence

For future projects, project owners and stakeholders can consider the outcome and use of the PCI, TA and DSS analytics, based on selective parameters provided about their strategic objectives and targeted measures of performance indicators, to obtain deeper insights in the goals and aims of their projects and company operations in which the solutions will be integrated. Wherever possible it is advisable to contact the specific port or project partners to understand the project goals and targets to compare the expectations set in the new project or vision to implement similar innovative solutions as were implemented in the port environment of the project evaluated. The **DtF Network of Excellence** (PoF-DtF NoE) can be a connecting facility to obtain contacts and can act as a facilitator in the process of collaboration or potentially port peering to enable the 'CHAMPION' approach to assist ports to adapt to the already proven implementations in donor ports and advanced guidance in the use of the recommended DtF Tools.

For the currently ongoing **PoF RIA projects**, the DtF team has held RIA Workshops (June 2020) as an initiation and guidance with the project teams to obtain a better understanding of the potentials for transferability of their project deliverables within the project consortium port participants and port environment, adapting and managing their unique requirements in port operations. Likewise, guidance is provided towards identifying the potential contributions to transferability and future port peering to deploy the currently ongoing implementation of solutions in the selected Living Labs. While the scheduled DtF workshops may only focus on initiation and understanding – due to resource availability within the available timeframe for both the RIA projects and the DtF team – DtF is to assist the PoF RIA projects to adapt their approach to the recommended PoF TA Methodology and for the PoF RIA projects to commence to adapting their applied strategies in these areas and anticipate the required measurements and risk management approach in line with the DtF recommendations. At a later stage, the further facilitation and follow-up can be provided by the DtF-NoE and experts assigned to assist in optimally applying the transferability tools between the RIA project port participants and interested/targeted ports within the EU TEN-T corridor network.

As during the PCI Assessment was experienced, projects evaluated do not have the appropriate data for or have not considered performing an assessment on their transferability potentials and effective risk management. While some projects indicate a vague reference to transferability, past approach has never been to go into more details of achieving transferability of the solutions delivered across other ports.

The DtF project anticipates an information session on the Transferability Analysis and its PoF TA Methodology as part of the planned DtF Expert Workshop and assistance towards the three PoF RIA projects. It is to be understood that the PoF RIA projects are only half-way through their project cycle. If the PoF RIA projects can anticipate to organise their data and reporting for the potential and ease of transferring their solutions to other ports, the provided information of their Transferability Analysis may then be taken up in the DtF D5.8 – Final Report on Exploitation on Activities and Update of the Exploitation Plan (PER). Likewise for the evaluation feedback from the DtF Expert Workshops.

Continued support on the DtF tools and methodologies will be provided by the PoF Docks the Future Network of Excellence (PoF DtF-NoE).

In conclusion

The DtF Transferability Analysis is a useful tool in the context of the aims for the Port of the Future, Vision 2030:

- The PoF TA Methodology shows the success factors and barriers to implementation and in particular if it is practical to try and transfer an IC implemented in one port to another where the context may be different.
- By implication, the same approach can be used to show if it is practical to try and implement a brand-new concept in an innovative port and its own particular context for a champion and a peering scenario between ports..

It is anticipated that further guidance of port management and project owners in actually making a solution transferable and integrating the solution in another port environment, is essential to successful realisation. The PoF DtF-NoE can play a significant role in adapting the PoF TA Methodology.

It also should be considered that innovative concepts and transferable solutions and project-peering do not only apply between the EU core and comprehensive ports of the TEN-T Corridor Network, but also replication into smaller ports and transboundary collaboration with ports in EU neighbouring countries, such as in the Mediterranean, Baltic, Balkan areas and countries who have an association agreement with the EU. Likewise the collaboration between ports and cities and their urban area of the serviced hinterlands, becomes an ever more important topic to be explored and achieved by ports to improve port-city relations.

Furthermore, as outlined in this DtF TA and its PoF TA Methodology, the promotion and facilitation of collaboration between EU PoF projects (e.g.: RIA projects) and between ports and port projects of the EU and neighbouring countries (Balkan, Adriatic/Baltic, Mediterranean Basin, EU/UK) is well established for recognising the potential opportunities and intentions for transferability, from concept to realisation. This enforces the concept of innovations aligned towards PoF Roadmap 2030, enabling EU funding on specific IC projects and for transferability on scope related areas and collaboration between EU and its neighbouring countries.

More information can be found under Chapter 1 - From Potential Contribution to Ease of Transferability, under the sections p.13-14: ***Facilitate the collaboration and transferability between EU projects*** (PoF RIA and other projects) and ***Facilitate port and project collaboration with EU neighbouring countries***

Appendixes

Annex I – TA WORKSHEET – practical guide and instructions

Upon the experience and recommendations by the PoF RIA projects during the June 2020 held PoF RIA Workshops, the initial templates of the TA Worksheet have been synchronised into one TA Worksheet, with 2 major overview tabs and 20 details tabs + admin tab (data-tables):

- Intro and instructions for use of the TA Worksheet
- Scores & Indexes (one-view on all assessment resulting in the different scores and indexes (future releases will also include graphs of the different scales applied)
- **HLSO Overview:** High-Level Strategic Objectives (main overview with project information and reconciliation of information from other tabs
- Info tabs on PoF SO's, PoF TO's, DtF Measures, I-score, TA-score and TA-index
- 5 evaluation tabs relative to the 5 WPSP Focus Areas (Sustainability, Port-City, Governance, Resilient Infrastructure and Safety & Security
- **PER Overview**: Project Evaluation Results (PER) of the PoF TA Methodology reflecting the assessment of all PER Areas with their Components and Characteristics
- **PER detailed assessment**: 11 evaluation tabs: pre-conditions, Niches 6-steps, Success Factors, Risk Management & Provisions, Benefits and Training

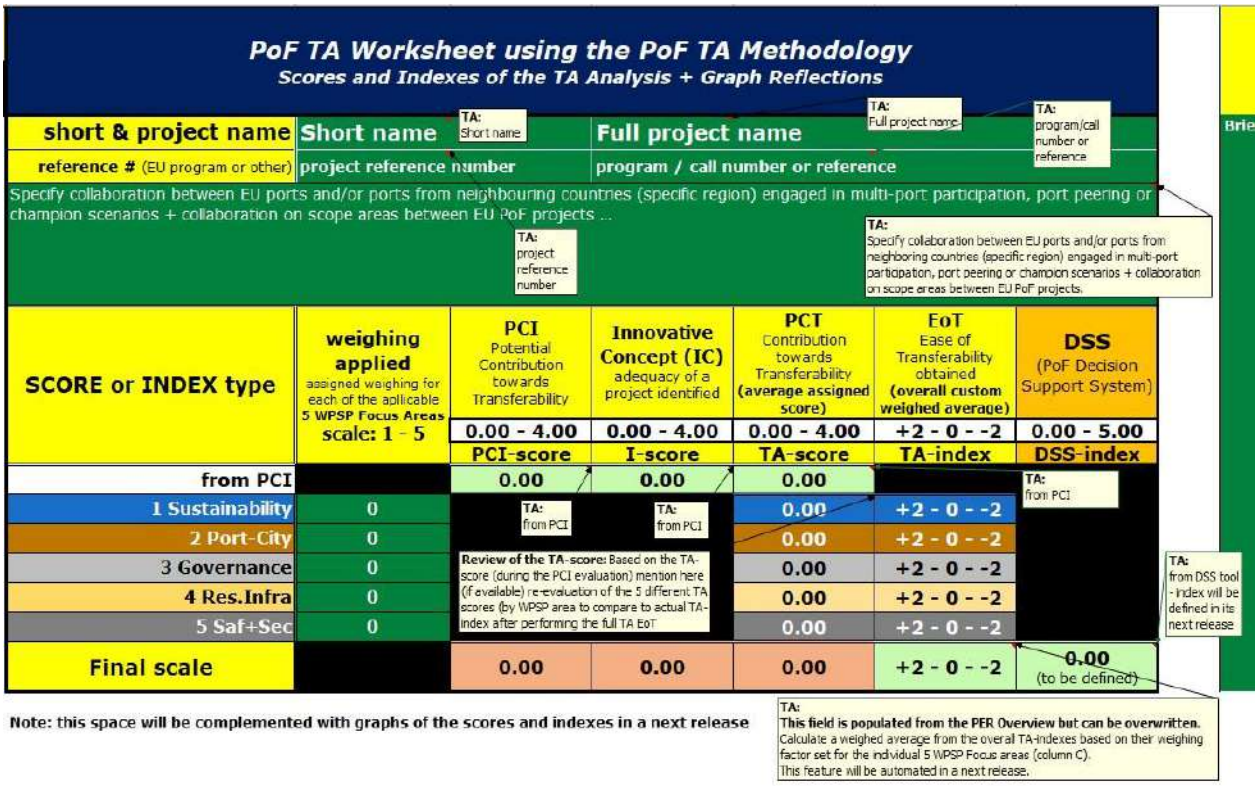
TA Worksheet intro and instructions (tab 1)

Quick overview of the tabs in the TA Worksheet			
HLSO Overview	Project info and reconciled info from or for the other tabs	PER Overview	Overview of the Project Evaluation Results (PER) by Living Lab or Pilot
PoF SOs	DtF Topics and HLSOs related to the 5 WPSP Focus Areas (+use)	Scores & Indexes + Graphs	Calculated graphs from the weighed scores and indexes
PoF TOs	DtF TOs - unlimited list (info only + applied weighing & use)	pre-conditions	PRE-CONDITIONS worksheet using the PoF TA Methodology
DtF Measures	DtF Measures - unlimited list (info only + applied weighing & use)	STEP 1	impacts and measures of success using the PoF TA Methodology
I-score	Anticipated I-score: IC introduced or applied, using the I-score scale	STEP 2	evaluate the need for up-scaling (or down-scaling) at the Adaptor Port
TA-score	Anticipated for PCT = Potential Contribution towards Transferability	STEP 3	identify main components of IC and its context relevant to transferability
TA-index	measured evaluation for EoT (Ease of Transferability) weighted average	STEP 4	identify component characteristics & its achievement in current context
1 Sustainability	WPSP 1 - SUSTAINABILITY Climate & Energy worksheet	SUCCESS	SUCCESS: Key characteristics of a successful project
2 Port-City	WPSP 2 - PORT-CITY Relationships Dialogue & Community Outreach worksheet	RISK	RISK & PROVISIONS: Assessment & Management Provisions

3 Governance	WPSP 3 - Governance & Ethics worksheet	STEP 5	assess ease or difficulty in achieving each characteristic in adopter port
4 Res.Infra	WPSP 4 -Resilient Infrastructure worksheet	STEP 6	set of values across characteristics & assess transferability & conditions required
5 Saf+Sec	WPSP 5 - Safety & Security worksheet	Benefits	Benefits, improvement of KPI's & ROI with CBA/SMART measurable values
DATA-tables	ranges used for drill-down selections in the worksheets	Training	Training programs for all engaged stakeholders and their employees

As much as possible the current TA Worksheet (version 3.7) avoids duplication of information and re-entry of same data) and has automated a lot of functions based on data-tables and streamlined the look and feel of the assessment through the use of consistent colour coding.
Future versions will have some further advanced automation of the calculations of the different aspects of the TA-index. Currently a number of manual calculations need to be undertaken.

One-view overview of all PoF DtF Scores and Indexes (tab 2)



Below some additional information relative to the assessment exercise of transferability using the TA Worksheet.

DtF High-level strategic objectives and KPIs

A combination from the foundation of the 5 WPSP Focus Areas has been developed in an outline which corresponds with the 17 UN SDGs, related to the DtF High-level Strategic Objectives (TOPICS), translated to the UN SDGs and the relative DtF Measures of aggregated Performance Indicators as defined in the DtF WP3. Together with a relationship to the 10 AIVP Agenda 2030 Goals, the developed spreadsheet forms a clear overview for project owners to combine the results of their project assessments from the different DtF tools (I-score, TA-score, PCI-index, TI-index and possible the DSS-index (if available from the DSS-tool).

PoF TA Methodology tool and scoring

For the assessment of a project towards the PoF TA Methodology, an additional spreadsheet has been developed, providing the different characteristics or components to which a project can be evaluated and how the project establishes it's overall TA-index from the detailed outlines related to the objectives and risk management provisions established to facilitate the easy of transfer (EoT) of solutions from one port to another, where the conditions may be different from the donor or champion port. Not all components are to be evaluated by the project owners. Those which are relevant to the project and needs for transferring the (innovative) solution to another port using the Champion or peering scenarios as outlined in this TA document.

As the TA Worksheet aims to be a working document for the project owners, a spreadsheet has been created to facilitate the recording and communication with stakeholders. As not all components or characteristics can be defined upfront, rather a process of evaluation and development of the risk management provisions applied as the project deliverables emerge and the conditions for transfer at an adaptor port can be recognized and emerge from the evaluations and dialogue.

As the spreadsheet is an empty worksheet to be used by the project owners and has a rather large space requirements, only screenshots of the tool are presented below. The TA Worksheet – which also include the different data elements, such as the TA-score, TA-index, DtF SO's, DtF TO's and DtF Measures (KPI's) included on different tabs for reference purpose - is available in MS Excel for use by project owners. For sample-results from the different DtF scores and indexes, the **DtF D3.4 PCI Assessment** and its Project Evaluations worksheet performed, can provide an insight on the expectations to process the project information in the TA Worksheet on Project Evaluation Results (PER) of the PoF TA Methodology.

The TA Worksheet established, aims to provide the project owners an easy tool for recording the results from their project evaluations, which can be used for sharing and dialogue with stakeholders of the project and the PoF DtF-NoE.

The tables, among other DtF Tools, will be demonstrated during the Workshops planned with the PoF RIA projects. Further guidance to the RIA projects will be considered when the project data becomes available by the project owners.

Instructions on the use of the TA Worksheet

zoom	*INTRODUCTION to the TA and PoF TA Methodology Worksheet High-level Strategic Objectives (HLSO) & Project Evaluation Results (PER)*
60	

#	INSTRUCTIONS on the use of the TA Worksheet
	Read the TA & PoF TA Methodology Guide (PDF) Read through these basic instructions to familiarise with the overall structure and the requirements for completing the exercise of going through the actual Transferability Analysis for your project(s). Follow the instructions below to ensure proper use of the TA Worksheet.
	TA Worksheet v3.7 (SAVE THIS TA WORKSHEET WITH YOUR PROJECT NAME before starting the assessment - keeping the original) This version has combined the High-Level Strategic Objectives (HLSO) and the Project Evaluation Results (PER) into one TA Worksheet, simplifying the inputs based on selection drill-down menus and automating functions, avoiding duplication of entries. This version contains now the information tabs and the DATA-table tab (very last one) all with far more integration and links in one worksheet, to enable all in one view, avoiding as much as possible double input, reusing data already entered and a lot of drill-down list to choose from to ease the input and processing to reach the evaluation of your project(s). You may notice that in this release already contains a lot of fields automatically prepopulated, while other automation (mainly around the calculation of the weighted averages of indexes and combined TA-indexes related to each of the 5 WPSP areas) will take place in next releases of the TA Worksheet. All colour codes are provided on the INTRO tab of the TA Worksheet. **Follow the instructions below to ensure proper use of the TA Worksheet.**
	All tabs have been set at their optimal working **zoom size**. Left top corner on each tab provides the original %-zoom (based on full screen use of on 68.6 cm / 27 inch screens) in case you had to zoom in or out during the process.
	On the right you will see a quick overview of the tabs in this TA Worksheet, which are split in two different parts (dark blue tabs): The **HLSO Overview** and the **PER Overview**, each followed by their respective related tabs
	Scores & Indexes + Graphs
1	This is your starting tab to provide general information about your project and to bring the PCI-score, the I-score and the TA-score obtained during the PCI evaluation forward into this TA Worksheet. The information provided in this tab will populate automatically in all the other tabs.
2	Start with providing the general project information (dark green fields): - Project Short Name, - Project Full Name, - Project Reference Number, - Program Call (or other framework) Reference, - a brief description of the project with visions, targets and objectives and - specific collaboration between EU ports and/or ports from neighbouring countries (specific region)

	engaged in multi-port participation, port peering or champion scenarios + collaboration on scope areas between EU PoF projects. Then provide the project owners reflection of the weighing for each of the 5 WPSP areas on a scale 1-5 (NOTE: this has consequences through-out the TA worksheet tabs) and enter the PCI-score, the I-score and the TA-score as was assessed in the PCI evaluation. The TA-score can be adapted to reflect a scale based on the overall TA-score but then now for each individual WPSP Focus Area – you may overwrite those fields under PCT. The TA-index (EoT) is populated automatically based on the progress of the Full TA evaluation. A weighted average in this release still needs to be calculated manually, based on the weighing relative to each of the 5 WPSP Focus Areas. Further instructions may be provided on the respective tabs themselves.
3	The notes on this tab and in others can be left from the screen if they are too disturbing, by selecting REVIEW, then drill-down on the Notes and select/toggle between 'show all notes' ON or OFF. Do not delete the notes as they provide the information to be entered which will no longer be in the field once you overwrite.
4	In a following release of the TA Worksheet, we will provide for automated graphs of the different scores and indexes (general weighted averages and for each of the 5 WPSP Focus Areas). This will be combined with automating the calculations of the weighted averages of the TA-scores and TA-indexes.

PoF HLSO+PER overview

1	Note that the entire TA Worksheet is centred around the ports – not the 'other participants' however as their roles are important to the project, they should be mentioned in the 'HLSO+PER Overview' tab, under the second part of the tables, focusing on those partners in the project.
2	Go through each line and either select from the drill-down menus or enter the information requested
3	Start with the Port Participants (ports may have to be replicated to enable multiple Living Labs or Pilots applicable to the same port or even because multiple HLSO's apply per Living Lab or Pilot.
4	Then with the other project participants in the section below it (note that while team leads can be under the 'other participants' as well, they do not further impact the lines of the Living Labs and the assignment of WPSP Focus Areas, AIVP Goals, PoF Topics, neither reflected in the assignment of the PoF HLSO's).
5	Only use the Dark TEAL fields if you need additional fields for each column (don't enter here but in the respective field on the 'DATA-tables' tab) or you can use the Light TEAL fields to enter them manually without having to update the Data Tables (be aware that these fields do not update anywhere this information and that you will need to manually keep track).
6	Provide brief description of the Living Labs or Pilots for each port (so you may have replication of ports because – or you can combine them in one field but be aware of formula errors – of participation in multiple living labs).
7	Select the WPSP Focus Area, the AIVP Goal for each of the ports identified in the columns. Select the PoF Topics as a guide to select the HLSO's next to it.
8	Select for each of the Living labs or pilots the corresponding PoF HLSO – if multiple HLSO's exist for the same Living Lab, you will have to duplicate the port which is involved with the Living Lab or pilot.
9	Then apply the weighing (importance/relevance) for each of the selected PoF HLSO's – note that it may be possible that a same HLSO applied for one port and its living lab may have a different weighing for another port and its respective living lab.
10	**If an area or a line item (component or characteristic) is not applicable to your project environment, scope or deliverable, pilot or living lab, it is recommend to 'grey-out' the entire line or area, to ease the focus on what is essential for your project - DO NOT delete lines which may corrupt the entire worksheet or show errors in particular calculated fields.**
11	Enter the PCI-score, I-score and TA-score from the evaluation in the PCI worksheet – note there is no TA-index at this stage as it is part of the TA worksheet. Note that the DSS-index is not yet automated, and you only need to enter the DSS-index if available (it has no further complications to the TA worksheet and will not show up in any other tab of the TA worksheet).

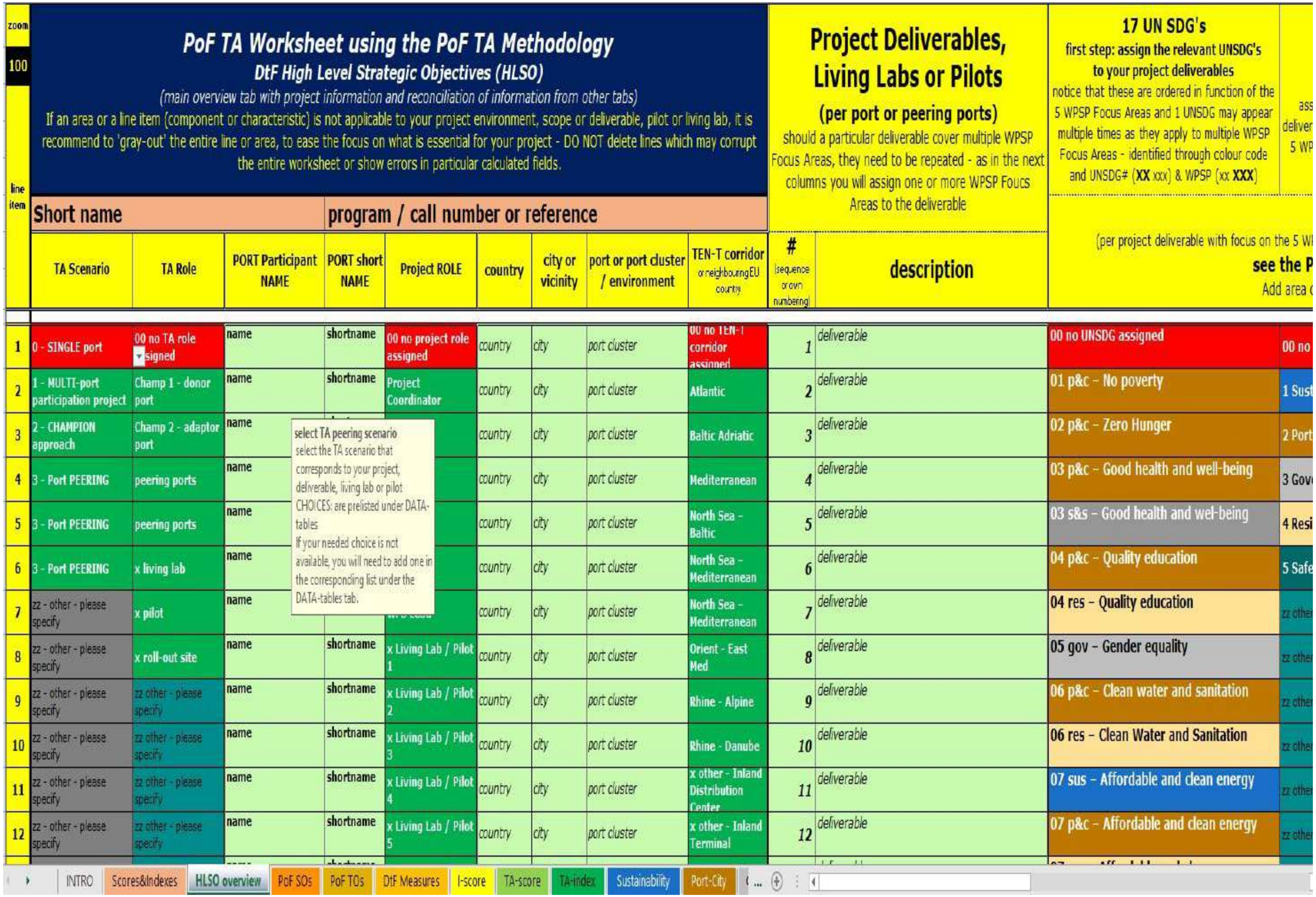
12	The rows below on the PCI-, I- and TA-scores have to be populated manually (if these scores were assigned per Living Lab in the PCI worksheet). The TA-index will be populated automatically (noted that the overall project TA-index and the TA-index by Living labs are weighed calculations based on the weighing you have assigned to each Living Lab under the assigned HLSO's.
13	Wherever possible, add comments in the blanc spaces for each line created, be it to ensure history or reasoning behind a certain decision taking during the TA process (analysis).
14	The tabs PoF SOs, PoF TOs and DtF Measures are currently only used for information purposes, as are the applied weighing and use columns. At a later stage we may automate these to be used in the other tabs of the worksheet. For now you may enter which of the detailed lines are being used and their weighing (using a scale 1-5), respectively in the Project Common Index (PCI) and the Transferability (TA) - we expect that those will be the same in each of the tools, but there is flexibility allowed if needed.
15	Then go to the different tabs of the 5WPSP areas (Sustainability, Port-City, Governance, Resilient Infrastructure and Safety & Security) where you will identify the Living Lab information pre-populated, as will the assigned UNSDG's, AIVP Goals, PoF Topics and PoF HLSO's (all coming from the 'HLSO+PER overview' tab. However, we recommend reviewing these. If not correct, you can overwrite for now (report us where the errors are and we will update the TA worksheet accordingly in a next version).
16	Then apply/use the light green fields for each line relative to the PCI-, I-, TA- (PCT) scores and the TA-index (in future versions we will automate these tabs to calculate the weighted averages for the different scores and indexes
17	As you have finished the Sustainability tab for each Living Lab this WPSP area was assigned to, complete the same process for the 4 other WPSP Focus areas: Port-City, Governance, Resilient Infrastructure and Safety & Security.
18	This completed the first part of the TA Worksheet: High-Level SOs assigned to each deliverable as per the 5 WPSP Focus Areas and per port applicable. Next start the actual evaluation or the Project Evaluation Review (PER) of transferability for each of the deliverables.

PER Overview (Project Evaluation Results (PER) of the PoF TA Methodology)

1	Most information will be pre-populated, but we recommend reviewing all the information provided. Correct or add all the information required through making the correct selections from the drill-down menus in the columns which provide this function and complete the needed inputs light green fields.
2	The PER starts with the PER Overview tab fields where all fields appear RED coloured at the first-time use of the worksheet, due their 'NO' status (not yet evaluated) of the different sections (PER tabs). Only when the project team has evaluated each section of the PoF TA Methodology tabs (after the PER Overview), you can change the 'NO' status to 'YES' status – we will be automating this process in a next release. The possibility to obtain a greener overview sheet can be done by entering 'YES' or 'NA' (Not Applicable). The latter will change the field or line into a dark grey area (not being used by the project).
3	Besides the status and the manually calculated TA-index, no other entries are required on this tab + comments if applicable (to explain certain evaluations where needed).
4	Do not overwrite any of the Gold-Orange fields as they are pre-populated fields calculated based on information from other tabs. Neither delete any lines.
5	**If an area or a line item (component or characteristic) is not applicable to your project environment, scope or deliverable, pilot or living lab, it is recommend to 'grey-out' the entire line or area, to ease the focus on what is essential for your project - DO NOT delete lines which may corrupt the entire worksheet or show errors in particular calculated fields.**
6	The different vertical columns reflect the 11 PER areas and the assessment of the project progress of the Conditions and their Characteristics (each of these areas are in detail evaluated by the project owner on the next tabs (overview of those taps are also reflected on the top of this tab in their respective colour codes, starting with:

	- Pre-conditions, - the first 4 Niches steps (1-2-3-4), - Success factors, - TA Risk Assessment and Provisions, - the 2 last Niches steps (5-6), - Benefits and - the training evaluation.
7	Next are the 11 PER areas which require the main attention of the actual project and/or its deliverable assessment relative to their ease of transferability (EoT). Many pre-filled lines can be chosen or left open (if not applicable (or greyed out) whereby the project owners will complete the green fields. In some of the PER areas, no pre-filled information is made available as each will be a typical reflection of the project or its deliverables itself.
8	There is room to add additional lines (other) if a particular Condition of a deliverable is not pre-filled provided. To keep the focus on those Components and/or their Characteristics which are relevant for your projects and deliverables relative to transferability, you may grey-out those lines not used or not applicable to your TA assessment.
9	For each of the Components and/or its Characteristics provide a TA-index in the last column for each (Component TA-index achieved) - use Y/N, but preferable to provide a score based on the TA-index scale). Once the PER tab is completed (or partially some Components have been completed), calculate the average TA-index for that PER-areas (tab) and place it in the top TA-index field. Then go to the PER Overview and change the NO into a YES status for particular (sub-) Component(s) assessed.
9	While this version is not yet completely automated, at each of the PER tabs, the project owners will have to make a weighted average of the TA-indexes assessed from a combination of the evaluated Conditions and their Characteristics in the PER Overview. his can then further be weighed based on the weighing provided for each of the deliverables, the PoF High-Level Strategic Objectives (PoF SO's) - to be done manually in the PER Overview.
10	Once all PER Areas (with Conditions and their Characteristics) - or on an interim basis - have been completed, go to the PER Overview tab and at the bottom of the worksheet you will notice calculations of the different PER areas and their Conditions. They are being prefilled for each of the conditions and PER area, from the different tabs. On the 3rd line you can overwrite the values populated from the previous line or you can remain them as is if you do not see need to change manually the different scores
11	At this stage, the project owner shall complete the PER Overview tab, ensuring all required lines have been assessed and changed from NO to YES status and for lines not applicable: NA status assigned. Then at the top of the PER Overview tab the overall TA-index has to be calculated from the TA-index achieved under instruction 10 here above. This feature will be automated in a next release.
12	In the tab 'Scores&Indexes' which have been pre-populated with the results from the PER Overview, the project Owners can then calculate (manually for now) the weighing of the TA-Index towards the importance of the assigned to each of the 5 WPSP area (column C). This feature will be automated in a next release.
13	**Upon completion of the TA Worksheet - or at interim stages the results can be shared with selected stakeholders to the project and with the PoF DtF NoE (DtF Network of Excellence) where the outcomes will be centralised for all project in the PoF Dashboard for use in the DtF DSS Tool dBase for evaluation and comparison with other projects (past, current and future projects under the Framework of Port of the Future, Vision 2030.**

Below screenshots of the main overview tabs: HLSO Overview and PER Overview



zoom 100

PoF TA Worksheet using the PoF TA Methodology
DtF High Level Strategic Objectives (HLSO)
(main overview tab with project information and reconciliation of information from other tabs)
If an area or a line item (component or characteristic) is not applicable to your project environment, scope or deliverable, pilot or living lab, it is recommend to 'gray-out' the entire line or area, to ease the focus on what is essential for your project - DO NOT delete lines which may corrupt the entire worksheet or show errors in particular calculated fields.

Project Deliverables, Living Labs or Pilots
(per port or peering ports)
should a particular deliverable cover multiple WPSP Focus Areas, they need to be repeated - as in the next columns you will assign one or more WPSP Foucs Areas to the deliverable

17 UN SDG's
first step: assign the relevant UNSDG's to your project deliverables
notice that these are ordered in function of the 5 WPSP Focus Areas and 1 UNSDG may appear multiple times as they apply to multiple WPSP Focus Areas - identified through colour code and UNSDG# (XX xxx) & WPSP (xx XXX)
(per project deliverable with focus on the 5 W…
see the P…
Add area …

Short name | program / call number or reference

line item	TA Scenario	TA Role	PORT Participant NAME	PORT short NAME	Project ROLE	country	city or vicinity	port or port cluster / environment	TEN-T corridor or neighbouring EU country	# (sequence or own numbering)	description	UN SDG	
1	0 - SINGLE port	00 no TA role assigned	name	shortname	00 no project role assigned	country	city	port cluster	00 no TEN-T corridor assigned	1	deliverable	00 no UNSDG assigned	00 no
2	1 - MULTI-port participation project	Champ 1 - donor port	name	shortname	Project Coordinator	country	city	port cluster	Atlantic	2	deliverable	01 p&c – No poverty	1 Sust…
3	2 - CHAMPION approach	Champ 2 - adaptor port	name			country	city	port cluster	Baltic Adriatic	3	deliverable	02 p&c – Zero Hunger	2 Port…
4	3 - Port PEERING	peering ports	name			country	city	port cluster	Mediterranean	4	deliverable	03 p&c – Good health and well-being	3 Gov…
5	3 - Port PEERING	peering ports	name			country	city	port cluster	North Sea - Baltic	5	deliverable	03 s&s – Good health and wel-being	4 Resi…
6	3 - Port PEERING	x living lab	name			country	city	port cluster	North Sea - Mediterranean	6	deliverable	04 p&c – Quality education	5 Safe…
7	zz - other - please specify	x pilot	name			country	city	port cluster	North Sea - Mediterranean	7	deliverable	04 res – Quality education	zz other…
8	zz - other - please specify	x roll-out site	name	shortname	x Living Lab / Pilot 1	country	city	port cluster	Orient - East Med	8	deliverable	05 gov – Gender equality	zz other…
9	zz - other - please specify	zz other - please specify	name	shortname	x Living Lab / Pilot 2	country	city	port cluster	Rhine - Alpine	9	deliverable	06 p&c – Clean water and sanitation	zz other…
10	zz - other - please specify	zz other - please specify	name	shortname	x Living Lab / Pilot 3	country	city	port cluster	Rhine - Danube	10	deliverable	06 res – Clean Water and Sanitation	zz other…
11	zz - other - please specify	zz other - please specify	name	shortname	x Living Lab / Pilot 4	country	city	port cluster	x other - Inland Distribution Center	11	deliverable	07 sus – Affordable and clean energy	zz other…
12	zz - other - please specify	zz other - please specify	name	shortname	x Living Lab / Pilot 5	country	city	port cluster	x other - Inland Terminal	12	deliverable	07 p&c – Affordable and clean energy	zz other…

select TA peering scenario
select the TA scenario that corresponds to your project, deliverable, living lab or pilot
CHOICES: are prelisted under DATA-tables
If your needed choice is not available, you will need to add one in the corresponding list under the DATA-tables tab.

INTRO | Scores&Indexes | HLSO overview | PoF SOs | PoF TOs | DtF Measures | I-score | TA-score | TA-index | Sustainability | Port-City

zoom 80

TA Worksheet Project Evaluation Results (PER) of the PoF TA Methodology

overview of all components & their characteristics with NICHES+ 6-steps approach

Short name		Full project name	
PCI-score	I-score	TA-score	TA-index
0.00	0.00	0.00	+2 - 0 - -2

PRE-condition s for TA | NICHES Step 1 | NICHES Step 2 | NICHES Step 3 | NICHES Step 4 | SUC-CESS | TA RISK Assessment and Management Provisions | NICHES Step 5 | NICHES Step 6 | BENEFITS | TRAINING | Niches Step 1 NO / YES / NA (not applicable) | Niches Step NO / YES / NA (not a

PRE-conditions for TA - NO / YES / NA (not applicable)

line item	PORT Short NAME	Deliver able #	Project Deliverables, Living Labs or Pilots	17 PoF HLSO's	Weighing	Reasons and Best Prac-tices for Trans-ferabi-lity	High-level evaluation: Barriers & con-straints	High-level evaluation: Success Factors	High-level evaluation: Risk & PM Provi-sions	High-level evaluation: Patterns to facilitate	High-level evaluation: Other	Key Benefits: Networ-king oppor-tunities	Key Benefits: Publishing effective guidance for stake-holders	Key Benefits: Spread-ing the word	Key Benefits: Ground-work for establish-ing pro-jects with supply chain actors	Key Benefits: other	National, EU regional, EU + Neigh-bouring Coun-tries	Roles, respons-ib ilities and function s across trans-ferabilit y scenario	other	Impacts and measures of success: Qualita-tive measues	Impacts and measures of success: Qualita-tive measues	Impacts and measures of success: other	Is up-scaling down-scalin required: Up-scaling	Is up-scaling down-scalin required: Down-scaling
1	shortname	1	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2	shortname	2	deliverable	1 sus SDG 12.00.0 Save natural resources	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3	shortname	3	deliverable	1 sus SDG 13.00.0 Combat global warming	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4	shortname	4	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5	shortname	5	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6	shortname	6	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7	shortname	7	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
8	shortname	8	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
9	shortname	9	deliverable	2 p&c SDG 08.05.0 Good jobs (SDG 8.5)	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
10	shortname	10	deliverable	2 p&c SDG 11.03.1 Land consumption	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
11	shortname	11	deliverable	2 p&c SDG 11.03.2 Inclusive cities	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
12	shortname	12	deliverable	2 p&c SDG 11.06.0 Improve environmental	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
13	shortname	13	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
14	shortname	14	deliverable	00 No PoF SO with UNSDG assigned	0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

PER overview | pre-conditions | STEP 1 | STEP 2 | STEP 3 | STEP 4 | SUCCESS | RISK | STEP 5 | STEP 6 | Benefits | Training | DATA-tables

Annex II – PoF TA Methodology in the context of PoF projects

The Transferability Index (TA-index) will be incorporated in the DSS tool or future versions thereof. Below guidelines provide a practical guide as a 1st stage approach in using the PoF TA Methodology and approach, applicable to ports and port-related supply chain actors. This may facilitate the introduction and roll-out of projects for innovative concepts with ports as the central role in the supply chain, linking actors and data across the supply chain, involving multiple stakeholders and identify the benefits for all users.

Innovative concepts to enhance accessibility

- Key stakeholders involved
- Port size, type and modus operandi
- Key characteristics
- Key benefits
- Good/best practices
- Undesirable secondary effects
- Costs
- Time horizon
- Crucial factors
- Excluding factors

Efficient planning and use of infrastructure

- Time horizon
- Key stakeholders involved
- Crucial factors
- Key characteristics
- Excluding factors
- Port size, type and modus operandi
- Undesirable secondary effects
- Costs
- Key benefits
- Good/best practices

Operations management centres

- Key characteristics
- Key benefits
- Good/best practices
- Costs (financing and implementation)
- Time horizon
- Key stakeholders involved
- Crucial factors (environment may play a crucial role here)
- Excluding factors
- Undesirable secondary effects
- Port size, type and modus operandi (for ports and supply chain this area might come higher in the priority)

Automated and efficient equipment resources

- Key characteristics

- Good/best practices
- Time horizon
- Port size, type and modus operandi
- Crucial factors
- Excluding factors
- Undesirable secondary effects
- Key stakeholders involved
- Costs
- Key benefits

Setting up training programs for all parties and their employees

- Key stakeholders involved
- Port size, type and modus operandi
- Key characteristics
- Key benefits
- Good/best practices
- Undesirable secondary effects
- Costs
- Time horizon
- Crucial factors
- Excluding factors

Defining the key benefits, improvement of KPI's and ROI

- Key stakeholders involved
- Port size, type and modus operandi
- Key characteristics
- Key benefits
- Good/best practices
- Undesirable secondary effects
- Costs
- Time horizon
- Crucial factors
- Excluding factors

As part of the roles to be undertaken by the PoF DtF-NoE, outcomes of the current three PoF RIA projects and results from future PoF program calls, their transferability readiness or preparedness to act as donor or peering port with other targeted / interested ports, will be anticipated in future releases and use of the DtF Tools.

Annex III – Publications and References

Study Tour Catalogue

NICHES+ also developed a 'Study Tour Catalogue' including 35 good practice examples on urban transport innovation in Europe. The aim of this Study Tour Catalogue is to provide urban transport professionals and local decision makers with an overview of European towns and cities that successfully implemented innovative strategies which have the potential to become mainstream transport solutions - download the Study Tour Catalogue here.

Niches Overview Concepts on Innovative Urban Transport Concepts

Moving from theory to practice
NICHES+ Overview brochure in English [PDF]
NICHES+ Overview brochure in French [PDF]
NICHES+ Overview brochure in German [PDF]
NICHES+ Overview brochure in Polish [PDF]
NICHES+ Overview brochure in Spanish [PDF]

NICHES+: Mainstreaming Urban Transport Innovation

Promoting innovative measures for making urban transport more efficient and sustainable and to move them from their current "niche" position into a mainstream urban transport application.
Effective guidance for cities in form of **'Guidelines for Implementers'** and e-learning modules including key information on success factors and barriers for the implementation process.
The project developed a sound methodology for transferability analysis (download 'Guidelines for assessing the Transferability of an Innovative Urban Transport Concept' here). This methodology was successfully tested by the seven Champion Cities that were actively supported by the project to develop implementation scenarios for selected innovative concepts
Access via www.niches-transport.org

Guidelines for Implementers

NICHES+ looks into the details of 12 innovative measures, structured in 4 thematic areas. For each of the 12 measures guidelines for implementers have been published:
Innovative concepts to enhance accessibility:

- Travel training for public transport
- Neighbourhood accessibility planning
- Tailored traveller information for users with reduced mobility

Concepts for Efficient Planning and Use of Infrastructure and Interchanges:

- Passenger friendly intermodal interchanges
- Innovative cycling facilities for intermodal interchanges
- Infrastructure for innovative bus systems

Traffic Management Centres:

- Financing and implementing traffic management centres
- Mobile travel information services for the public
- Using environmental pollution data in traffic management

Automated and Space Efficient Transport Systems:

- Group Rapid Transit

- Personal Rapid Transit
- Using electric vehicles in city car share schemes

Overcoming barriers to mainstreaming urban transport innovation

Addressing the issue of transferability
Recalibrating the term innovation
NICHES+ 6 step approach to assess transferability
Procuring innovation
By Ivo Cré, Polis
www.polisnetwork.org

Research and Policy Recommendations

Summaries of the research and policy recommendations for each of the 4 thematic areas have been published:

- Innovative concepts to enhance accessibility
- Concepts for Efficient Planning and Use of Infrastructure and Interchanges
- Traffic Management Centres
- Automated and Space Efficient Transport Systems

6 Tips Success Stories by POLIS

Perspectives on innovation and exploitation approaches in the CONDUITS and NICHES+ projects, including KPI's as a useful tool for transport authorities.
CONDUIT: Identified, examined and promoted twelve transferable innovative transport concepts in four thematic areas of sustainable urban transport: new seamless mobility services, innovative approaches in city logistics, new non-polluting and energy-efficient vehicles, and innovative demand management strategies promoted the most promising new concepts with the aim to move them from their current 'niche' position to a mainstream urban transport policy application.
NICHES+: Shortening the Implementation Path, Action Planning
TIPS Workshop Brussels, 24/10/2013
www.polisnetwork.eu

Guide to Cost-Benefit Analysis of Investment Projects (CBA)

Evidence-based and successful policy requires making investment decisions based on objective and verifiable methods. Therefore the Commission has been continuously promoting the use of Cost-Benefit Analyses (CBA) for major infrastructure projects above €50 million.
CBA - that is about measuring in "money terms" all the benefits and costs of the project to society - should become a real management tool for national and regional authorities and therefore have focused on practical elements in the Guide while keeping abreast of recent developments in the scientific world of welfare economics.
Economic appraisal tool for Cohesion Policy 2014-2020 by European Commission, Directorate-General for Regional and Urban policy.
http://bookshop.europa.eu
More recent information provided by INEA/CEF Transport on CBA methodology from the Cohesion Policy: http://ec.europa.eu/inea/sites/inea/files/cba_guide_cohesion_policy.pdf

CBA checklist: https://ec.europa.eu/inea/sites/inea/files/2019-cef-transport-map-cba_checklist.pdf
CBA case study: https://ec.europa.eu/inea/sites/inea/files/cef_case_study_-_safe_and_secure_parking.pdf

Motorways of the Sea (MoS) Detailed Implementation Plan

MoS Detailed DIP - Detailed Implementation Plan (DIP) of the Motorways of the Sea (MoS) determining 'adequacy' (data-based status quo analysis)
Motorways of the Sea aim at green, viable and efficient sea-based transport links that are well integrated in the entire EU transport chain and exploit the huge potential of maritime transport as the backbone of international trade. The policy is supported by the Connecting Europe Facility (CEF), a dedicated tool for infrastructure financing. The European Fund for Strategic Investments can also provide significant support.
The Detailed Implementation Plan (DIP) is built within the three development pillars as key priorities for shipping and ports:

- Environment (maritime green solutions)
- Integration of maritime transport in the logistics chain
- Safety, Human Element and Traffic Management.

The DIP methodology is based on:

1. An analysis of MoS Data (overview of shipping operations, MoS qualitative assessment, MoS maps and traffic data), and
2. An analysis of MoS Content (the development of priorities based on identified gaps, Member State and industry needs according to the above three pillars.

By Brian Simpson OBE, European Coordinator for Motorways of the Sea.
European Commission – Directorate General for Mobility and Transport
Directorate B – European Mobility Network
http://ec.europa.eu/transport/index_en.htm

Other resources for reference

- The **Strengthening European Transport Research and Innovation Strategies project (SETRIS)** is a project funded under the European Union (EU)'s Horizon 2020 research and innovation Programme, specifically targeted at strengthening the research and innovation strategies of the transport industries in Europe. SETRIS assists the 5 **European Technological Platforms (ETPs)** to define their common research steps for strategy and programmes in alignment. http://newrail.org/setris/

- Polis manages the Sustainable Urban Mobility activities within the EIP-SCC Market Place. The **European Innovation Partnership on Smart Cities and Communities (EIP-SCC)** is an initiative supported by the European Commission bringing together cities, industry, SMEs, banks, research and other smart city actors. The **EIP-SCC Market Place** has been designed for those who are active in the challenging area of Smart Cities and willing to know more about ongoing and foreseen activities throughout Europe. The Market Place includes two Sustainable Urban Mobility Initiatives: Smart Mobility Services and EV4SCC looking into electromobility. https://eu-smartcities.eu/

- The **European Road Transport Research Advisory Committee (ERTRAC)** develops a common vision for European transport. It also coordinates the implementation of the results found by the research in order to improve competitiveness. http://www.ertrac.org