The SuperGreen project
a project led by the
National Technical University of Athens (NTUA)

Harilaos N. Psaraftis, NTUA

7ᵗʰ Framework Programme

- Theme title: Transport (including Aeronautics)
- Type of project: Coordination and Support Action
- Project full title: Supporting EU's Freight Transport Logistics Action Plan on Green Corridors Issues
- Project acronym: SuperGreen

Background

Freight Transport Logistics Action Plan (2007)

- Green transport corridors for freight.

- Green Corridors should in all ways be environmentally friendly, safe and efficient.

- Emissions, internal as well as external costs should be considered.

supergreen

Objectives

- ***Support and recommendations*** on Green Corridors to EU's Freight Transport Logistics Action Plan.
- ***Encourage co-modality*** for sustainable solutions.
- ***Overall benchmarking*** of Green Corridors based on selected KPIs covering all aspects related to transport operations and infrastructure (emissions, internal and external costs).
- Conduct a programme of ***networking activities between stakeholders*** to facilitate information exchange, dissemination of research results and communication of best practises and technologies.

Objectives, contd.

- ***Deliver studies*** addressing topics important for the further development of Green Corridors.

- ***Deliver policy recommendations*** at a European level for the further development of Green Corridors.

- Provide ***recommendations concerning new calls for R&D*** proposals to support development of Green Corridors (eliminate bottlenecks).
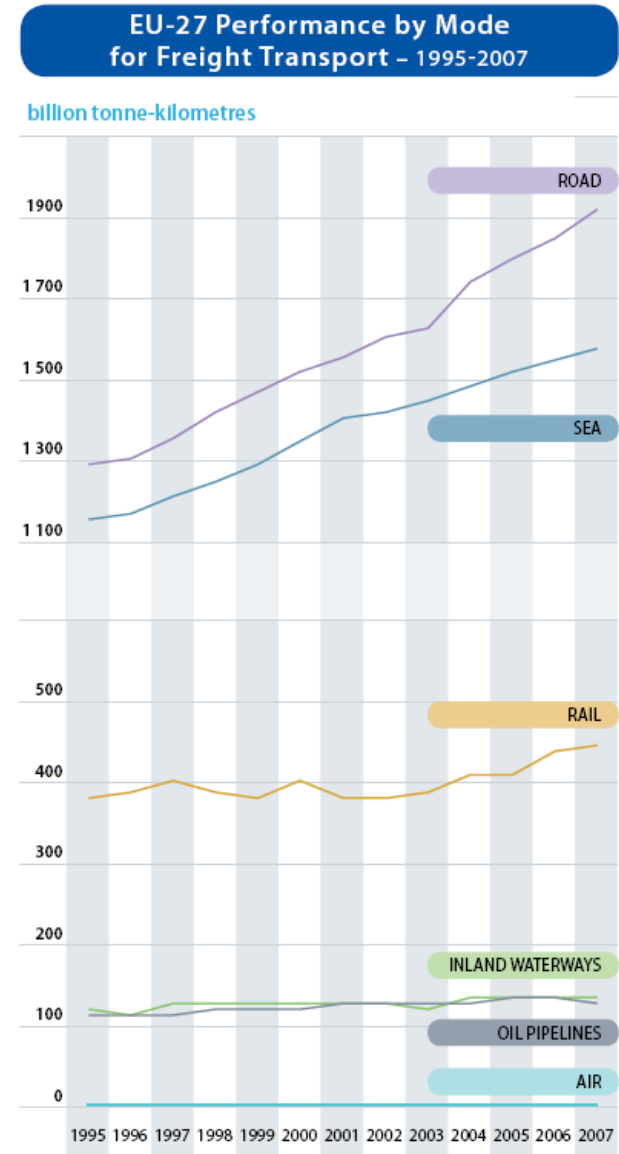
SuperGreen stakeholders

- transport operators
- terminal operators including ports
- infrastructure operators
- cargo owners (shippers)
- industry/consultants
- non Governmental Organisations (NGOs)
- environmental organisations
- authorities responsible for social and spatial planning
- R&D organisations and universities

All surface modes covered

- Road
- Rail
- Sea
- Inland Navigation

EU-27 Performance by Mode for Freight Transport – 1995-2007

billion tonne-kilometres

ROAD, SEA, RAIL, INLAND WATERWAYS, OIL PIPELINES, AIR

What is a green corridor?

EU Commission:

- Green Corridors are a European concept denoting long-distance freight transport corridors where advanced technology and co-modality are used to achieve energy efficiency and reduce environmental impact.
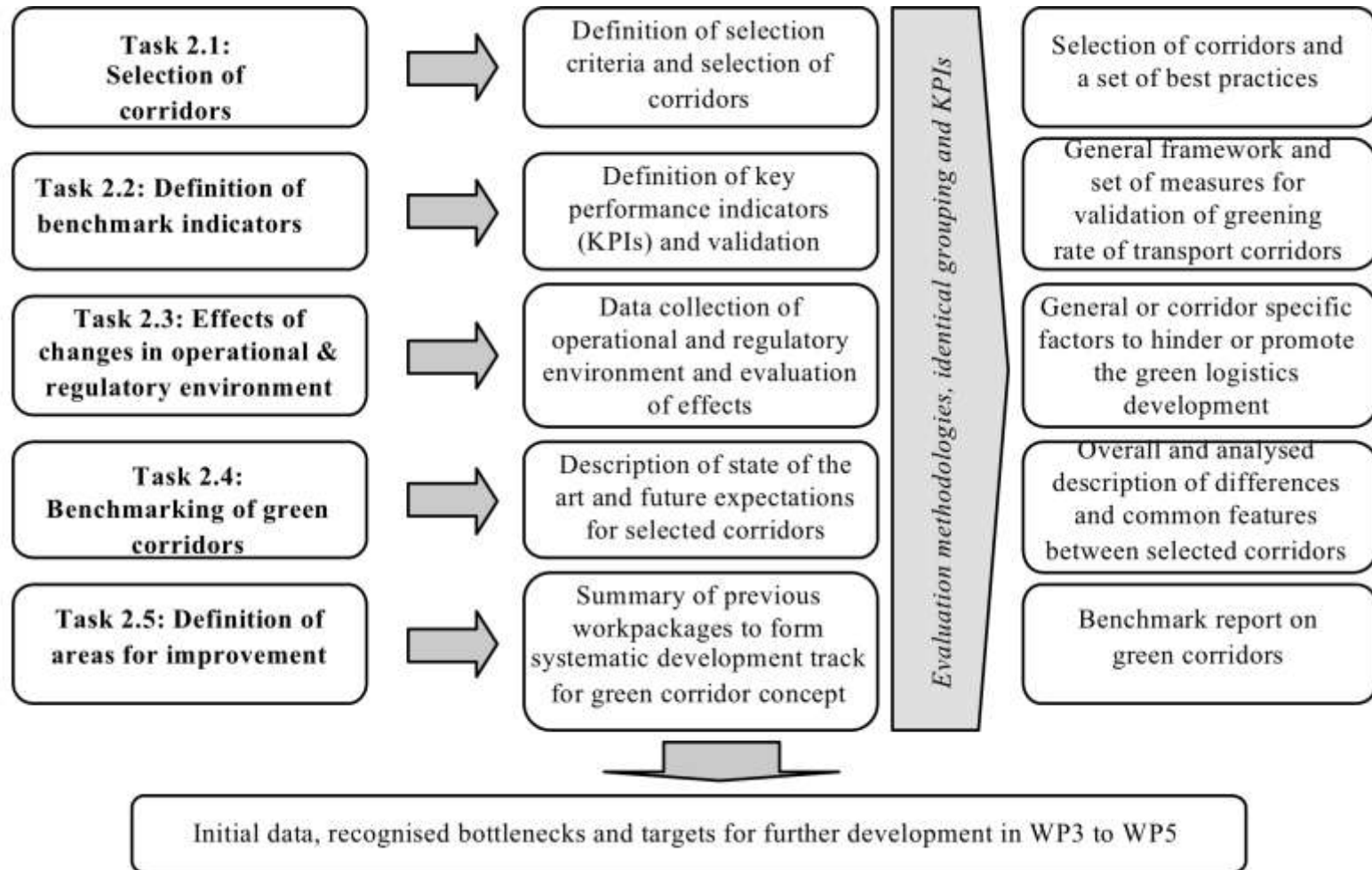
What is a green corridor?

- Definition by the Swedish Ministry:
  A green transport corridor is characterised by:

  - Sustainable logistic solutions
  - Integrated logistic concepts with utilisation of comodality
  - A harmonised system of rules
  - National/international goods traffic on long transport stretches
  - Effective and strategically placed transshipment points and infrastructure
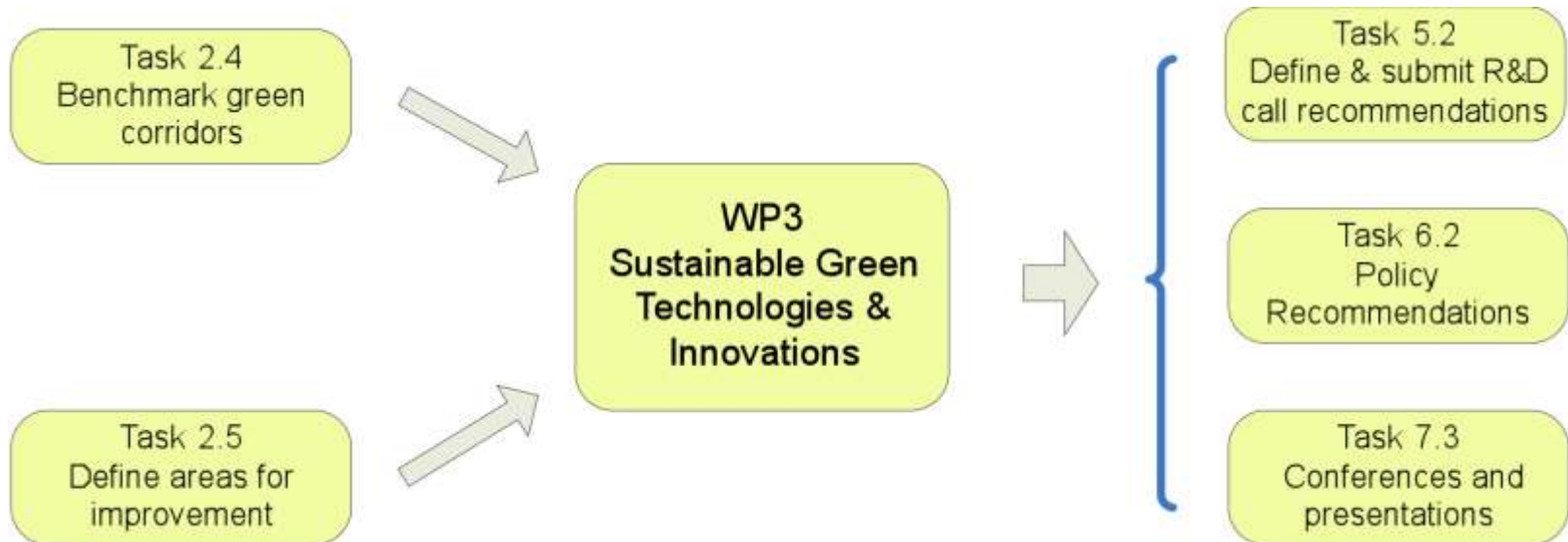 - A platform for development and demonstration of innovative logistic solutions
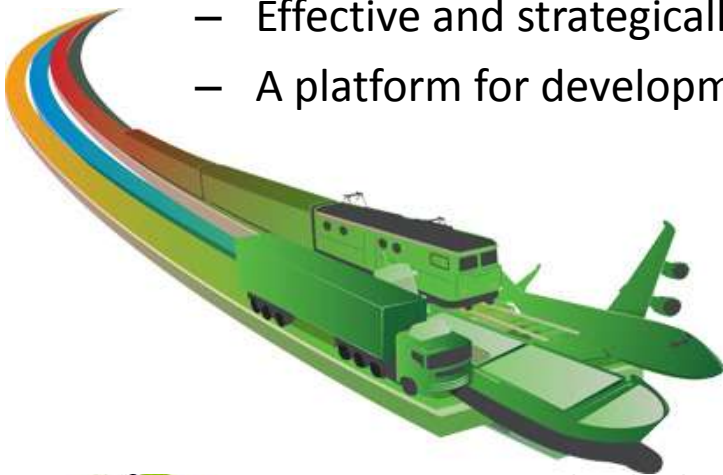
supergreen

SuperGreen work package structure
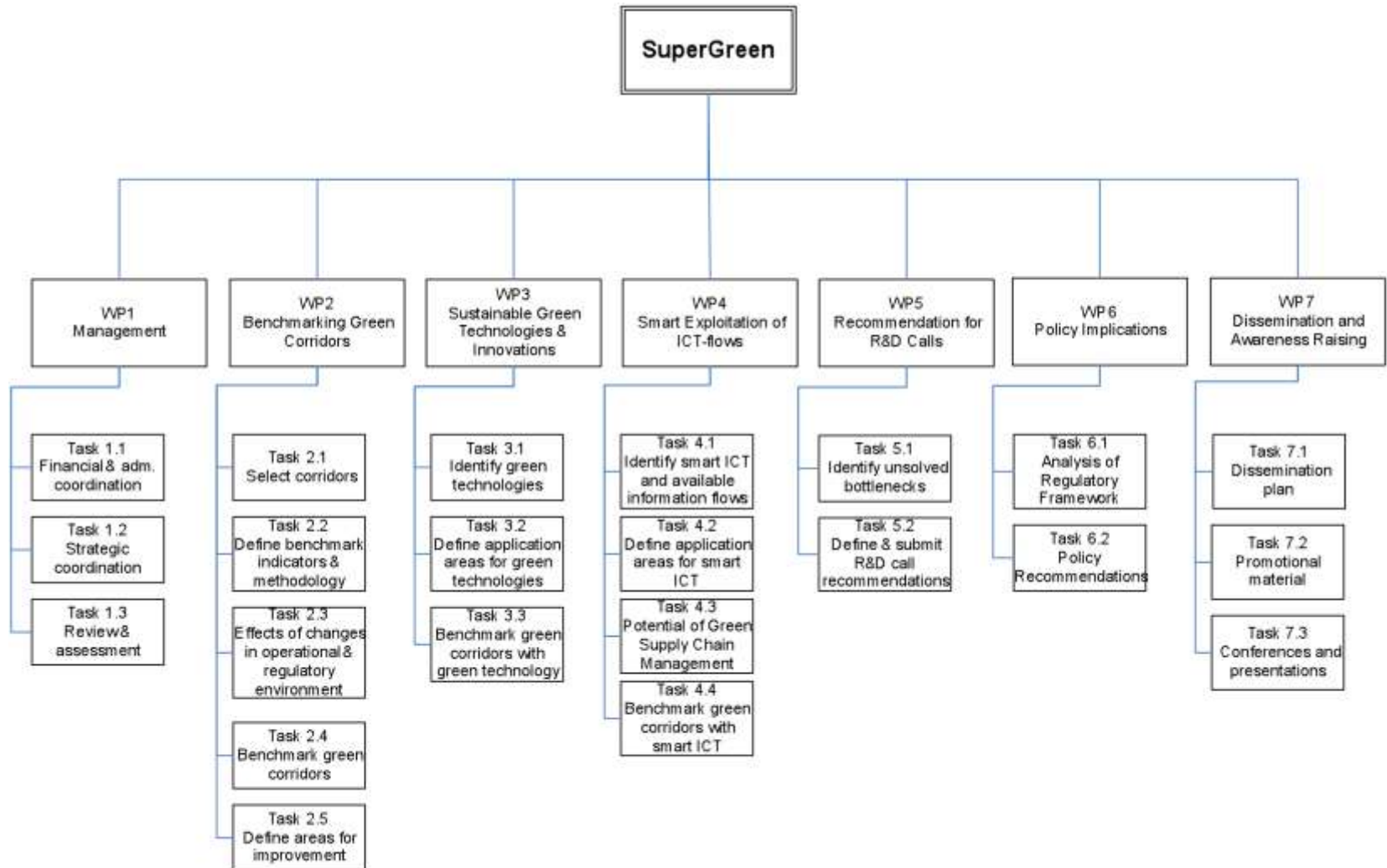
WP2: benchmarking green corridors

WP3: Sustainable green technologies and innovations

WP4: Smart exploitation of ICT flows

Task 4.1
Identify smart ICT and available information flows

Task 4.2
Define application areas for smart ICT

Task 2.2
Define benchmark indicators

Task 4.3
Potential of Green Supply Chain Management

Task 2.4
Benchmarking green corridors

Task 4.4
Benchmark green corridors with smart ICT

WP 5
Recommendations for R&D calls

WP 6
Policy implications
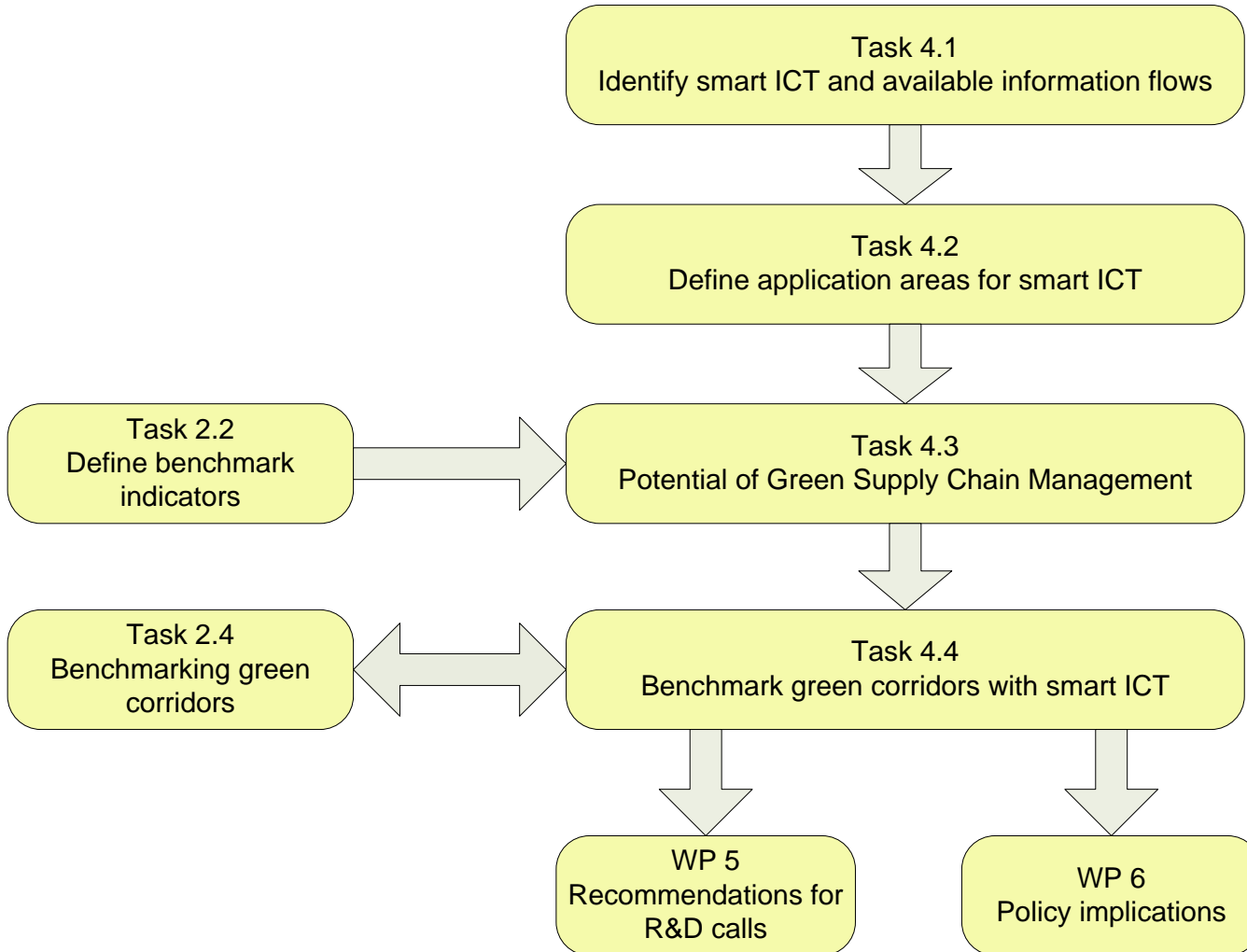
WP5: recommendation for R&D calls
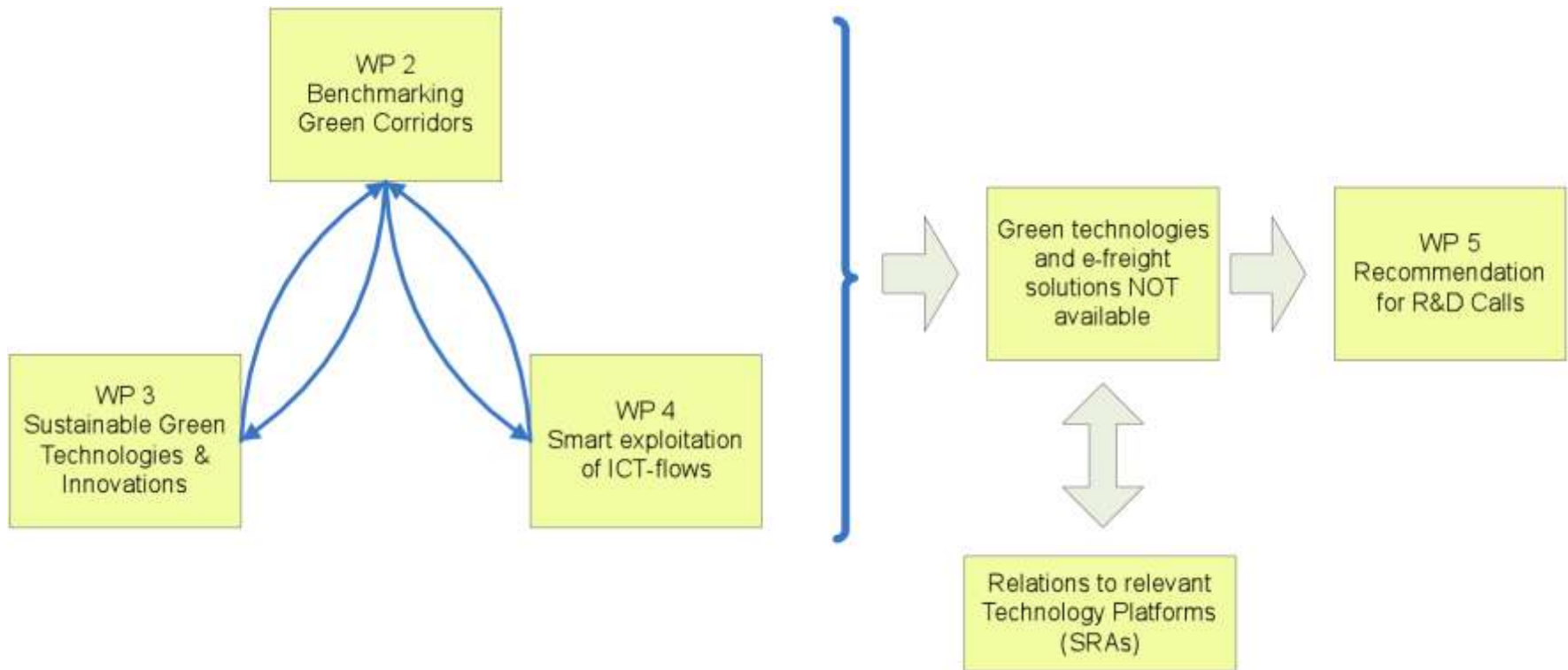
WP6: Policy implications

WP7: dissemination & awareness raising

- Dissemination plan
- Promotional material
  - Newsletter
  - Web site
- Friends email list
- Conferences and presentations
  - 3 major workshops, 4 technical
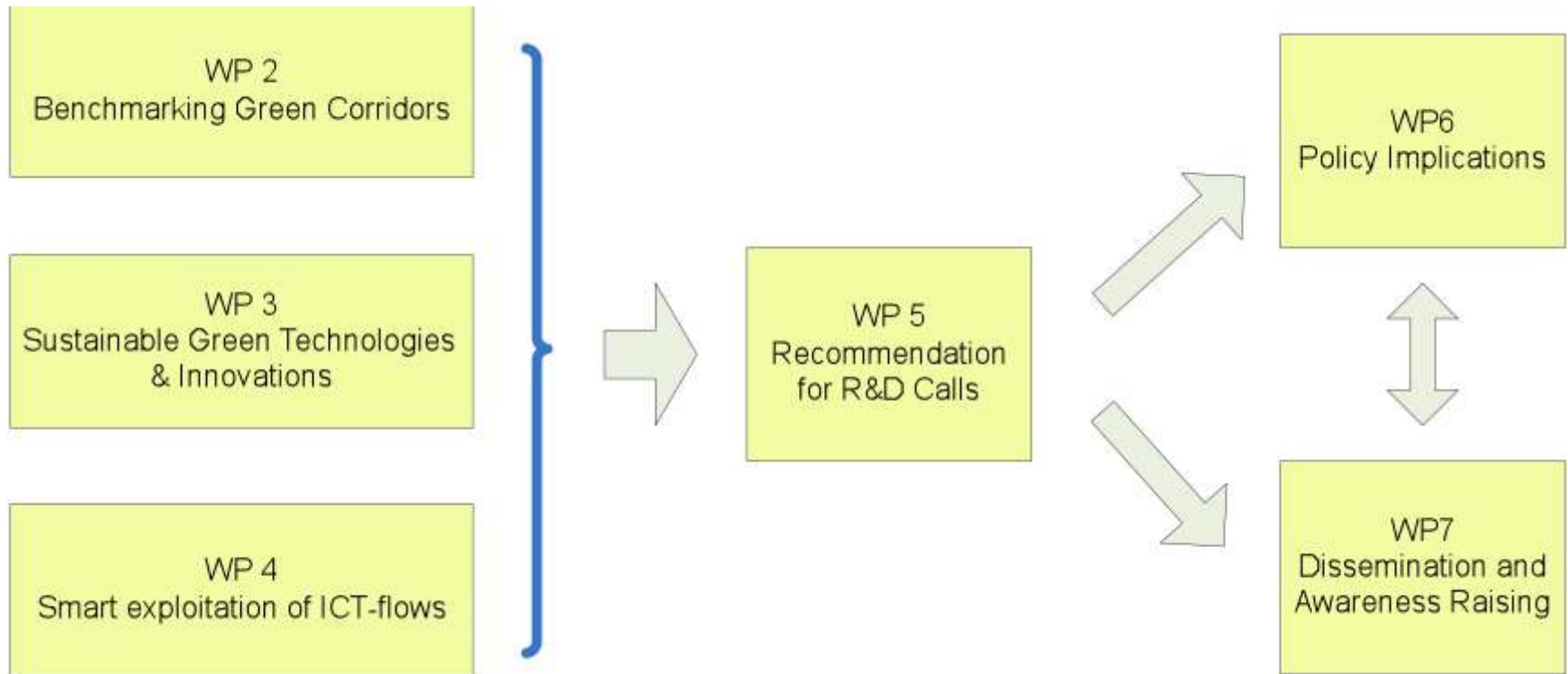
The consortium

Partner Number *	Partner name	Partner short name	Country
1 (Coordinator)	National Technical University of Athens	NTUA	Greece
2	Norsk Marinteknisk Forskningsinstitutt AS, MARINTEK	MAR	Norway
3	Sito Ltd (Finnish Consulting Engineers Ltd)	SITO	Finland
4	D'Appolonia S.p.A.	DAPP	Italy
5	Autoridad Portuaria de Gijon Gijón Port Authority-	PAG	Spain
6	DNV Det norske Veritas	DNV	Norway
7	via donau Österreichische Wasserstraßen-Gesellschaft mbH	VIA	Austria
8	NewRail – Newcastle University	UNEW	UK
9	CONSULTRANS	CONS	Spain
10	PSA Sines	PSAS	Portugal
11	Finnish Transport Agency	FMA	Finland
12	Straightway Finland Ry	SWAY	Finland
13	SNCF Fret Italia	SFI	Italy
14	Procter & Gamble Eurocor	PG	Belgium
15	VR Group	VRG	Finland
16	Lloyd's Register-Fairplay Research	LRFR	Sweden
17	Hellenic Shortsea Shipowners Association	HSSA	Greece
18	Dortmund University of Technology	DUT	Germany
19	TES Consult Ltd	TES	Ukraine
20	Turkish State Railways	TCDD	Turkey
21	DB Schenker AG	SCH	Germany
22	Norwegian Public Road Administration	NPRA	Norway

supergreen

Organizational structure
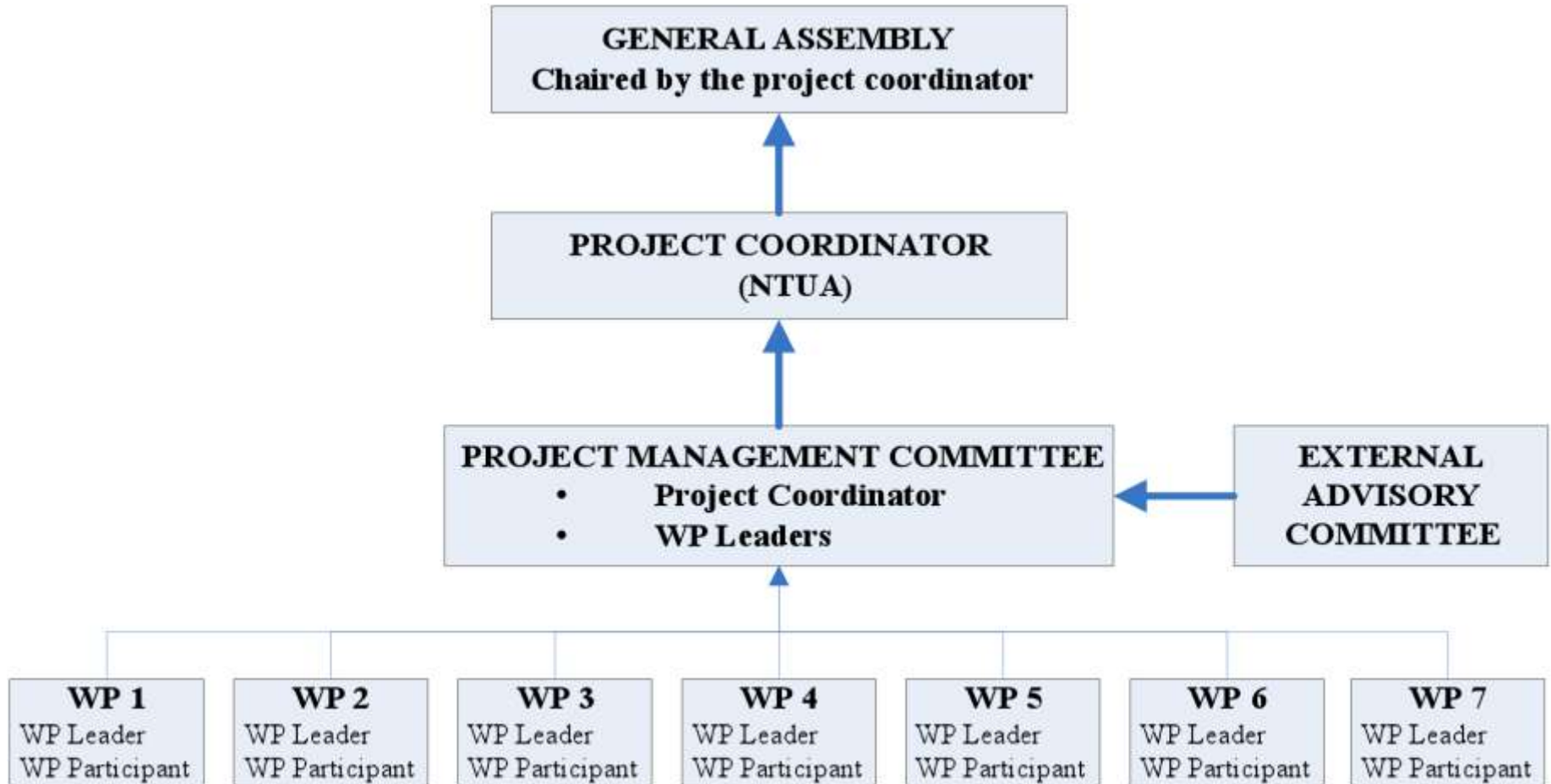
Advisory Committee

- Unique feature of the SuperGreen project

- Purpose: provide independent advice and feedback on key issues related to the progress of the project, and to validate its main results.

- Will ensure key stakeholder input into the project.

- Is invited to participate in selected meetings and workshops.

NAME	Organisation
Herman de Meester	European Community Shipowners Association (ECSA)
Karin de Schepper	Inland Navigation Europe (INE)
Jacques Dirand	Community of European Railway and Infrastructure Companies (CER)
Rein Jüriado	European Commission, DG-MOVE (SuperGreen project officer)
Fuensanta Martinez Sans	ACEA-European Automotive Manufacturers Association
Manfred Reuter	Hamburg Port Authority
Algirdas Sakalys	Competence Centre of Intermodal Operators Transport and Logistics (CCITL) of Vilnius Gediminas Technical University (VGTU)
Jerker Sjögren	Ministry of Enterprise, Energy and Communications, Sweden
Nicolette van der Jagt	European Shippers Council (ECS)
Michel Violland	International Transport Forum (OECD)
Peter Wolters	European Intermodal Association (EIA)

supergreen

Duration & budget

- Official start: 15 Jan. 2010
- Duration: 3 years
- Total budget: 3,453,747 EUR
- EC contribution: 2,634,698 EUR

WP2: benchmarking green corridors

Status

supergreen

Thus far: 2 public deliverables

- D2.1: Selection of corridors
- D2.2: KPIs

- Both available at:

http://www.supergreenproject.eu/info.html

Issues to be addressed include

- Which corridors to select for study?

- What are the KPIs?

- How are selected corridors benchmarked?

supergreen
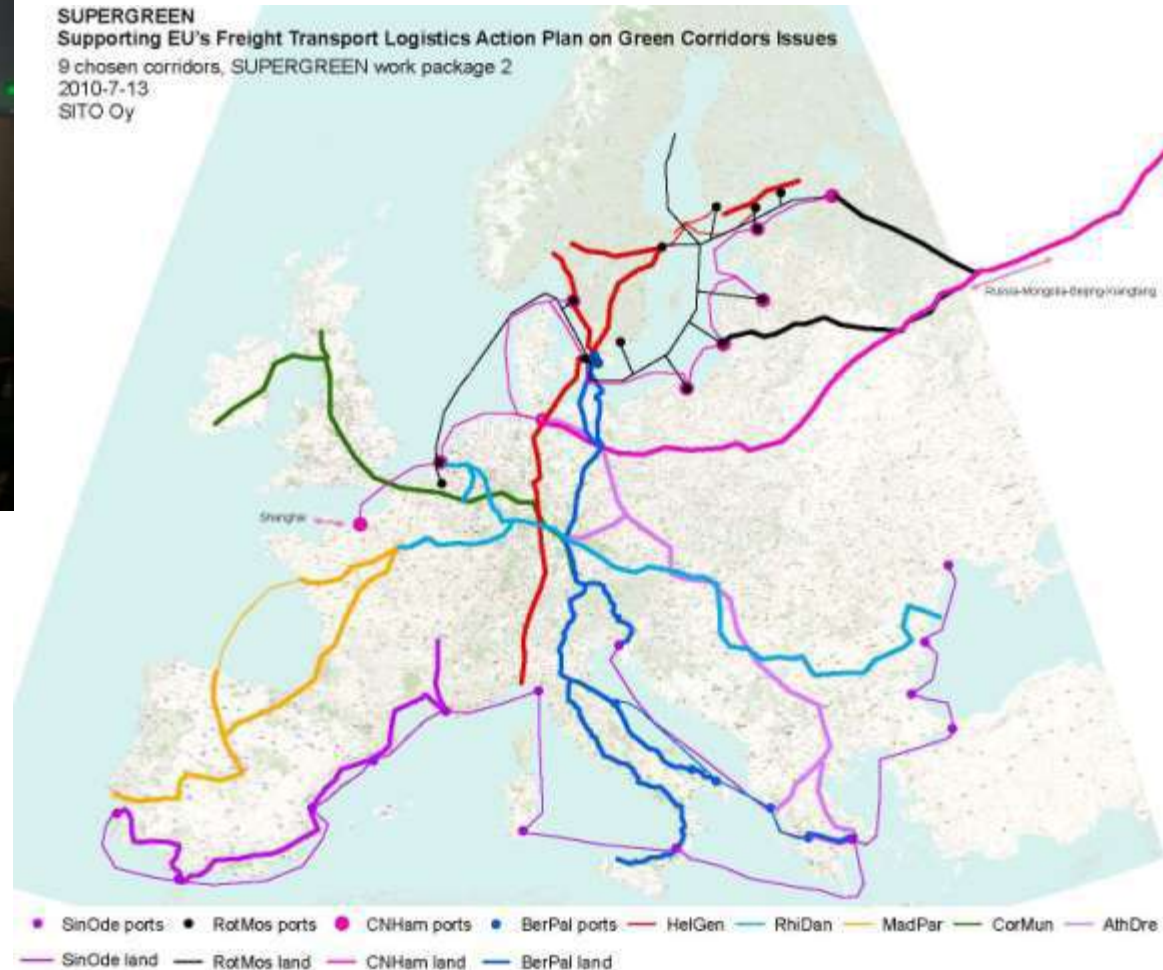
SuperGreen Corridors

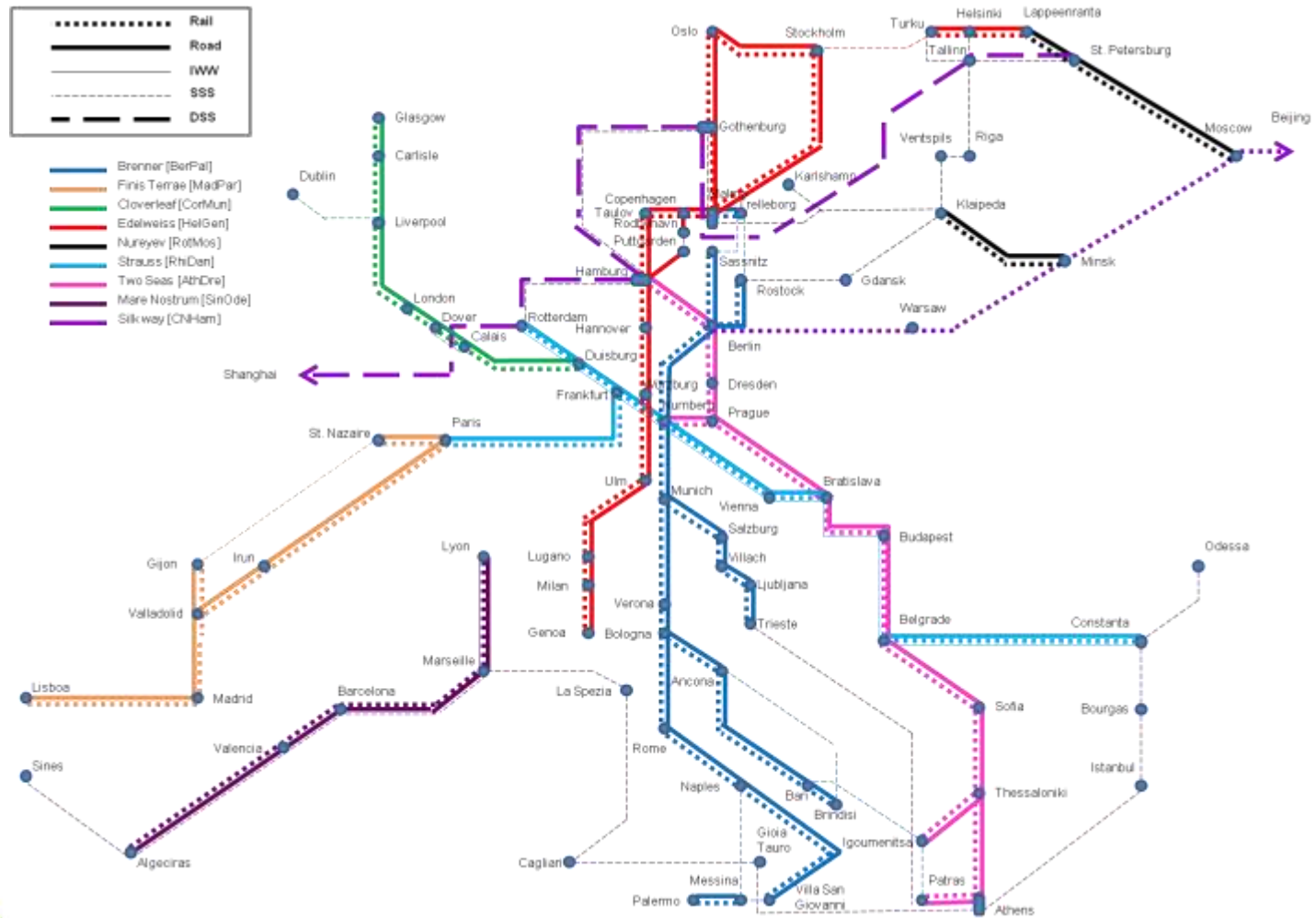| BRIEF DESCRIPTION- BRANCHES	NICKNAME
Malmö-Trelleborg-Rostock/Sassnitz- Berlin-Munich-Salzburg-Verona-Bologna-Naples-Messina-Palermo Branch A: Salzburg-Villach-Trieste (Tauern axis) Branch B: Bologna-Ancona/Bari/Brindisi-Igoumenitsa/Patras-Athens	Brenner
Madrid-Gijon-Saint Nazaire-Paris Branch A: Madrid-Lisboa	Finis Terrae
Cork-Dublin-Belfast-Stranraer Branch A: Munich-Friedewald-Nuneaton Branch B: West Coast Main line	Cloverleaf
Helsinki-Turku-Stockholm-Oslo-Göteborg-Malmö-Copenhagen (Nordic triangle including the Oresund fixed link)- Fehmarnbelt - Milan - Genoa	Edelweiss
Motorway of Baltic sea Branch: St. Petersburg-Moscow-Minsk-Klapeida	Nureyeev
Rhine/Meuse-Main-Danube inland waterway axis Branch A: Betuwe line Branch B: Frankfurt-Paris	Strauss
Igoumenitsa/Patras-Athens-Sofia-Budapest-Vienna- Prague-Nurnberg/Dresden-Hamburg	Two Seas
Odessa-Constanta-Bourgas-Istanbul-Piraeus-Gioia Tauro-Cagliari-La Spezia-Marseille-Barcelona-Valencia-Sines Branch A: Algeciras-Valencia-Barcelona-Marseille-Lyon Branch B: Piraeus-Trieste	Mare Nostrum
Shanghai-Le Havre/Rotterdam-Hamburg/Göteborg-Gdansk-Baltic ports-Russia Branch:Xiangtang-Beijing-Mongolia-Russia-Belarus-Poland-Hamburg	Silk Way

SuperGreen Corridors ii

SUPERGREEN
Supporting EU's Freight Transport Logistics Action Plan on Green Corridors Issues
9 chosen corridors, SUPERGREEN work package 2
2010-7-13
SITO Oy

SinOde ports • RotMos ports • CNHam ports • BerPal ports — HelGen — RhiDan — MadPar — CorMun — AthDre
— SinOde land — RotMos land — CNHam land — BerPal land

SuperGreen Corridors iii

KPI areas: 5 groups

- Efficiency
- Service quality
- Environmental sustainability
- Infrastructural sufficiency
- Social issues

supergreen

KPIs hierarchy

Efficiency	Absolute unit cost
	Relative Unit cost
Service quality	Transport time
	Reliability
	Frequency of service
	ICT applications
	Cargo security
	Cargo safety
Environmental sustainability	CO_2-eq
	SOx
	NOx
	PM
Infrastructure sufficiency	Congestion
	Bottlenecks
Social issues	Land use - urban areas
	Land use - sensitive areas
	Traffic safety
	Noise

supergreen

Efficiency KPIs

- Absolute unit costs (€/tonne), used for comparisons of transport solutions on the same route. Also used to express costs incurred on nodes.

- Relative unit costs (€/tkm), used for comparisons of transport solutions either on different routes within the same corridor, or on different corridors.

.

Service quality KPIs

- **Transport time**, expressed in either absolute terms (hours, days) or in relative terms (average speed)
- **Reliability**, expressed as the percentage of on-time deliveries
- **Frequency of service**, expressed as number of shipments available per week
- **ICT applications**, expressed as the assessed result of:
- *- Availability of tracking services on nodes/links*
- *- Integration & functionality of tracking services*
- *- Availability of other ICT services on nodes/links*
- *- Integration & functionality of other ICT services*
- **Cargo security**, expressed as percentage of security incidents over total number of shipments
- **Cargo safety**, expressed as percentage of safety incidents over total number of shipments

supergreen

Environmental sustainability KPIs

- CO_2-eq
- SO_X
- NO_X
- $PM_{2.5}$ or PM_{10} (depending on data availability)

- Grams of emissions PER TONNE KM

- **NOTE: Load factor** is a most crucial parameter!

supergreen

Infrastructural sufficiency KPIs

- **Congestion,** expressed in either absolute terms (average delay in hours) or in relative terms (ratio of average delay over total transport time). Alternatively congestion can be expressed in money terms, if the average delay is multiplied by a proper 'value of time'.

- **Bottlenecks,** expressed as the assessed result of an inventory of different types of bottlenecks per transport solution combined with information on ongoing and planned projects addressing removal or diminishing of the bottlenecks.

Social issues KPIs

- **Land use – urban areas,** expressed as the percentage of urban areas in a buffer zone formed by a 20 km radius from the median line of each corridor (use of CORINE Land Cover spatial dataset).

- **Land use – sensitive areas,** expressed as the percentage of environmentally sensitive areas in a buffer zone formed by a 20 km radius from the median line of each corridor (use of Natura 2000 spatial dataset).

- **Traffic safety,** expressed as the incident rate of accidents and/or fatalities over the total number of shipments or total transport work (ton-km).

- **Noise,** expressed as percentage of total distance exposed to noise levels above 50 dB (55 dB for rail transport).

supergreen

Approach

- Initial selection of KPIs
- Development of (20-step) methodology
- Extensive solicitation of feedback from stakeholders on both KPIs and methodology
- Application to selected corridors (ongoing process)
- Projected end of WP2: July 2011

Stakeholder input

- Industry participation in stakeholder workshops
    - 1st plenary w/s: **Helsinki, 28 Jun. 2010**
    - 1st regional w/s: **Napoli, 19 Oct. 2010**
    - 2nd regional w/s: **Antwerp, 1 Feb. 2011**
    - 3rd regional w/s: **Malmö, 10 Mar. 2011**
    - 4th regional w/s: **Sines, 24 Mar. 2011**
    - 2 more plenary workshops (thru 2013)
- Through Advisory Committee
- Link with other projects and related activities

supergreen

Stakeholder input ii

- **Input from stakeholders was obtained through a specially designed questionnaire**

- **1st Regional Workshop in Naples (19/10/2010)**
- The concept was welcomed
- The methodology was accepted in principle
- No need to aggregate corridor KPIs into a single indicator
- Need to associate KPIs to specific end-users
- KPIs are exhaustive but too many; need for further filtering
- No need to have a KPI on fair and open access to infrastructure

- **Advisory Committee meeting in Brussels (26/10/2010)**
- KPIs on infrastructure, land-use and ICT applications are inputs rather than outputs
- Scarcity costs for railways should be taken into consideration
- Use qualitative indicators when quantitative ones are not feasible
- Transit time, reliability and frequency are the most important indicator of the service quality group
- Data availability leaves much to be desired

Napoli w/s, 19 Oct. 2010

26 Oct. 2010, Brussels

4th regional workshop, Sines, Portugal, March 24, 2011

Antwerp w/s, 1 Feb. 2011

Malmö w/s, 10 March 2011

KPI importance

KPI	Input unit	Output unit	Grading of importance for Supergreen
Efficiency			
Absolute costs	ton, €	€/ton	3 Can manage without
Relative costs	ton, €, km	€/ton-km	1 Must have
Service quality			
Transport time	hours	hours	1 Must have
Reliability	Total number of shipments, On-time deliveries	%	1 Must have
ICT appl.	Availability, integration & functionality of cargo tracking & other services	graded scale	2 Prefer to have
Frequency	Services per week	number	1 Must have
Cargo security	Total number of shipments, Security incidents	%	2 Prefer to have
Cargo safety	Total number of shipments, Cargo safety incidents	%	2 Prefer to have
Environmental sustainability			
CO_2 emissions	ton, km	g/ton-km	1 Must have
NO_x emissions	kg, km	g/1,000 ton-km	2 Prefer to have
SO_x emissions	kg, km	g/1,000 ton-km	1 Must have
PM emissions	kg, km	g/1,000 ton-km	2 Prefer to have
Infrastructural sufficiency			
Congestion	ton, km, Average delay	hours/ton-km	2 Prefer to have
Bottlenecks	number & category	graded scale	2 Prefer to have
Social			
Corridor land use	Share of distance per area type	percent	2 Prefer to have
Traffic safety	Traffic safety incidents	percent	2 Prefer to have
Noise	Share of distance above level	percent	2 Prefer to have

supergreen

Smart ways to get connected

- Give us a call or send an email!

- Send an email to supergreen@martrans.org
  (SuperGreen friends email list: keeping track of the project)

- Visit our web site www.supergreenproject.eu

Library section of site

Events in which SuperGreen was presented

- EC Green corridor conference, Brussels, Dec. 2009
- Green corridor conference, Gothenburg, Sweden, May 2010
- Green corridor conference, Malmo, Sweden, May 2010
- Europe Maritime Day conference, Gijon, Spain, May 2010,
- TEN-T conference, Zaragoza, Spain, June 2010
- EIRAC conference, Wiesbaden, June 2010
- AIRO conference, Villa San Giovanni, Italy, September 2010
- Trans-Baltic conference, Gdansk, Poland, September 2010
- ECO-TRANSIT conference, Paris, France, October 2010
- ECITL conference, Bremen, Germany, November 2010
- Port Integration conference, Ancona, Italy, November 2010

Forthcoming events in 2011

- September 12: 2nd plenary workshop, Genoa, Italy
(villa Pagoda)

Thank You!

WWW.SUPERGREENPROJECT.EU

supergreen