

21st Annual Temperature Controlled Logistics in Biopharmaceuticals Europe 2025



Intermodal Pharmaceutical Logistics: Sustainability and Compliance in Motion

Exploring the GDP-UCI Integrated Pharmaceutical Eco-Lane (IPEL) Approach



What is GDP·UCI?

Aimed at the global pharmaceutical distribution chain, the GDP Universal Compliance Initiative has the goal of bringing consistency, certainty, and continuous improvement to the process of meeting international quality and regulatory standards for the safe, efficient and sustainable distribution of medicines and vaccines



An independent subscription-funded body

GDP-UCI is not a vested interest group and is not promoting, protecting or controlled by any specific business interests or factional group

ON-LINE COLLABORATION PLATFORM





Integrated Pharma Eco-Lanes

The exploration and development of GDP-compliant intermodal “pharma eco-lanes” linking up the main pharma production centres and distribution hubs in alignment with Euro green deal and other sustainability policies



JOINING UP THE SAFE AND SUSTAINABLE DISTRIBUTION OF MEDICINES FROM PRODUCER TO PATIENT



INTEGRATED PHARMA ECO-LANE

“An ‘Integrated Pharma Eco-lane’ (IPEL) in pharmaceutical logistics refers to a specialized supply chain route optimised to transport pharmaceutical products in an environmentally and sustainable manner while ensuring the integrity and safety of the pharmaceuticals through compliance with regulatory standards and other GDP guidelines”



JOINING UP THE SAFE AND SUSTAINABLE DISTRIBUTION OF MEDICINES FROM PRODUCER TO PATIENT



UNITED NATIONS
**PARIS CLIMATE
AGREEMENT**
SIGNING CEREMONY
— 22 APRIL 2016 —



Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels



Emissions Gap Report 2024

No more hot air ... please!

With a massive gap between rhetoric and reality,
countries draft new climate commitments

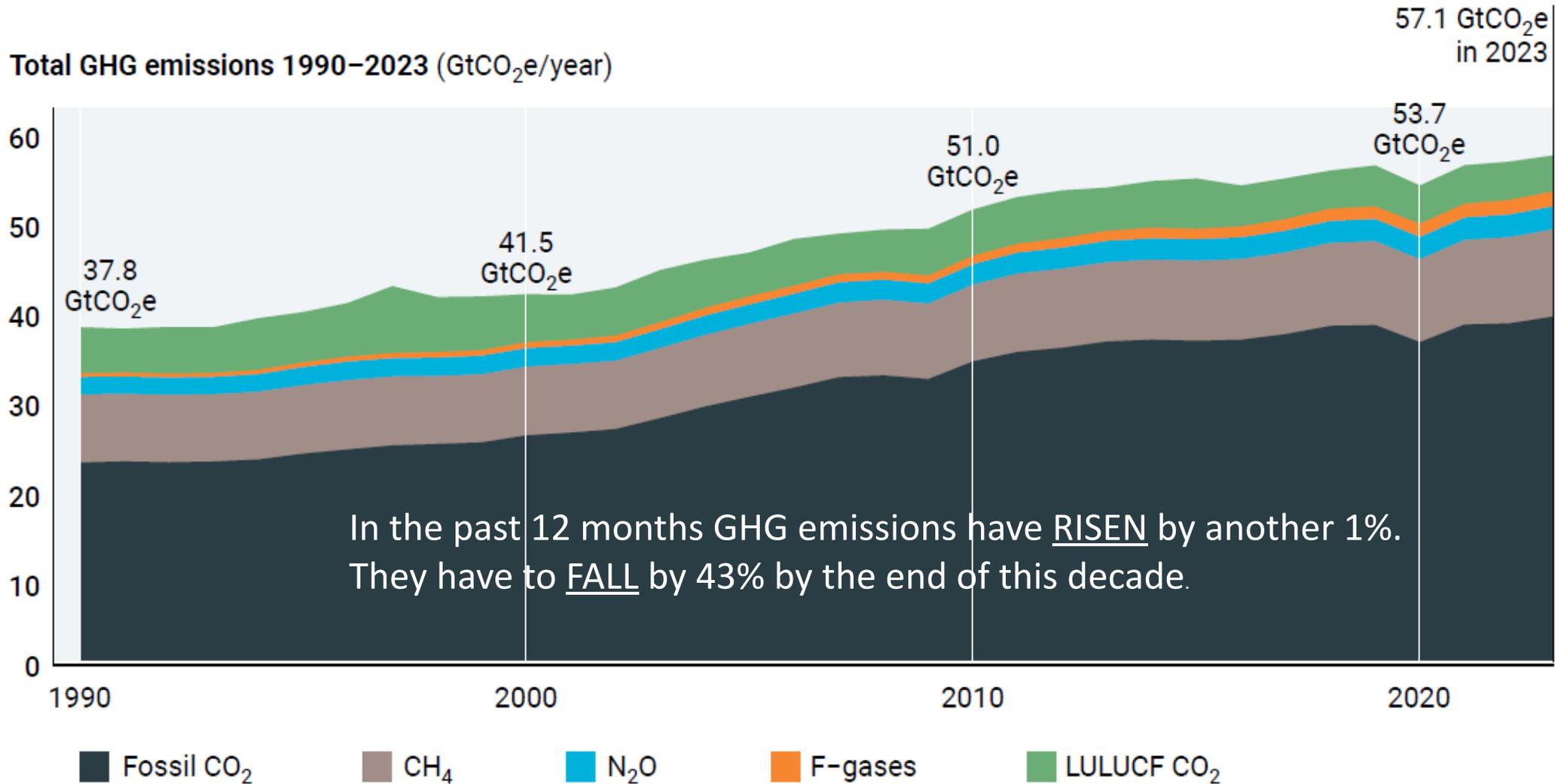


JOINING UP THE SAFE AND SUSTAINABLE DISTRIBUTION OF MEDICINES FROM PRODUCER TO PATIENT



Total GHG Emissions 1990 -2023

Total GHG emissions 1990–2023 (GtCO₂e/year)



Freight Logistics

responsible for over

13%

of total global CO₂ emissions

& around

10%

of total global GHG emissions



“The strong growth of freight activity calls for an increased focus on decarbonising goods transport”

“Freight’s absolute CO₂ emissions will be 22% higher than 2015 by 2050 under current policies and its share of all transport emissions will continue to grow”

Source: OECD International Transport Forum

Total Global Trade in Health Related Products
Exceeds
One Trillion Dollars

\$1.058 TRILLION

(ONE THOUSAND THOUSAND MILLION)

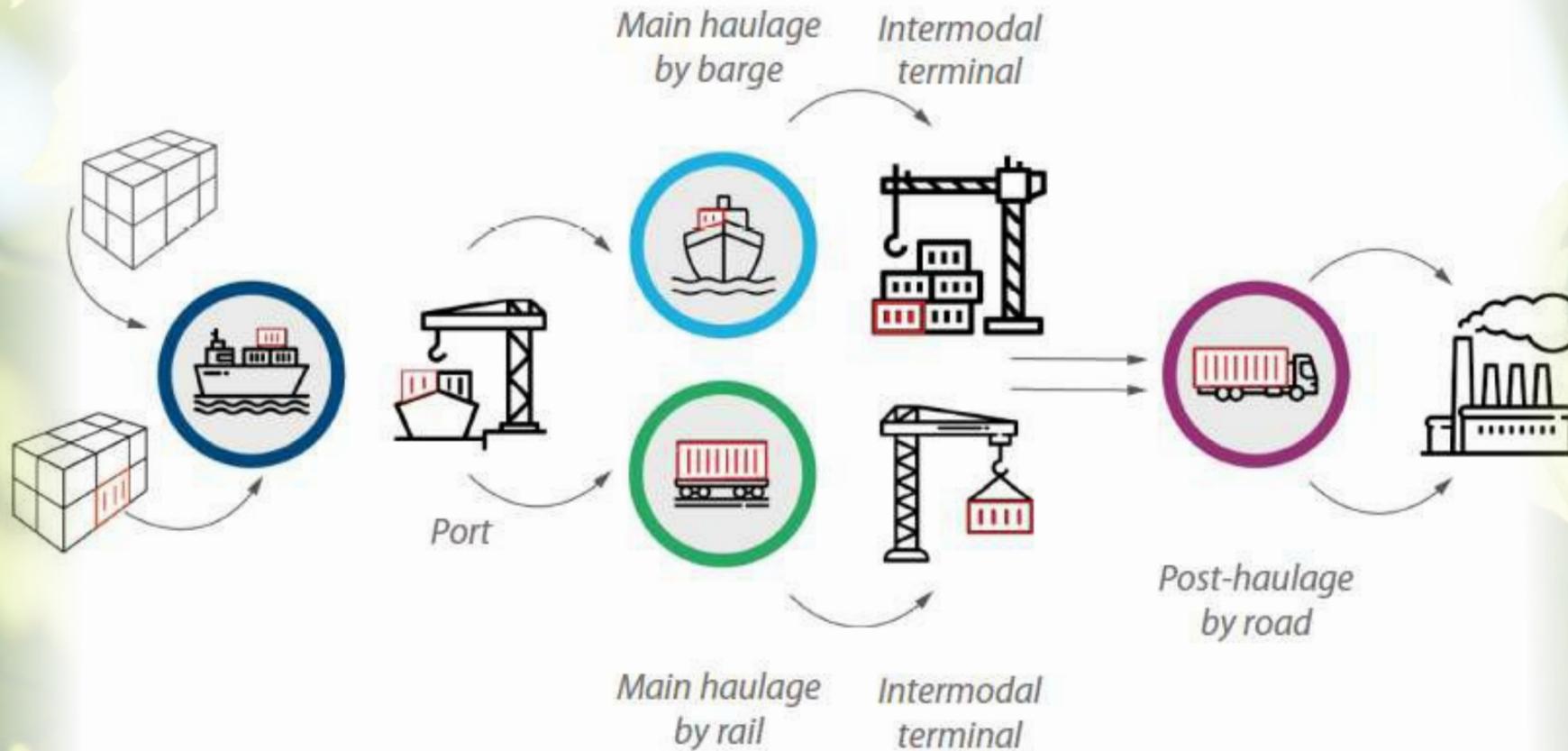
To what extent do you think the pharmaceutical supply chain is currently meeting its legal and social obligations (ESG) regarding environmental sustainability?

“Some progress is being made but much more needs to be done: 63%

Are you currently measuring and reporting your organization’s “Scope 3” emissions in accordance with GreenHouse Gas Protocol (GHG Protocol)

“No” or “Not sure”: 67%

Example of Intermodal Logistics Chain



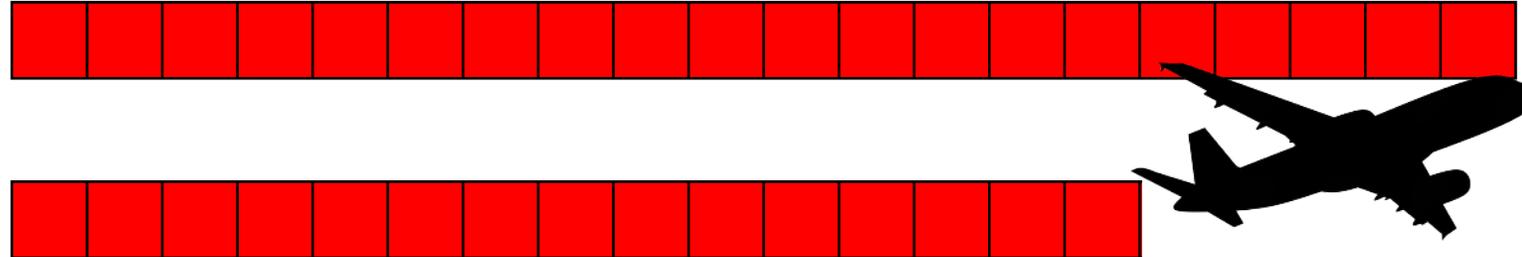
Source: ECA

COMPARISON OF CO₂ EMISSIONS BETWEEN MODES OF TRANSPORT

CO₂ Efficiency Comparison: Grams of CO₂ emitted per ton-kilometer (gCO₂/ton-km):

Sources: ICCT; IPCC; EEA

Short-haul Flights (under ~1,500 km):
1,500-2,000 gCO₂/ton-km



Long-haul Flights (over ~1,500 km):
1,000-1,500 gCO₂/ton-km

Road Freight: 60-150 gCO₂/ton-km



Inland Waterways: 30-50 gCO₂/ton-km



Sea Freight: 7-40 gCO₂/ton-km



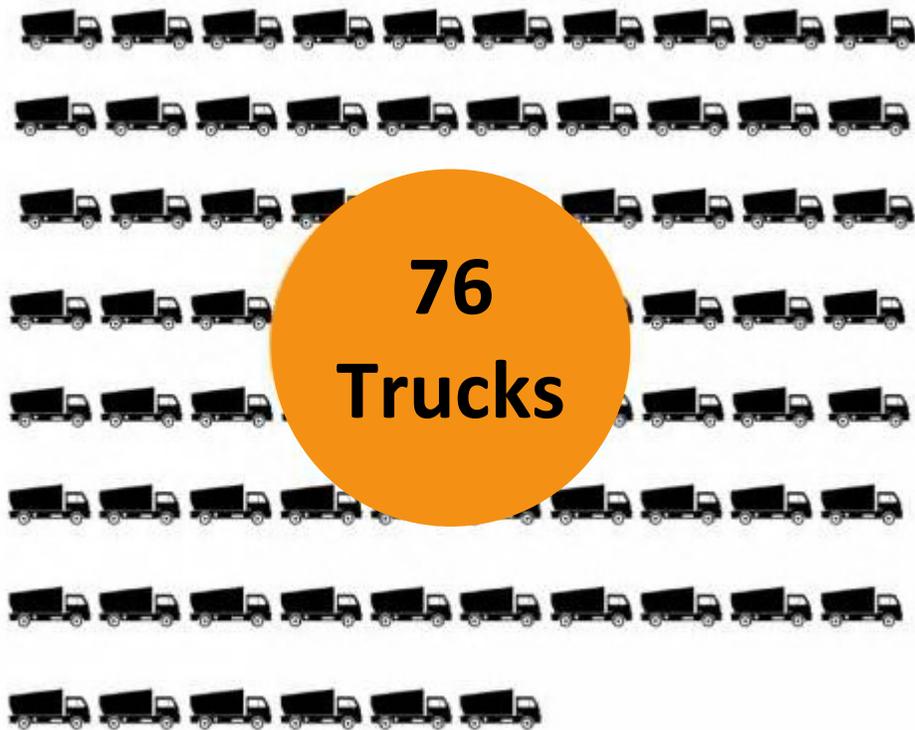
Rail Freight: 15-30 gCO₂/ton-km



NOTE: ADDITIONAL IMPACT OF AIR FREIGHT:

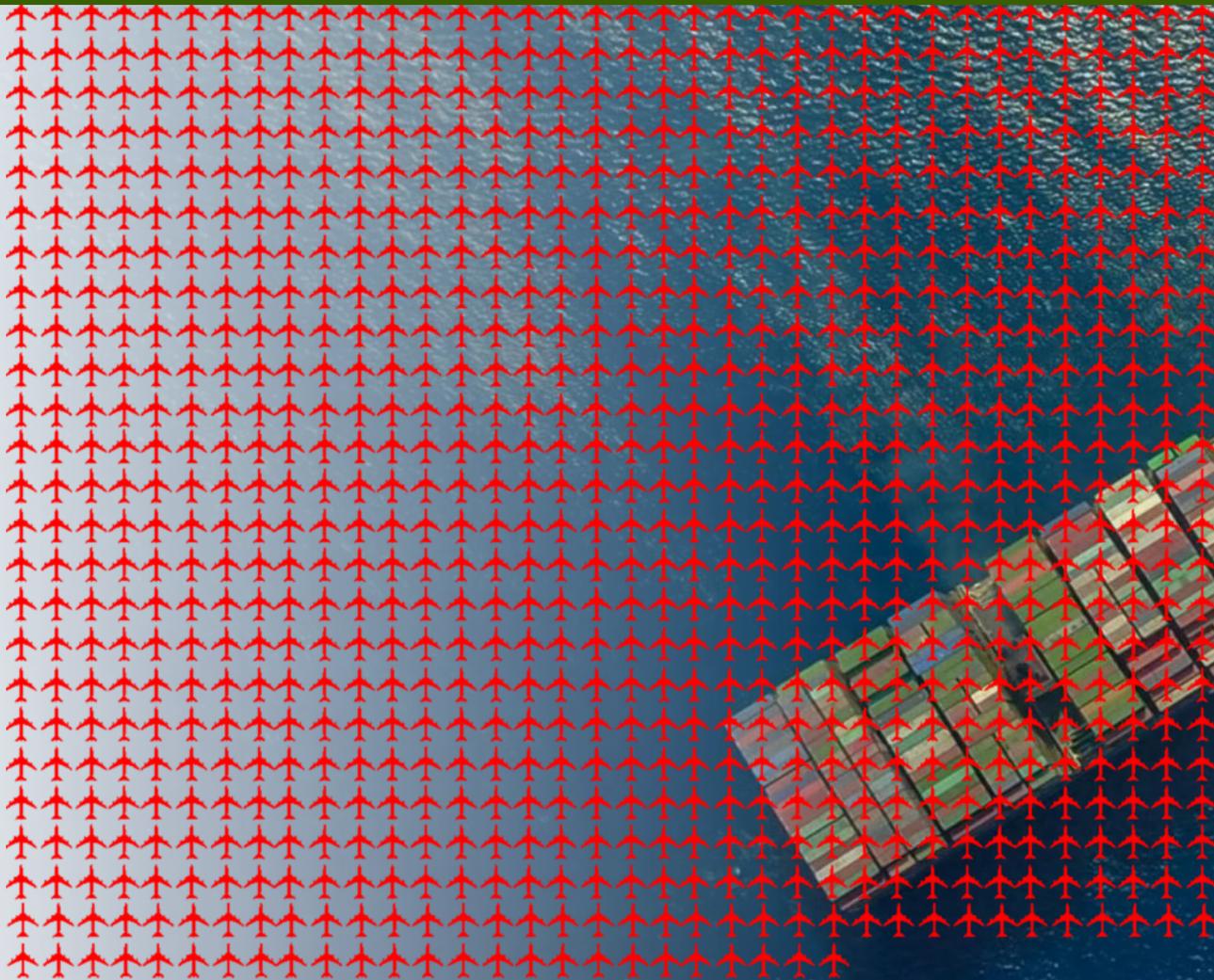
+ a radiative forcing multiplier
(1.9 to 2.0 times the CO₂ emissions)
applies to both short- and long-haul flights

COMPARISON OF CO₂ EMISSIONS BETWEEN MODES OF TRANSPORT



Source: HS2.org.uk 2024

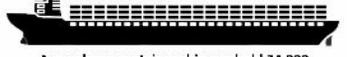
COMPARISON OF CO₂ EMISSIONS BETWEEN MODES OF TRANSPORT



20-foot high-cube ocean reefer



25 m³ usable space



A very large container ship can hold 24,000 20-foot containers

One large container ship has the volumetric capacity equivalent to more than 800 Boeing 777-200F wide body freighters

IPEL

- **The Role of IPEL in Securing Pharma Supply Chains**
- **IPEL is a framework for compliance and sustainability**
- **Integration of GDP standards into intermodal eco-lanes**
- **Collaborative approach with pharma shippers, carriers, freight hubs, logistics providers & regulators**

IPEL

TWO PHASES:

1. PILOT STAGE

2. COMMERCIALISATION STAGE



5 Main pharmaceutical sales markets (ranked)

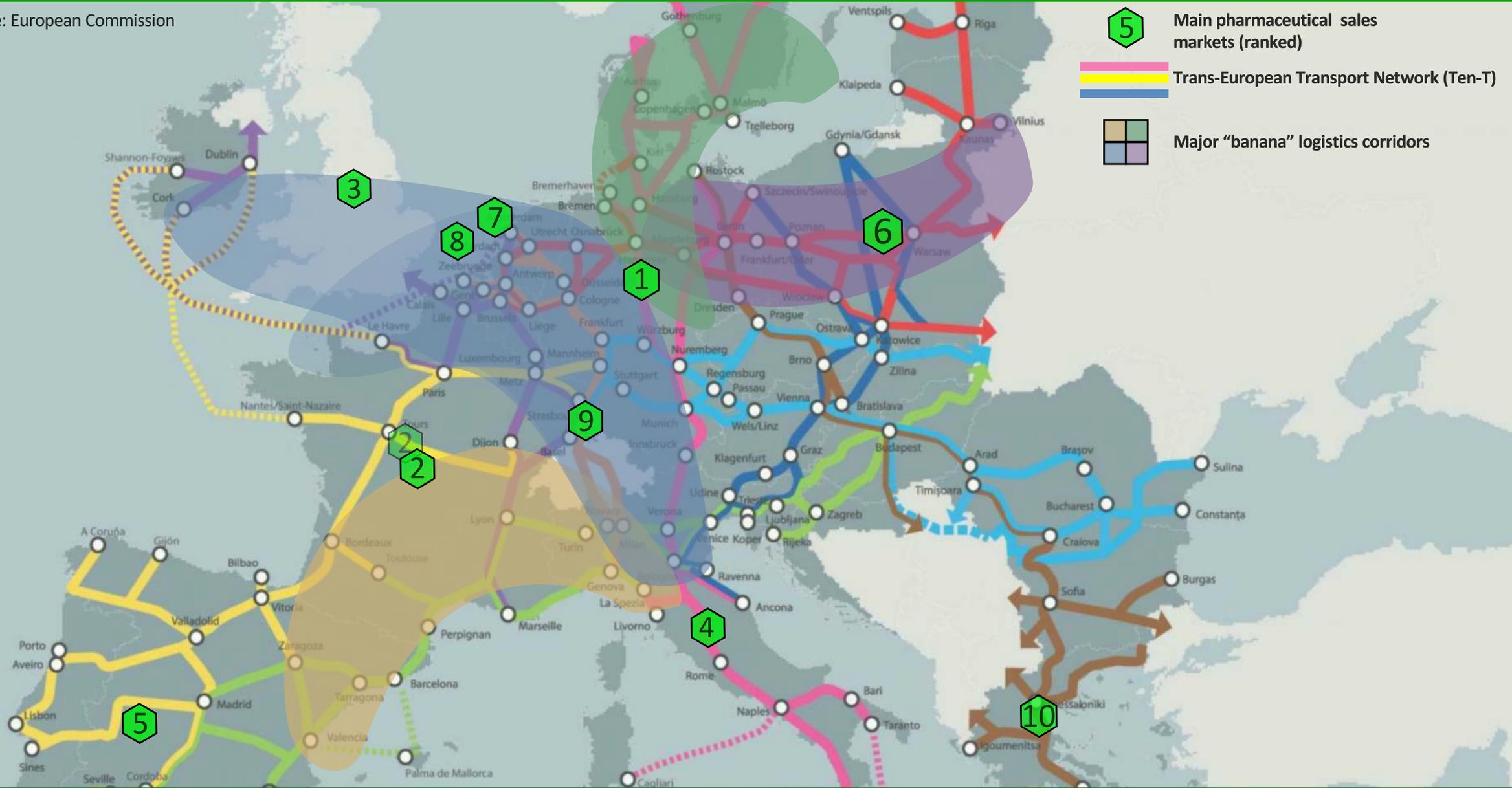


Source: European Commission

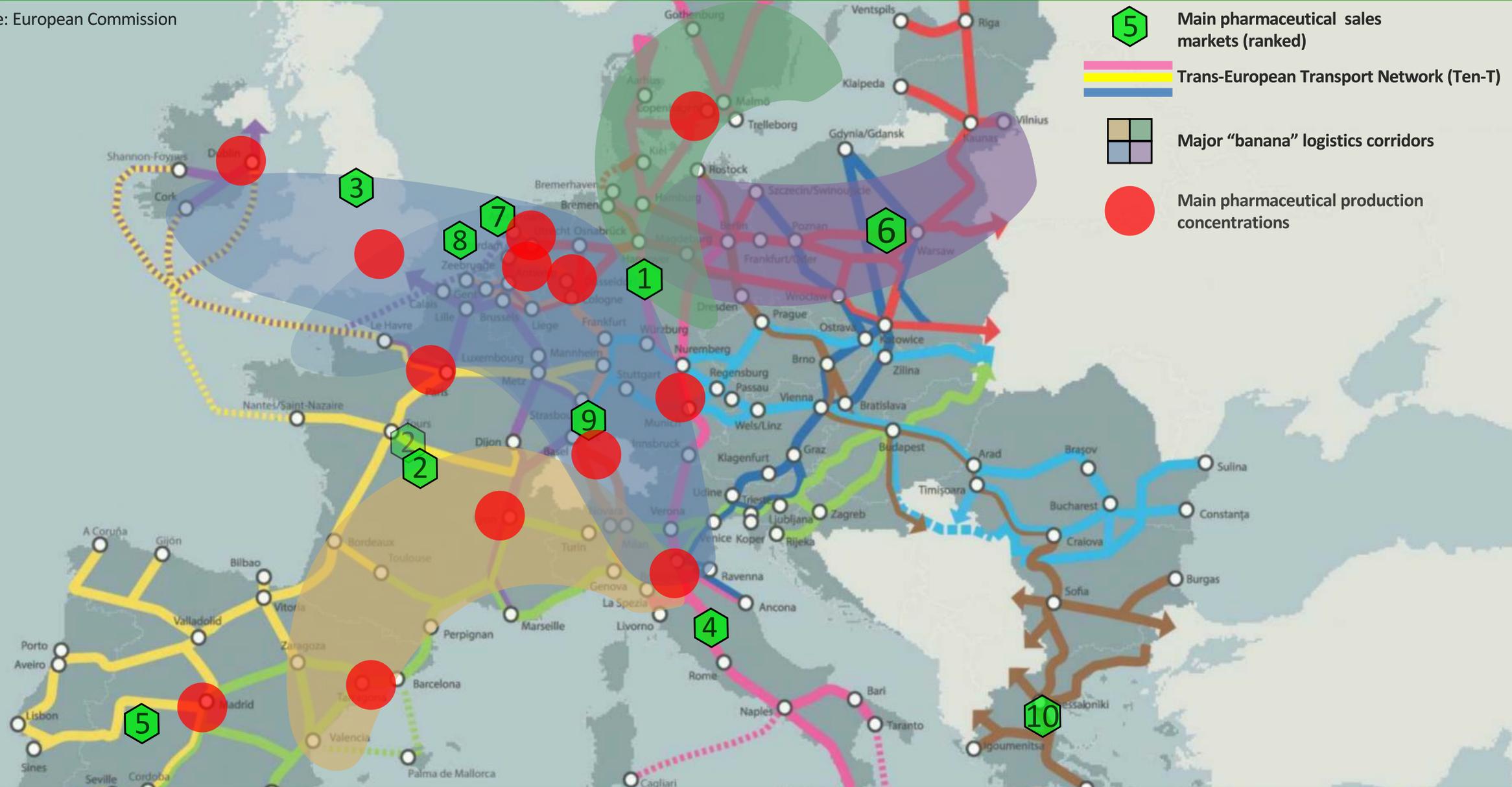
5 Main pharmaceutical sales markets (ranked)
Trans-European Transport Network (Ten-T)



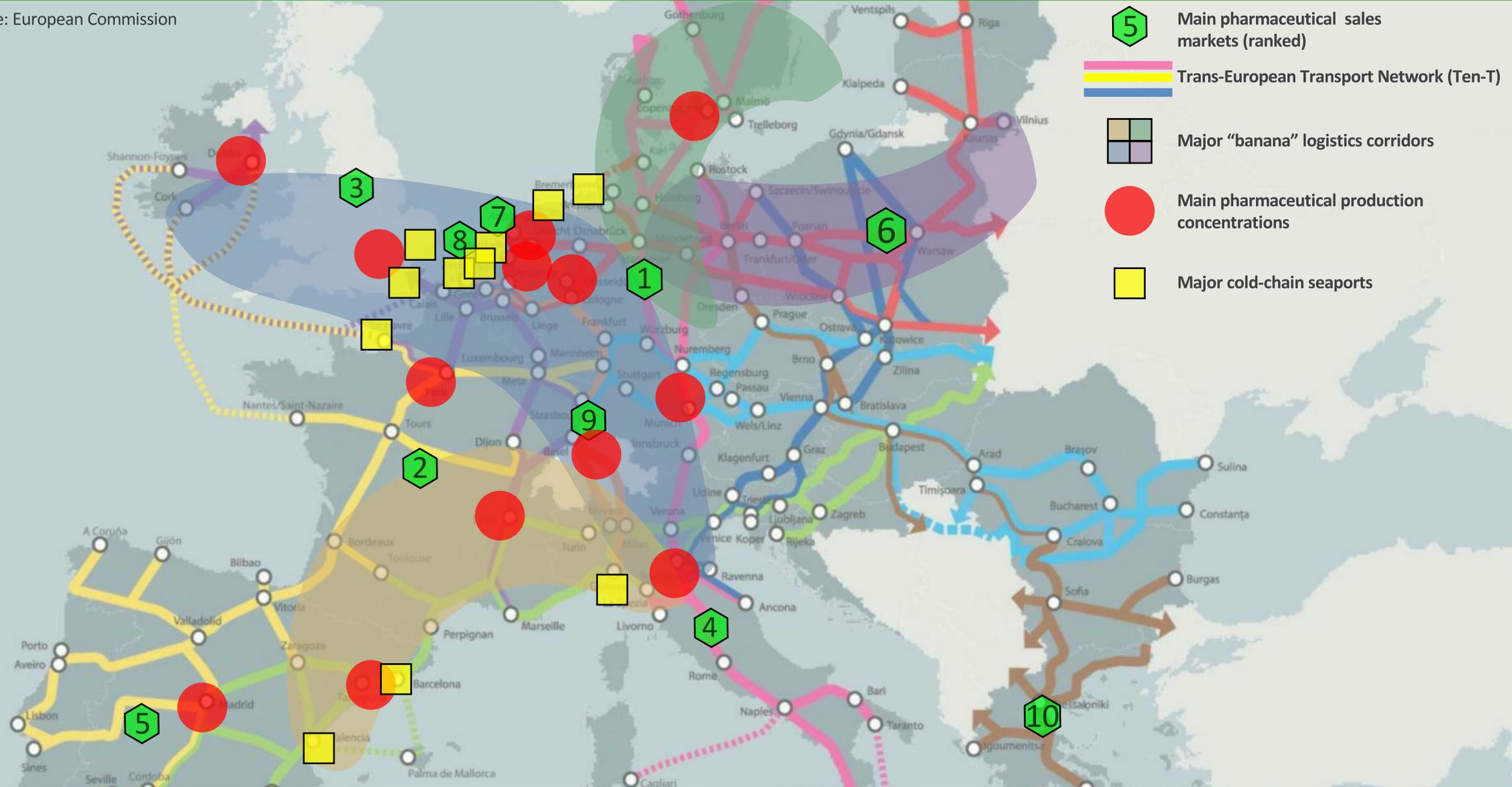
Source: European Commission



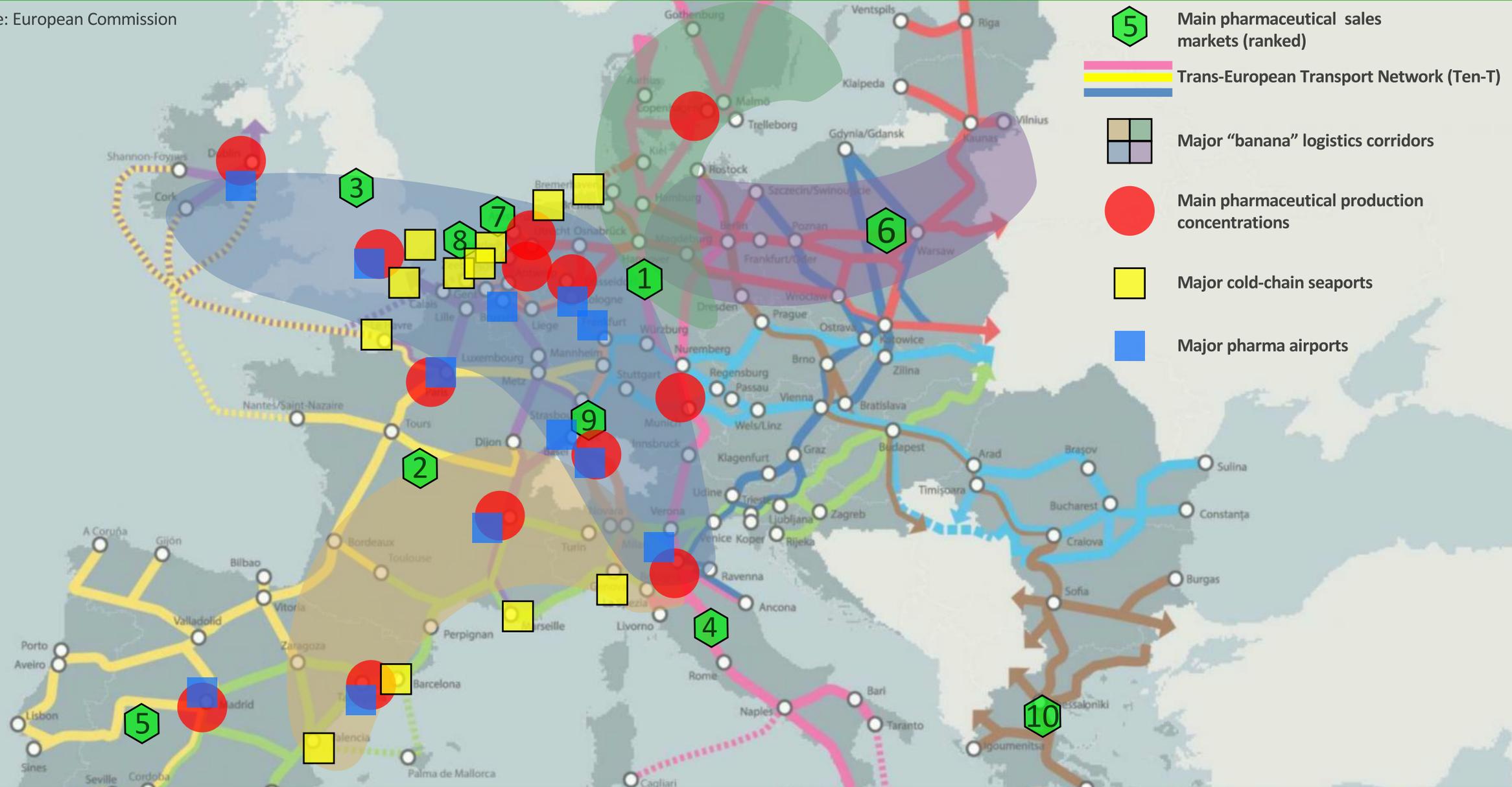
Source: European Commission



Source: European Commission



Source: European Commission



Source: European Commission



- Main pharmaceutical sales markets (ranked)
- Trans-European Transport Network (Ten-T)
- Major "banana" logistics corridors
- Main pharmaceutical production concentrations
- Major cold-chain seaports
- Major pharma airports
- IPEL pilot routes

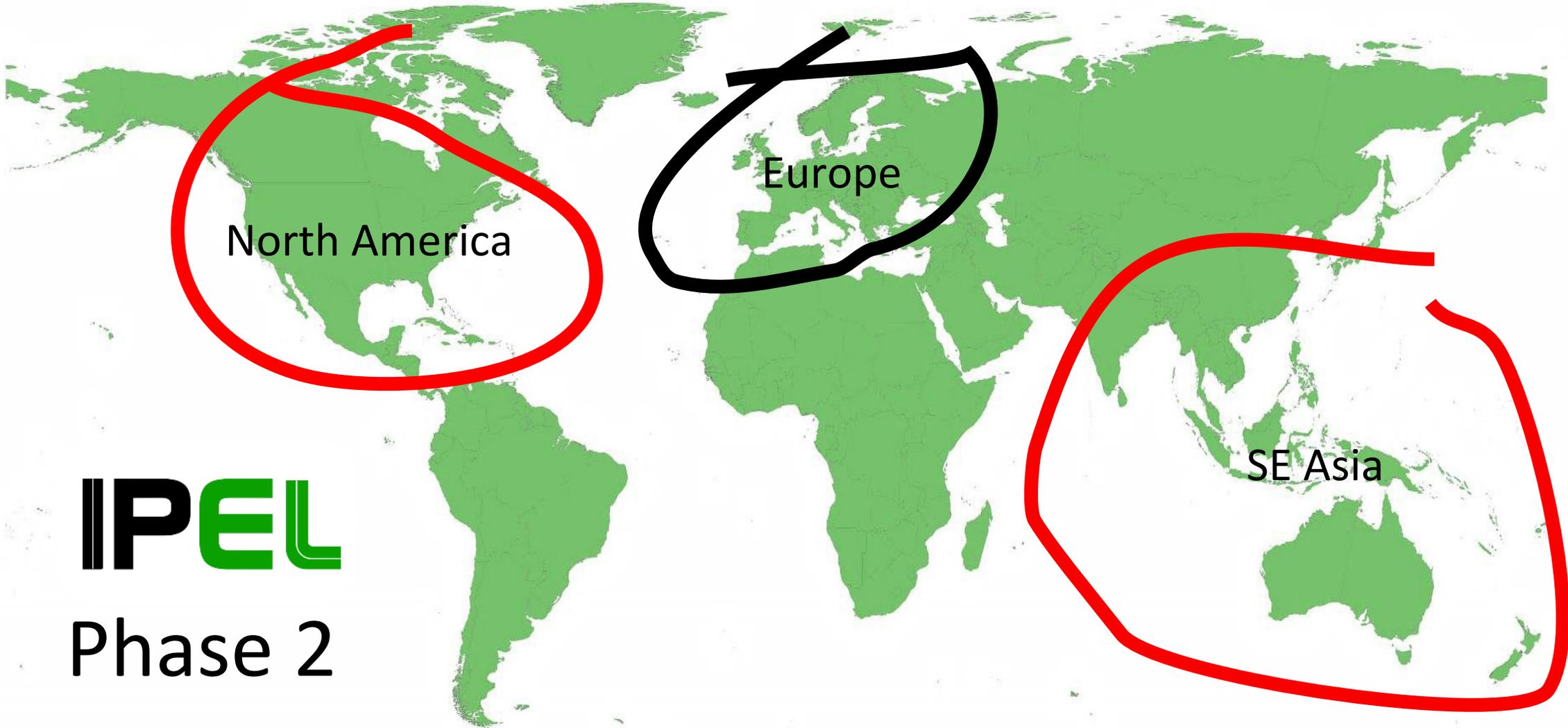
IPEL 1
Barcelona to Posnan
2150km

Source: European Commission



- Main pharmaceutical sales markets (ranked)
- Trans-European Transport Network (Ten-T)
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IPEL 2
Rotterdam to Budapest
1600km



North America

Europe

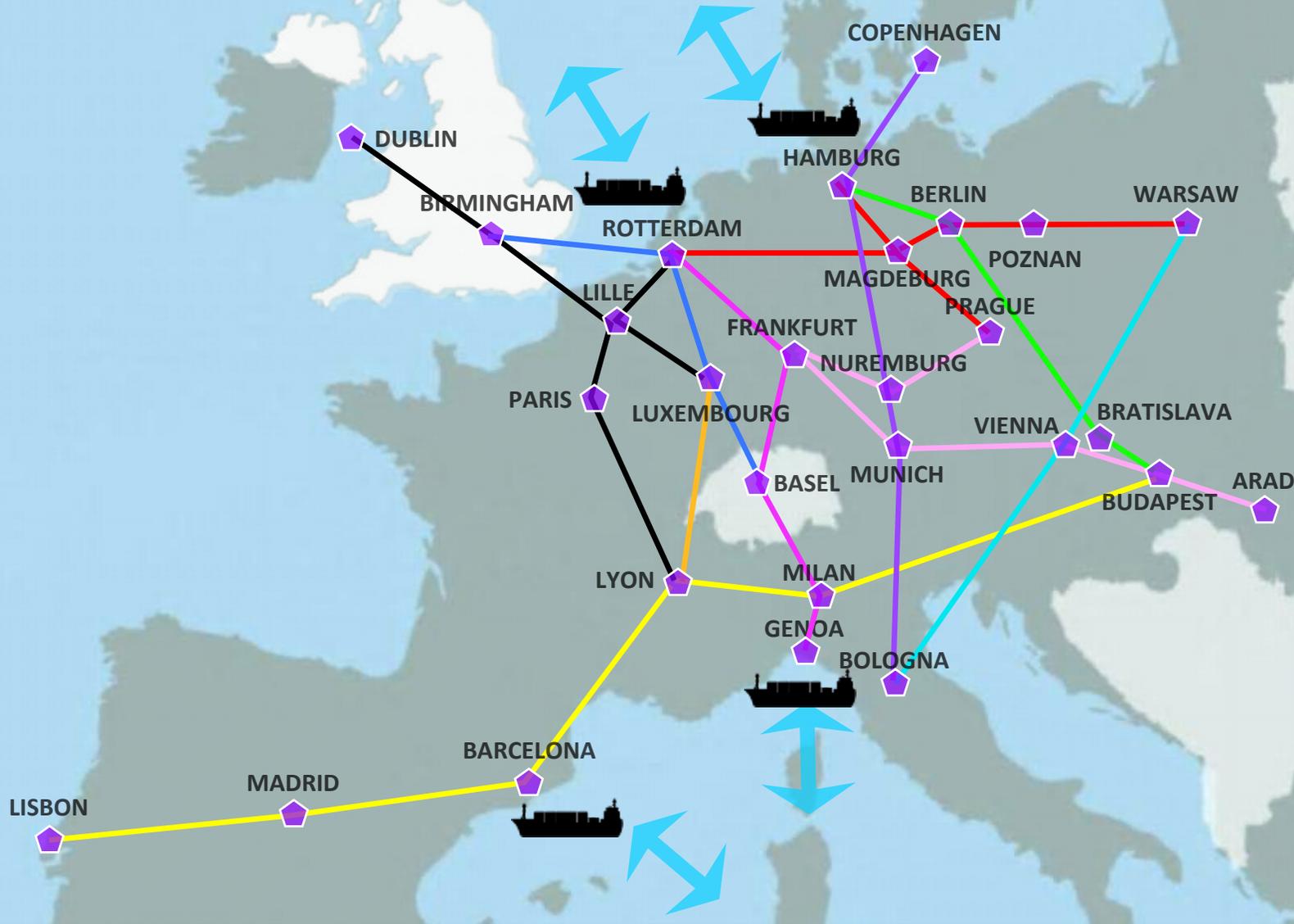
SE Asia

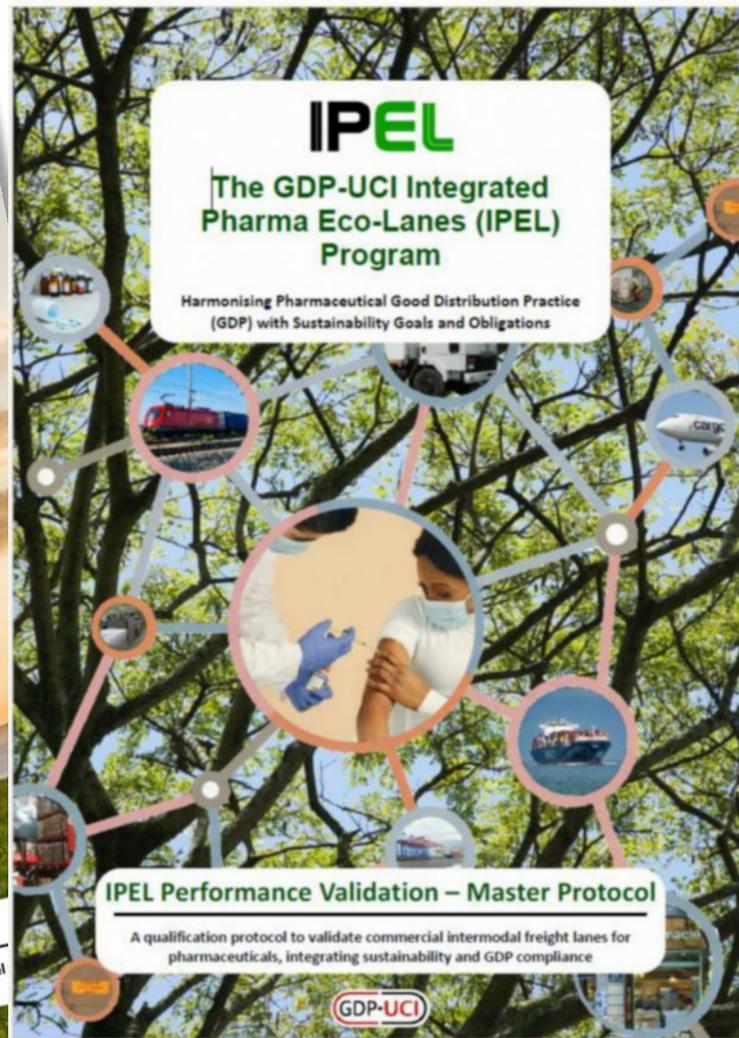
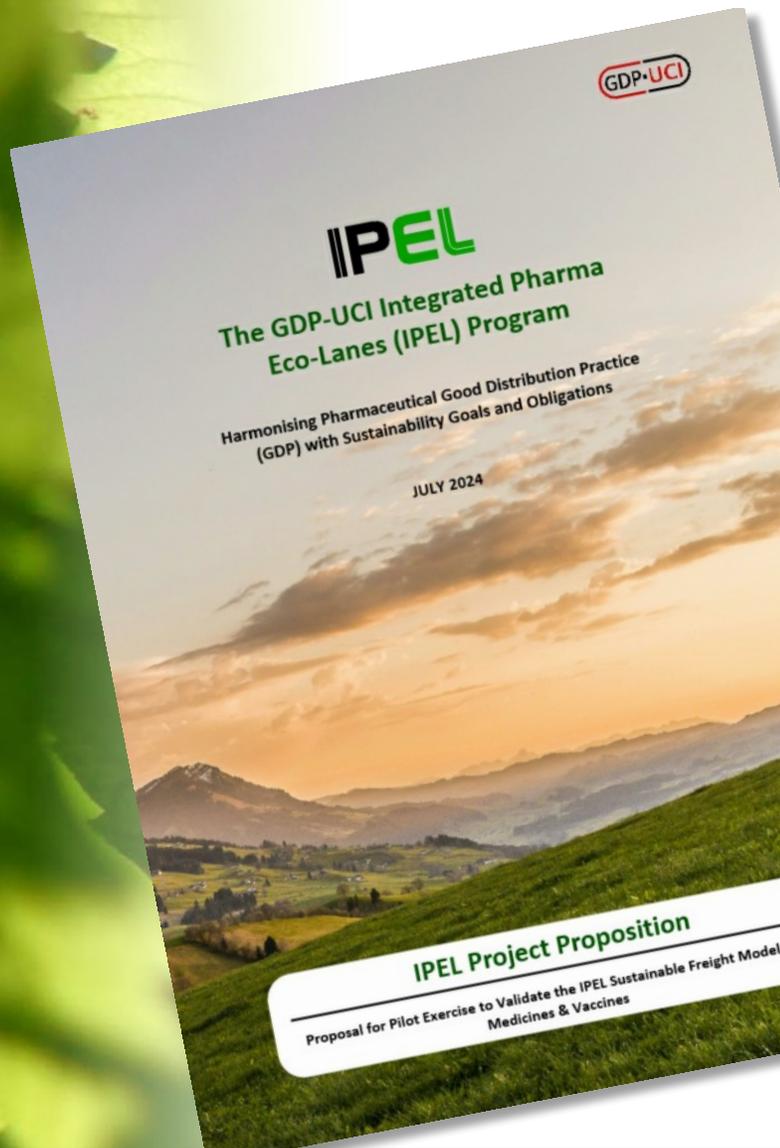
IPEL

Phase 2



EUROPEAN NETWORK 2030







Project Master Documentation

1. IPEL Project Proposal

A high-level document outlining the overall project concept and objectives.

2. IPEL Project Performance Validation - Master Protocol

A comprehensive framework that defines standardized procedures, risk management strategy, and the criteria for evaluating/verifying the performance and outcomes of the IPEL pilot exercise against its predefined objectives and KPI benchmarks.

3. IPEL Final Project Plan, Specification, & Participant Brief

A detailed executional plan containing precise operational details which, together with the above two documents, forms the Project Master Plan. This document will include granular operational detail, such as SOPs and lane-specific details, serving as a working brief for participating organizations.



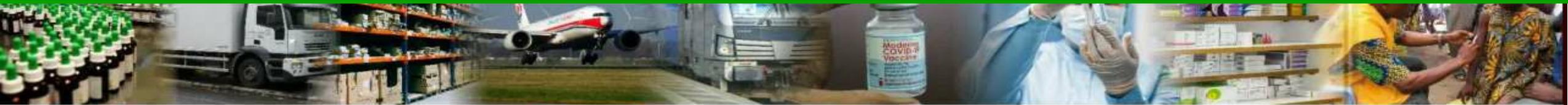
Guidance & Solutions WorkGroup
PROJECT



IPEL Quarterly WorkShops

Integrated Pharmaceutical Eco-Lanes

IPEL



Good Distribution Practice
Universal Compliance Initiative

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www.gdp-uci.org





Thank you

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