Distribution Management

Other Types of Distribution Management

EMERGENCY - HUMANITARIAN LOGISTICS

Emergency - Humanitarian Logistics

- Parts of the distribution infrastructure(e.g. bridges, roads) can be damaged.
- This damage would make it impossible and/or unsafe for the vehicles to reach all the centers of demand (e.g., towns and villages).
- Natural events: **Earthquake, flood, hurricanes, tornadoes, volcanic eruptions, fire, blizzard, drought, pandemics, tsunami …**
- Human activity based disasters: **terrorism, train accidents, airplane crash, chemical spills, nuclear power plant failures**

Earthquake

Flood

Hurricanes

Tornadoes

Volcanic eruptions

Fire

Blizzard


AP

Drought


NO
SWIMMING

Pandemics

Tsunami

Train accidents

Airplane crash

Chemical spills

Nuclear power plant failures

Infrastructure Recovery Model

- Optimization of recovery plans for damaged elements of the distribution network (e.g., bridges and roads) after the disaster
  - real-time decision support system(Brown and Vassiliou)
  - optimization response operations following an earthquake(Fiedrich et al.)
    - optimizes the allocation of resources (e.g., cranes, trucks, dozers) to response tasks (e.g., search-and-rescue, stabilization, and rehabilitation of transportation lifelines)

- Combination of infrastructure recovery planning and aid distribution operations(Yan and Shih)
  - This model minimizes the time necessary for both emergency repair and relief distribution

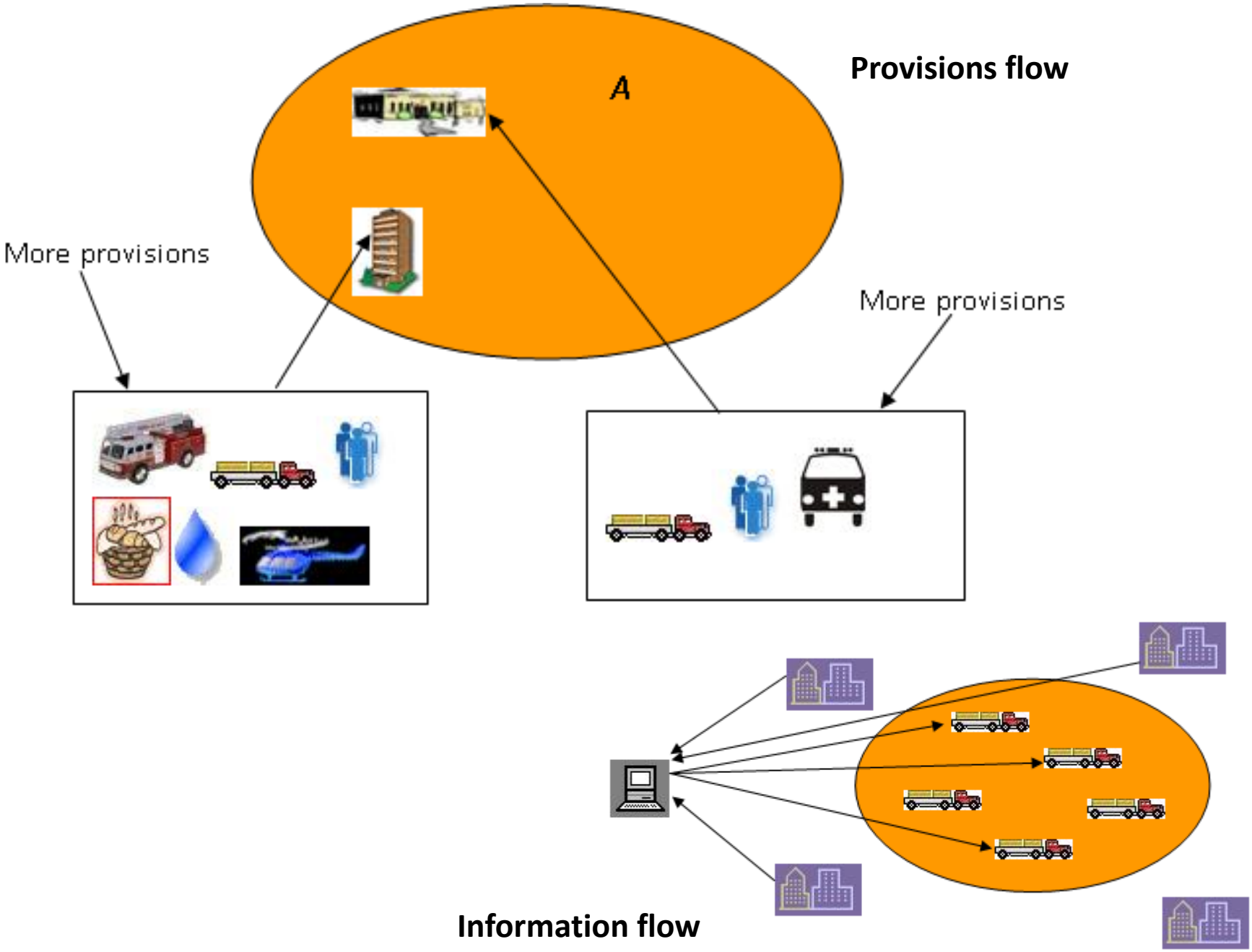
- Santa Cruz County Emergency Response and Recovery Plan:
  - Emergency flood fighting operations.
  - Emergency clearance of debris to allow for reconnaissance of the damaged areas and passage of emergency personnel and equipment for lifesaving.
  - Temporary construction of emergency access routes which include damaged streets, roads, bridges, airfields and any other facilities necessary for passage of rescue personnel

- which normally have a higher cost than the distribution operations and rely on different resources, such as clean-up teams and special machinery
- the agencies in charge of the recovery operations may not coincide with the ones in charge of the distribution. It is well-known that coordination and cooperation among agents is essential to a successful and efficient response

- **Difficulties:**
  - Limitation of time
  - Unpredictable, and unclear information

Supplies

- water,
- food (e.g., ready-to-eat meals),
- prescription medications
- Clothing
- Personal hygiene stuff (such as feminine pad)
- Shelter (or safety)
- Milk & stuff for babies (childcare)
- Professional personnel (doctors, nurses, army……)
- Equipment


Provisions flow
A
More provisions
More provisions
Information flow

EMERGENCY MEDICAL LOGISTICS

Emergency medical logistics

- Three characteristics increase the complexity and difficulty of solving logistical problems
  - **limited demand-related information, such as the severity of injuries and the number of casualties, challenges distribution-related decision making. In particular, the incubation period results in a time delay in demand**
  - **a disease can spread quickly from one area to another and can even become a large-scale epidemic**
  - **the substitutability of medical relief is imperfect, unlike other forms of relief such as food. A specific medicine cannot be perfectly substituted by another medicine.**

SUSTAINABLE DISTRIBUTION SYSTEM

Sustainable distribution system

- Foggy days with PM2.5
- To reduce the emissions:
  - Carbon tax (add the low carbon constraint)
  - Shorten the travel distance
  - Redesign the distribution network
  - Using environmental-friendly

MILITARY TACTICAL LOGISTICS

Military tactical logistics

- Distributing heterogeneous commodities
  - Food
  - Medical supplies
  - Construction material
  - Ammunition
  - Troop
  - Fuel
- Use a combination of heterogeneous transportation assets such as logistics trucks and tactical helicopters.

- Minimizing the logistics operating cost while satisfying the operational demands under time and security constraints is of high importance for the military.
- In the design of military logistics distribution strategies, as well as commercial logistics strategies, there are different trade-offs between the capital/operating costs and the achievable support performances.
- Focusing solely on the logistics costs may result in strategies that are less flexible and not effective in meeting the requirements of deployed troops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COLD CHAIN

Cold Chain

- For preventing food being rotten (perished)
- Keep refrigerated and frozen goods in specified low temperature environment during production, storage, transportation, process and sale.
- Features:
  - Freshness, perishability, timeliness, large costs, logistics performance
  - Reduce processing time in lowering the risk of food spoilage

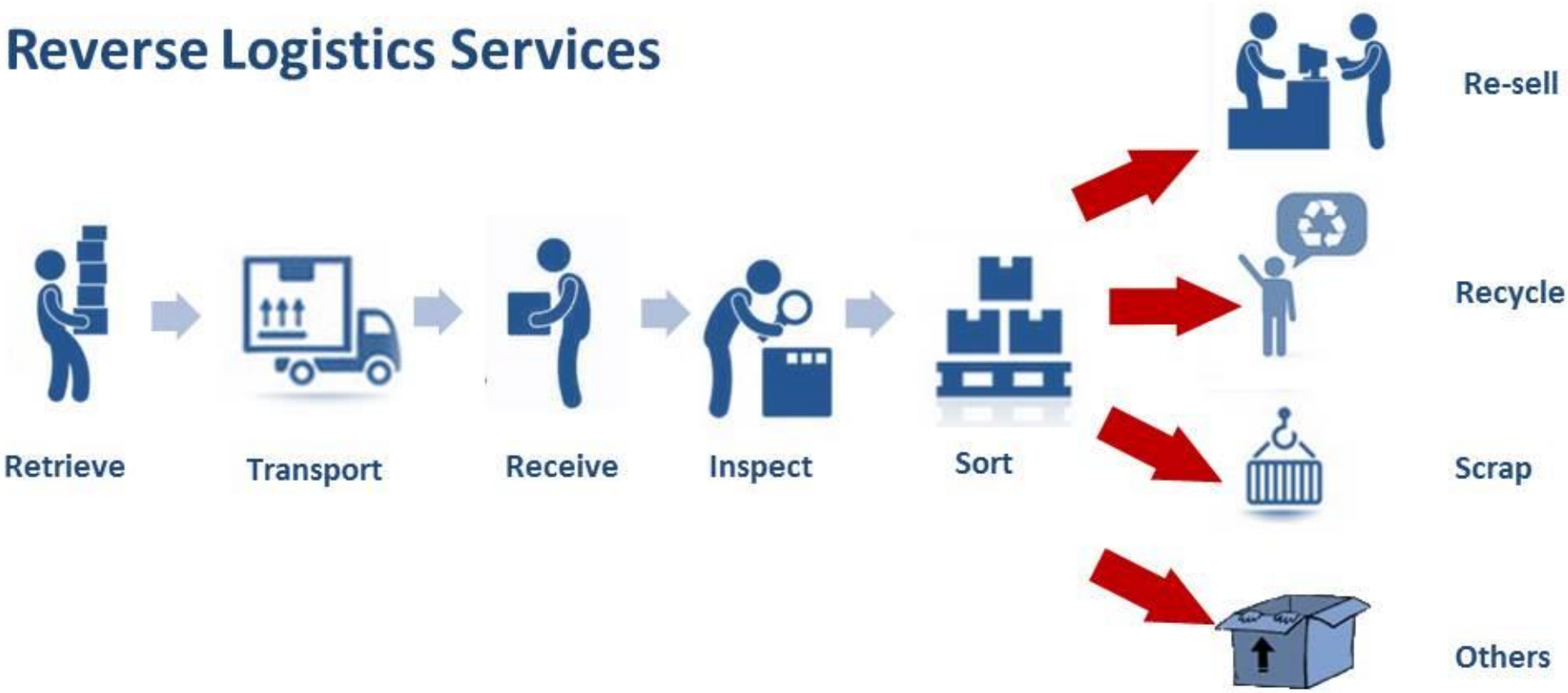
REVERSE LOGISTICS

Reverse Logistics

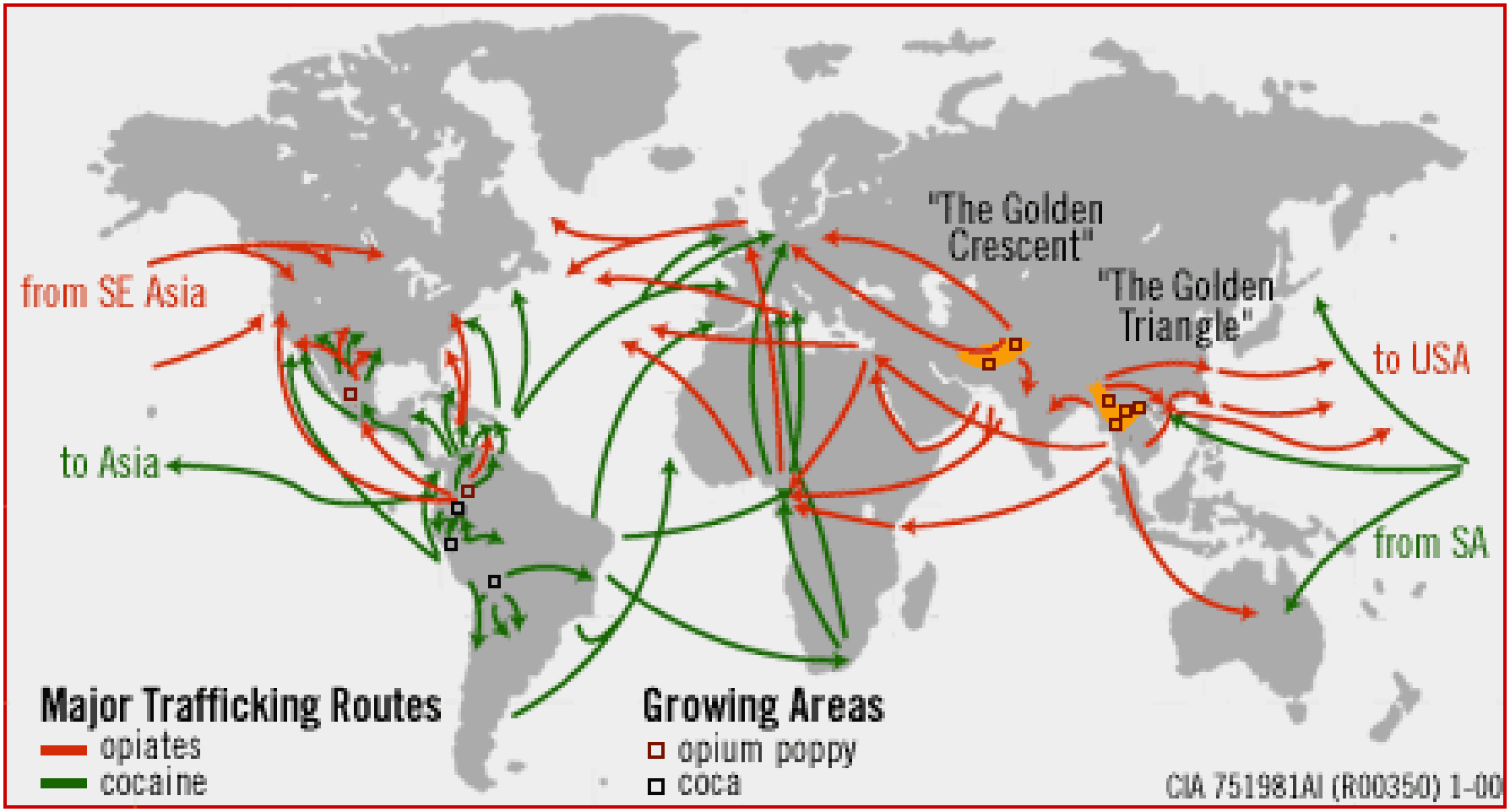
"...the movement of goods from a consumer towards a producer in a channel of distribution"

引入逆物流系統的主要原因	使用逆物流系統的典型例子
為獲得補償或退款而退還產品	不能滿足客戶期望的vcR被退回，以得到退款
歸還短期或長期租賃物	當天租賃的場地裝備的返還
返回製造商以便修理、再製造或返還產品的核心部分	返還用過的汽車發電機給製造商以期被再製造和再銷售
保修期返回	電視機在保修期內功能失靈而被退還
可再利用的包裝容器	返回的汽水瓶、酸奶瓶、飲料瓶被清洗和再使用
寄賣物返還	寄存在商店的音箱沒有變賣又返還給物主
賣給顧客新東西時折價回收舊貨	出售新車時代理商回收舊車準備再賣
產品發往特定組織進行升級	舊電腦被送往製造商以安裝光碟驅動器
送還	不必要的產品包裝或托盤在不需要時被送還
普遍的產品召回	由於安全帶失效汽車被返還給代理商
產品返還給製造商進行檢查或校準	醫學設備被返還以檢查和調校儀錶
產品沒有實現製造商對客戶的承諾	如果電視性能與承諾的不一致則可以退還它

Reverse Logistics Services



Smuggle


"The Golden Crescent"
"The Golden Triangle"
from SE Asia
to Asia
to USA
from SA
Major Trafficking Routes
opiates
cocaine
Growing Areas
opium poppy
coca
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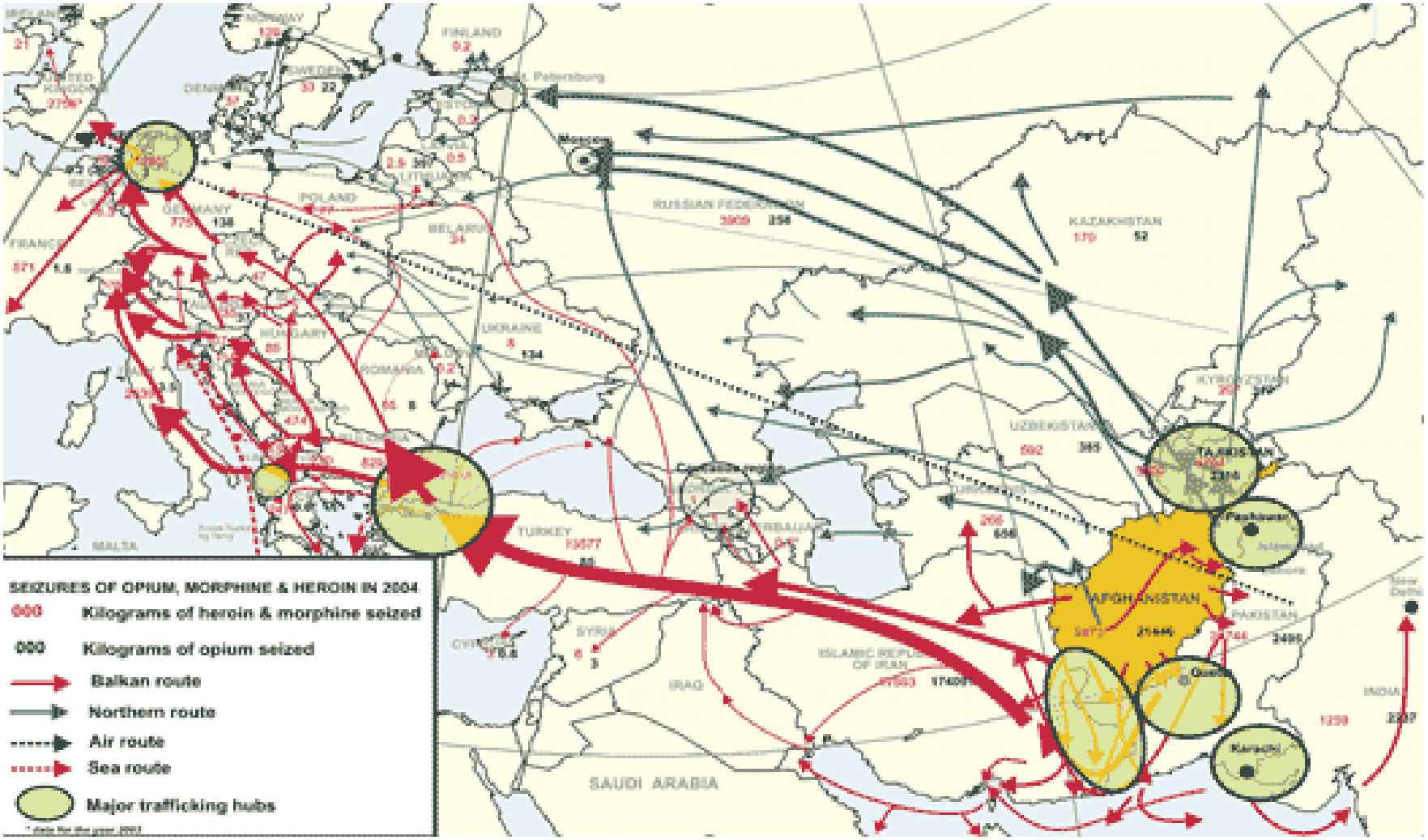
SEIZURES OF OPIUM, MORPHINE & HEROIN IN 2004
000 Kilograms of heroin & morphine seized
000 Kilograms of opium seized
Balkan route
Northern route
Air route
Sea route
Major trafficking hubs
FINLAND
RUSSIAN FEDERATION
KAZAKHSTAN
BELARUS
UKRAINE
POLAND
GERMANY
HUNGARY
ROMANIA
TURKEY
UZBEKISTAN
TAJIKISTAN
AFGHANISTAN
PAKISTAN
Peshawar
Quetta
Karachi
IRAQ
SAUDI ARABIA
INDIA
MALTA