



Slovenian System for Protection against Illicit Radioactive Material in Scrap Metal Shipments

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The Problem



Lost or forgotten sources



- Somebody stopped using them ...
- ... and has forgotten about them,
- Or somebody intentionally illegally trafficked with them!



What was found in scrap in Slovenia?



Diff. items, including
NORM (Ra-226)

80 %



Sources from industry
(mainly Co-60 in Cs-137)

12 %



Lightning rods
(Eu-152/154, Co-60)

6 %



Others
(Th-232,...)

2 %



**Many imported
from abroad!**





Specific Slovenian problem



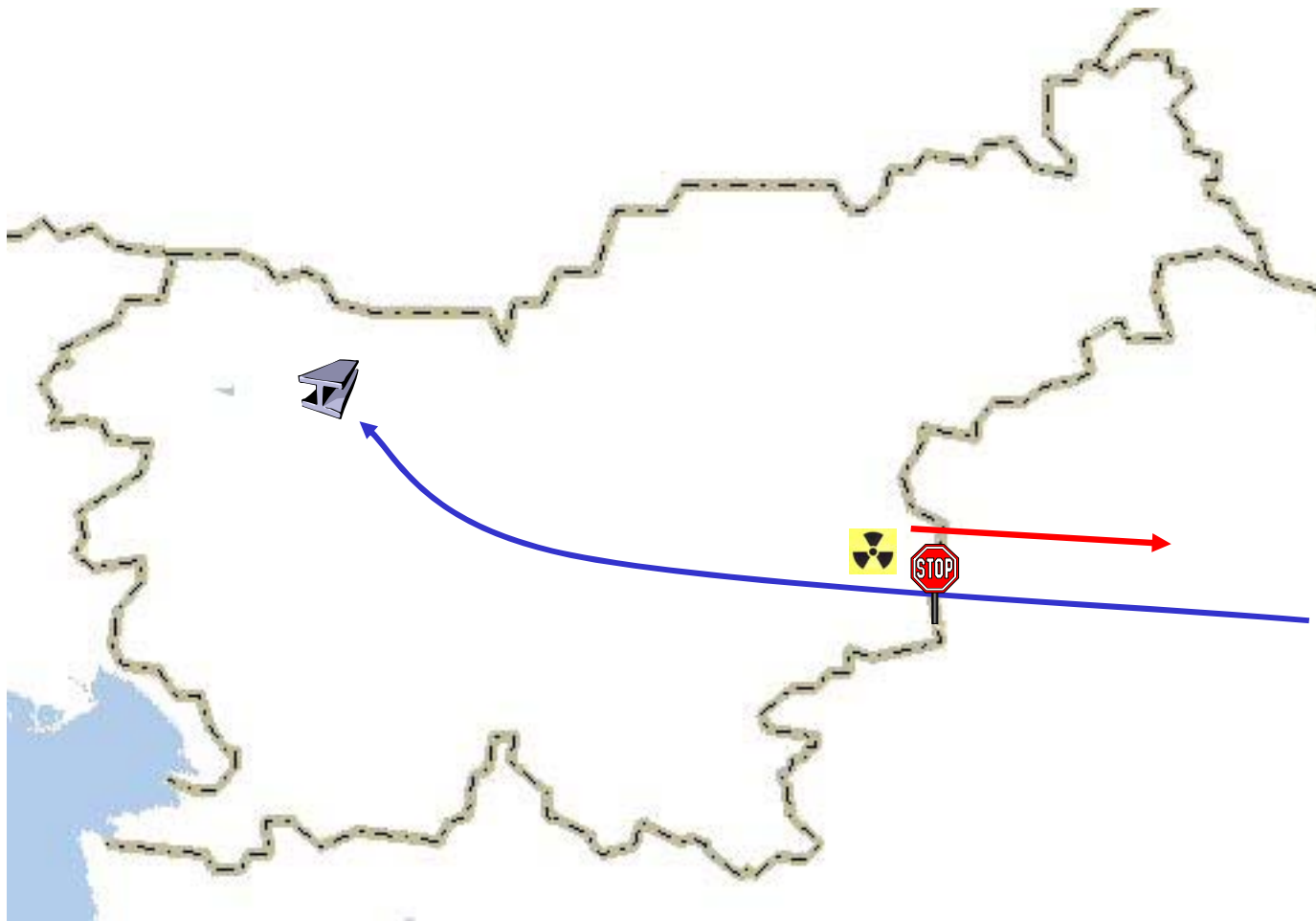
Protection until 2008



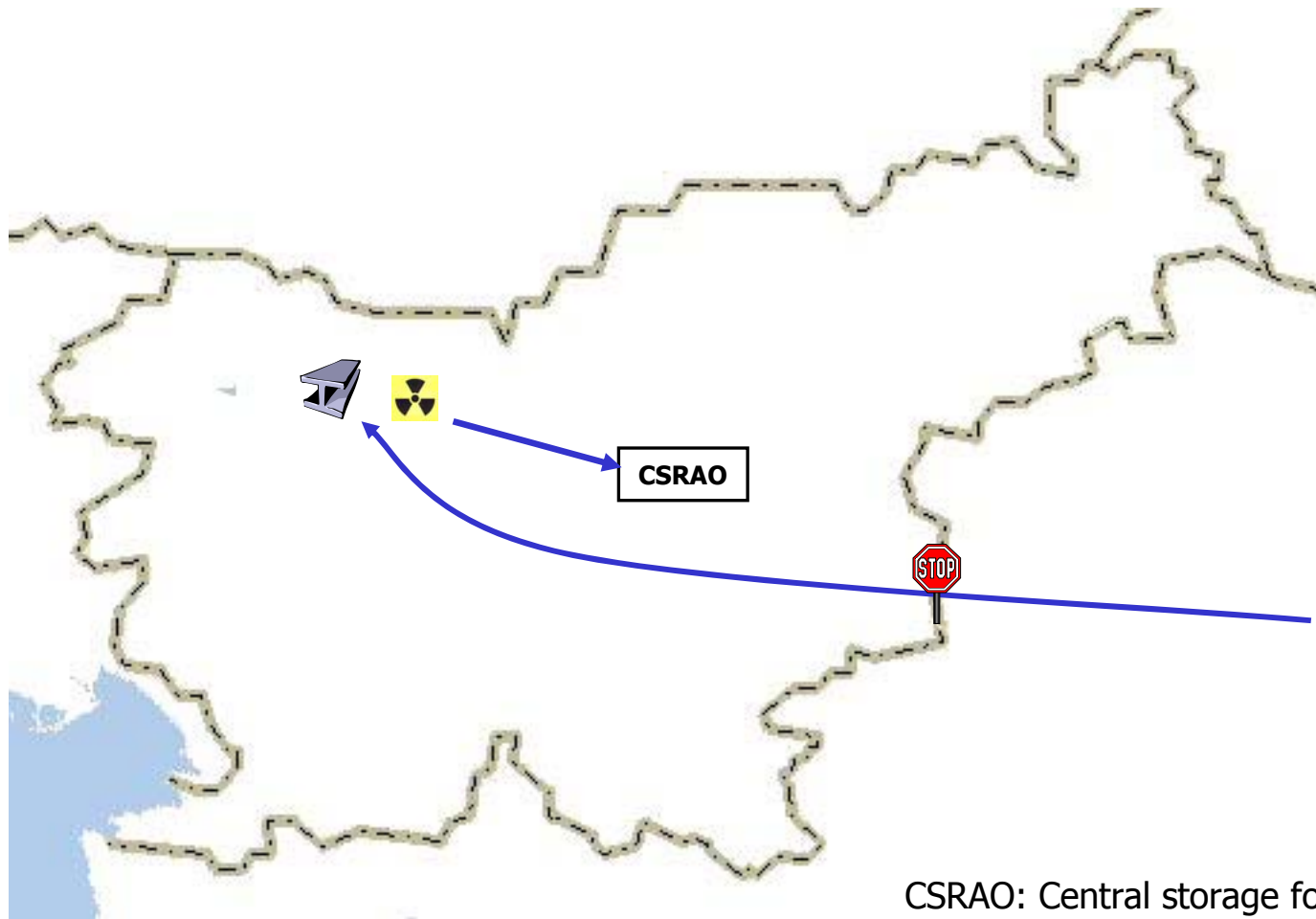
- Handheld pagers (Customs, Police)
- Co-operation between police-customs-nuclear inspection
- Portal monitors at two border crossings



Import from the East



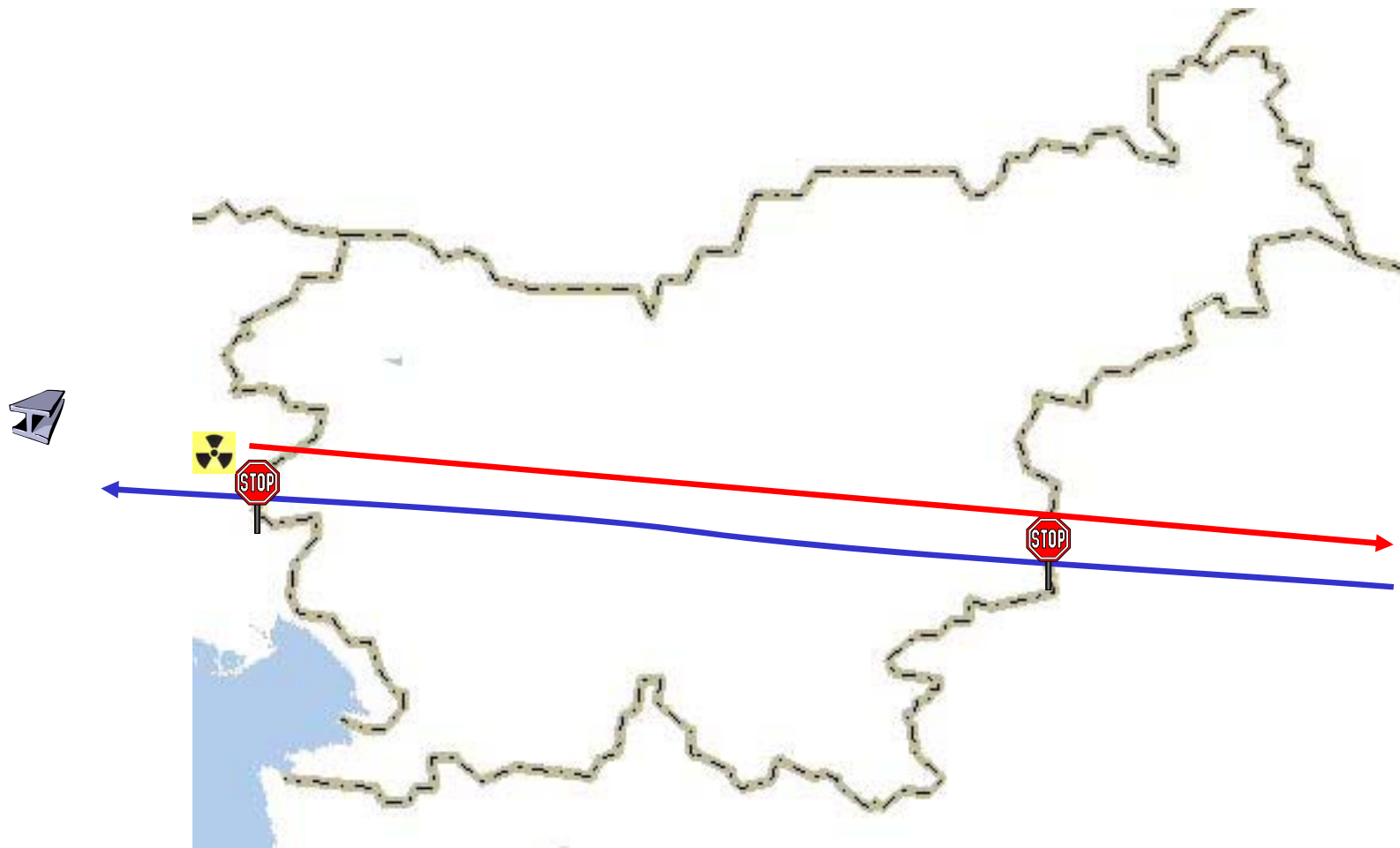
Import from the East



CSRAO: Central storage for RW



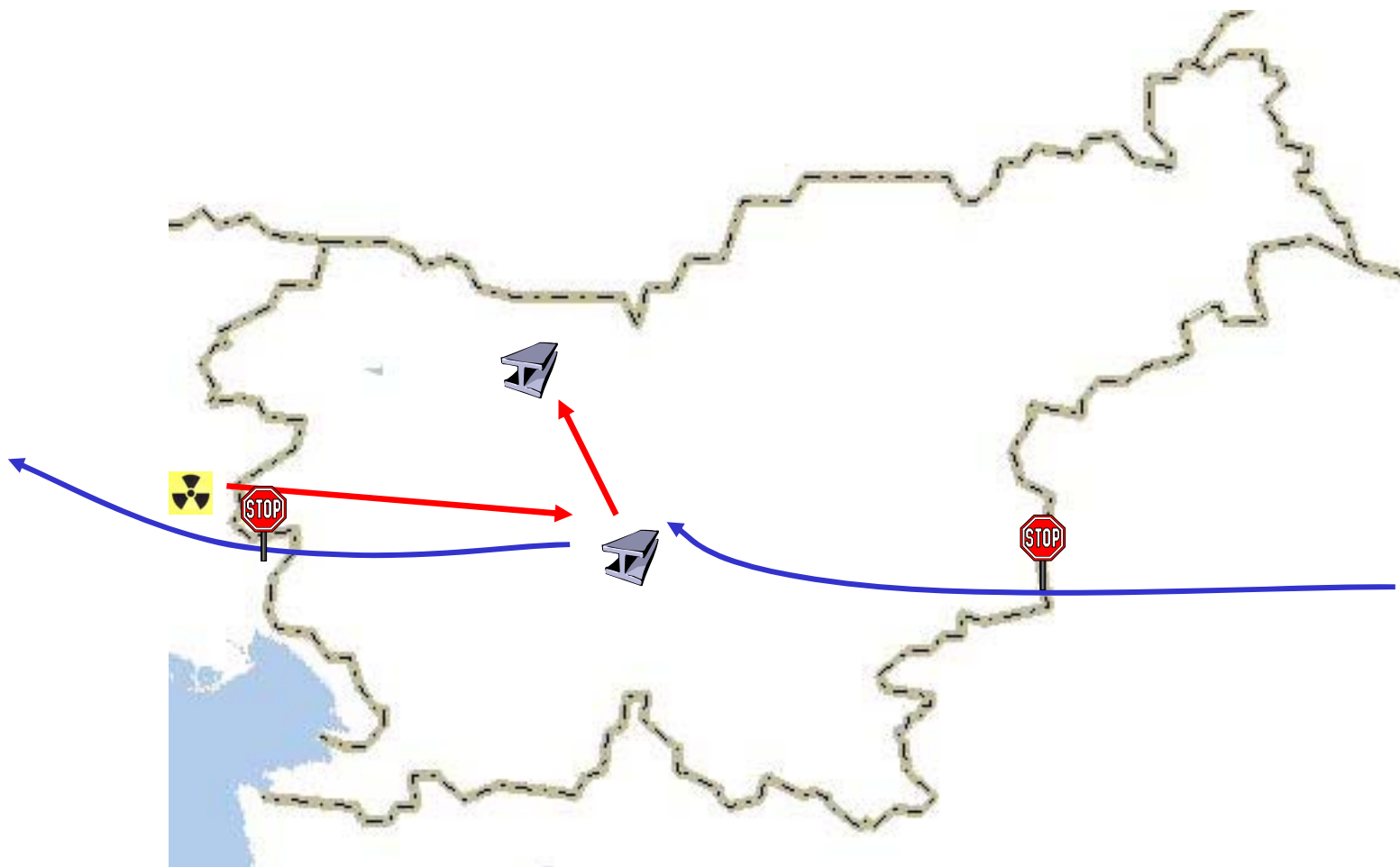
Transit through Slovenia



Import -> Export



Rejection and reuse in Slovenia – worst case



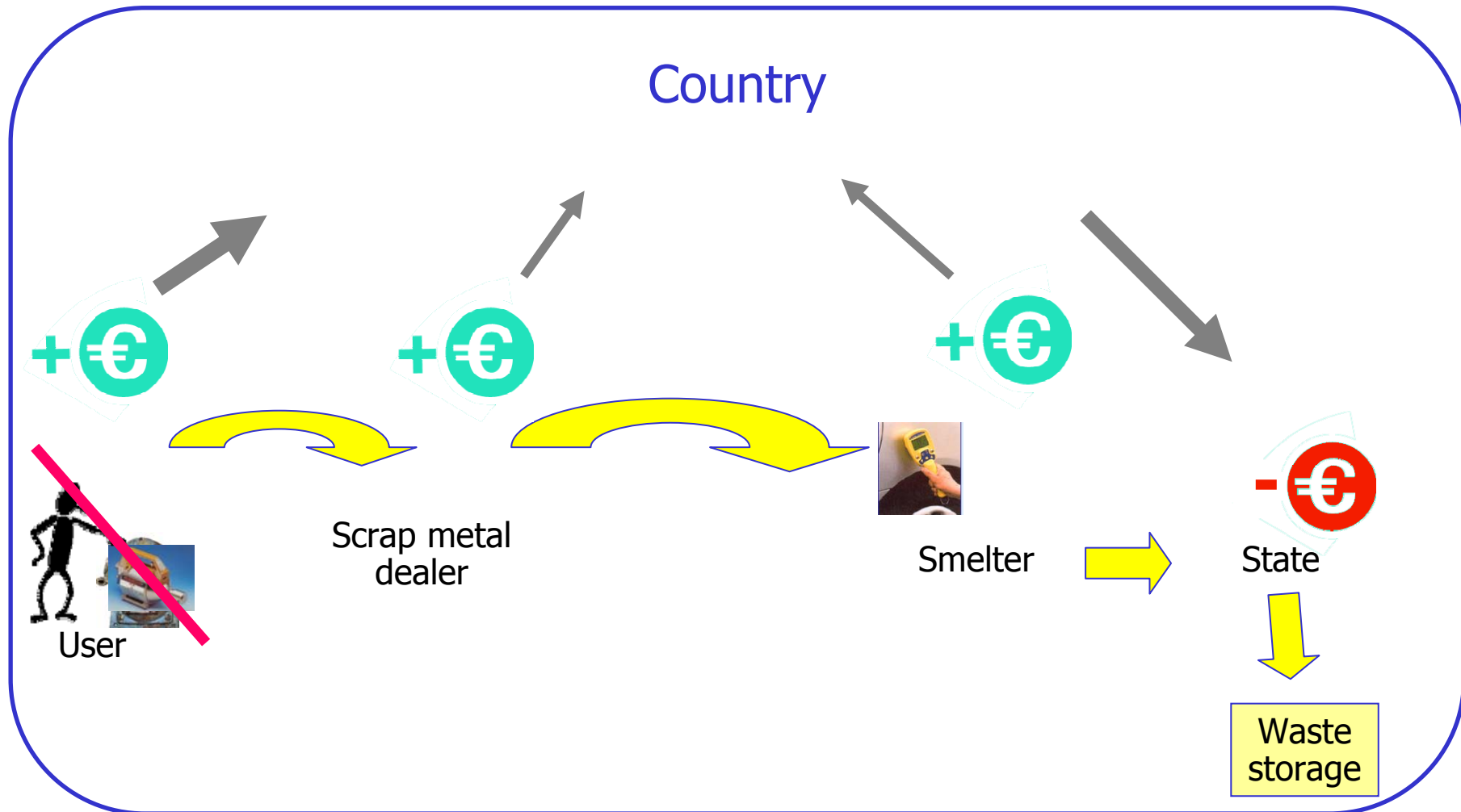
Search for the solution



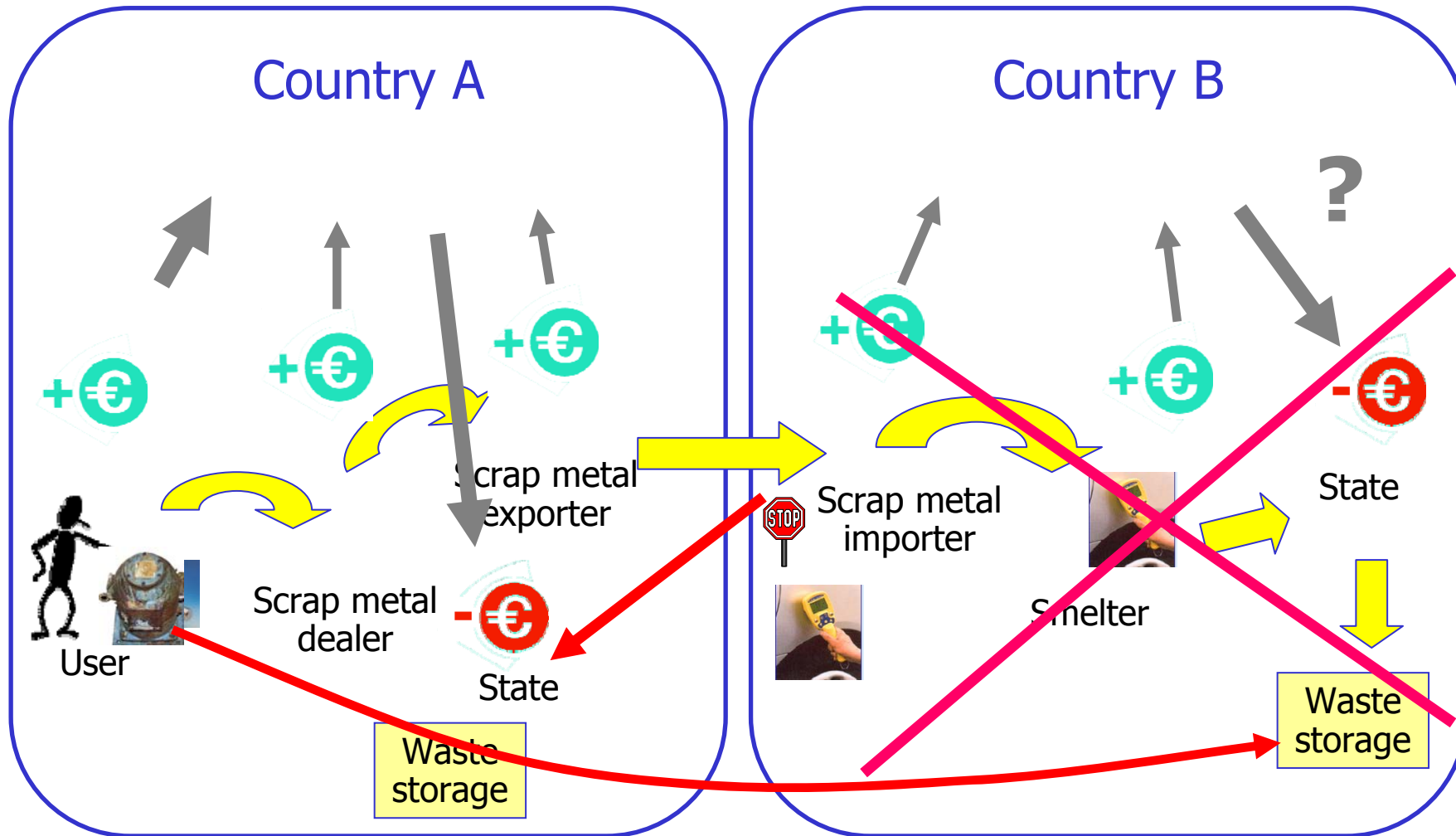
- Should be simple
- Should be cheap for the state budget
- Should be attractive for users
- “Polluter pays” principle should be applied
- Options
 - Portal monitors at all border crossings
 - Use of resources of interested stakeholders



Solution for domestic problems



Problem of foreign waste



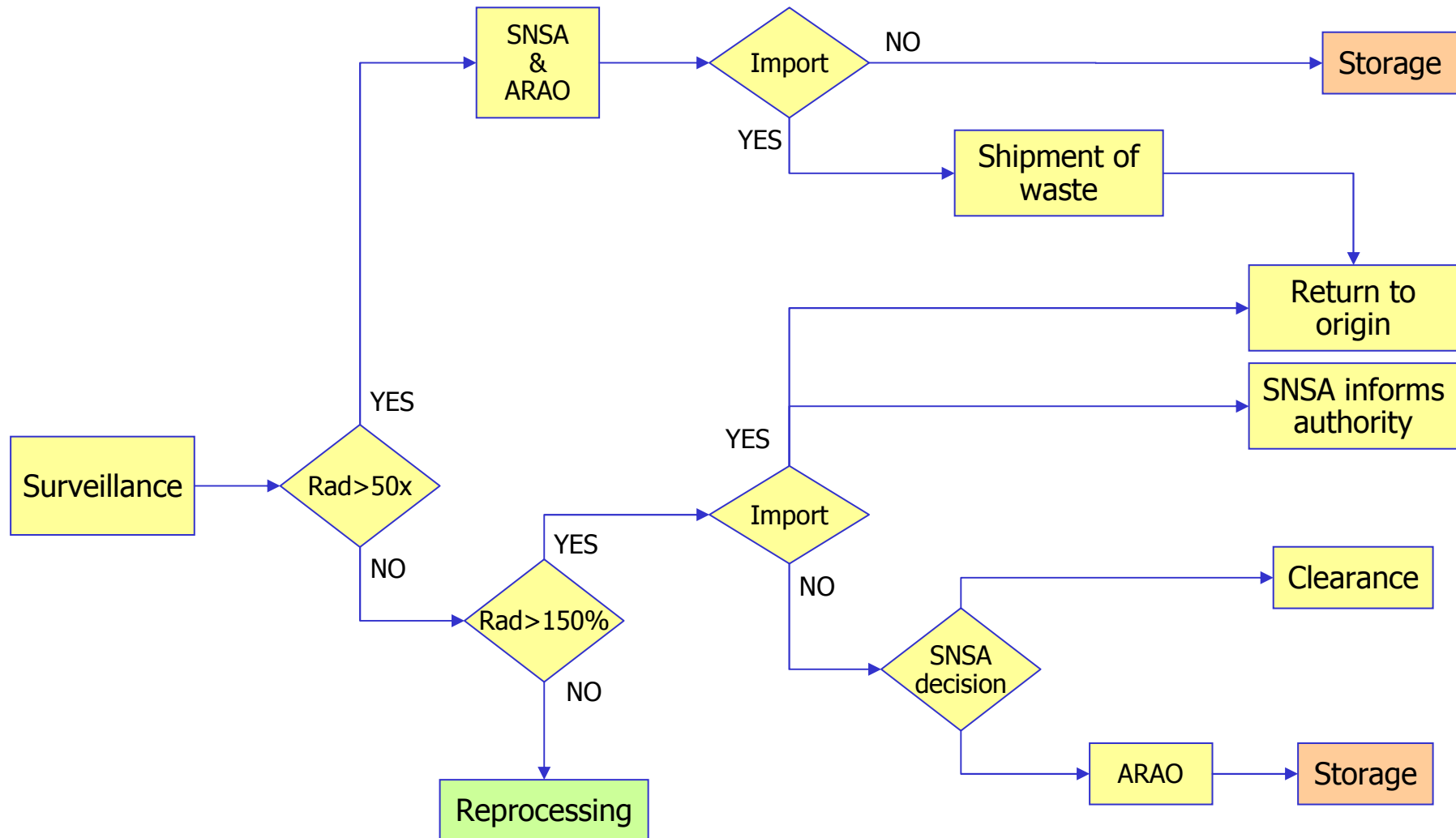


The solution

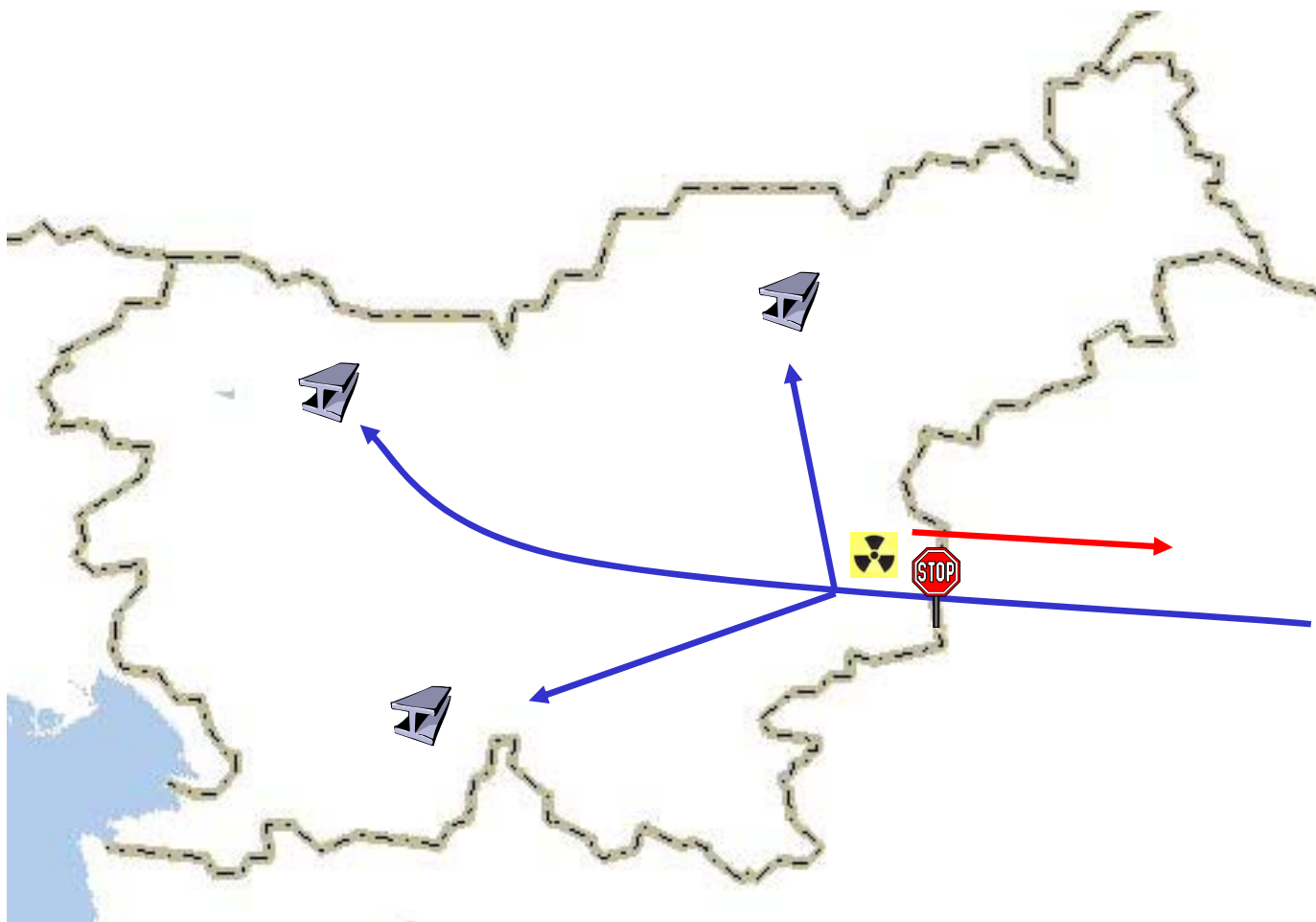
New rule forcing users to measure every shipment of scrap metal before import or reprocessing



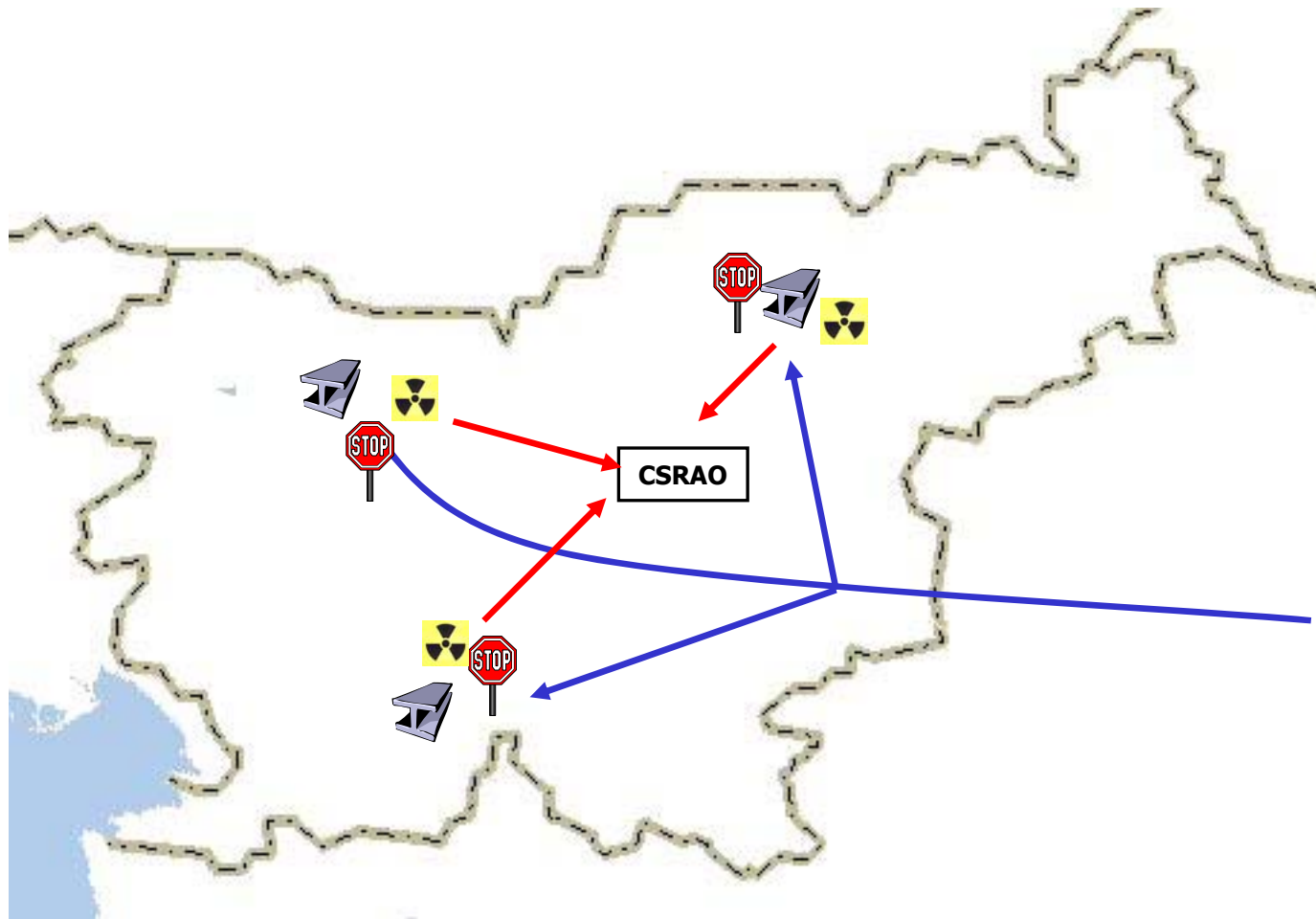
Slovenian system



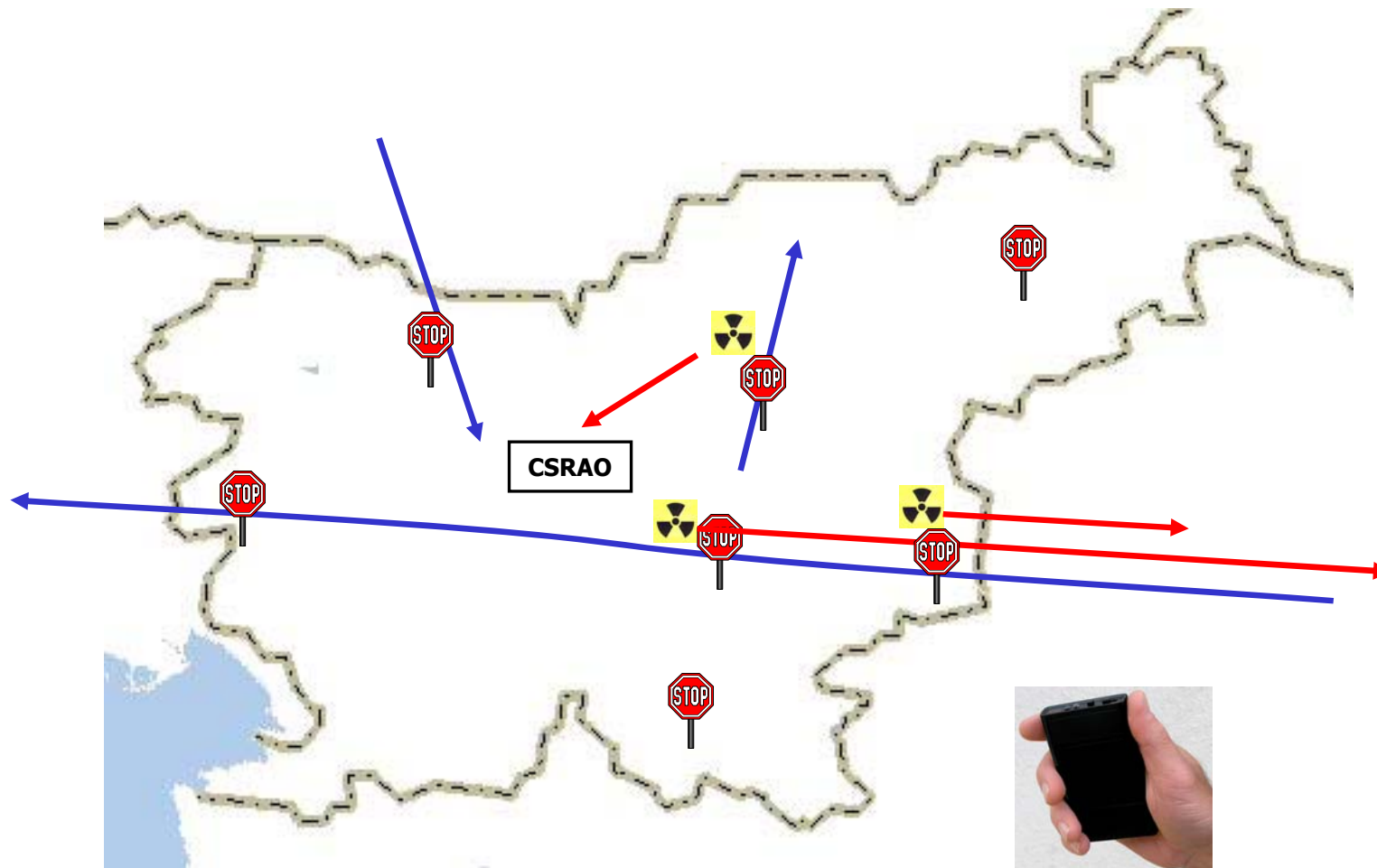
Measurements before the import



... which prevents accumulation in our storage



Occasional measurements by authorities



Implementation



- In place since 1. January 2008
- Measurements done by authorized expert - measurer
- Expenses paid by importer/user
- Authorization of measurer done by Slovenian Nuclear Safety Administration (SNSA)
- Every imported shipment must be measured and written certificate produced
- Certificate is a condition for customs to let that shipment into the country
- Shipments in transit are not measured, but could be returned to the country of origin if rejected by destination country
- Smelters and scrap yards must measure each shipment before reprocessing





- **If dose rate is more than 50 % above background but less than 50 times that level:**
 - **Import:**
 - SNSA informed,
 - Customs rejects import,
 - User returns to the country of origin,
 - SNSA informs authorities in the country of origin
 - **Industrial processing:**
 - SNSA informed
 - Stored in CSRAO



- **Dose rate more than 50 times the background:**
 - **SNSA informed, the procedure for waste removal initiated:**
 - SNSA inspection goes into the field
 - Radiation protection experts check the source
 - Agency for radwaste takes it to the CSRAO
 - In the worst case the radiation accident response system initiated
 - **User bares the cost**
 - **The shipment is not automatically returned to the country of origin**

Results



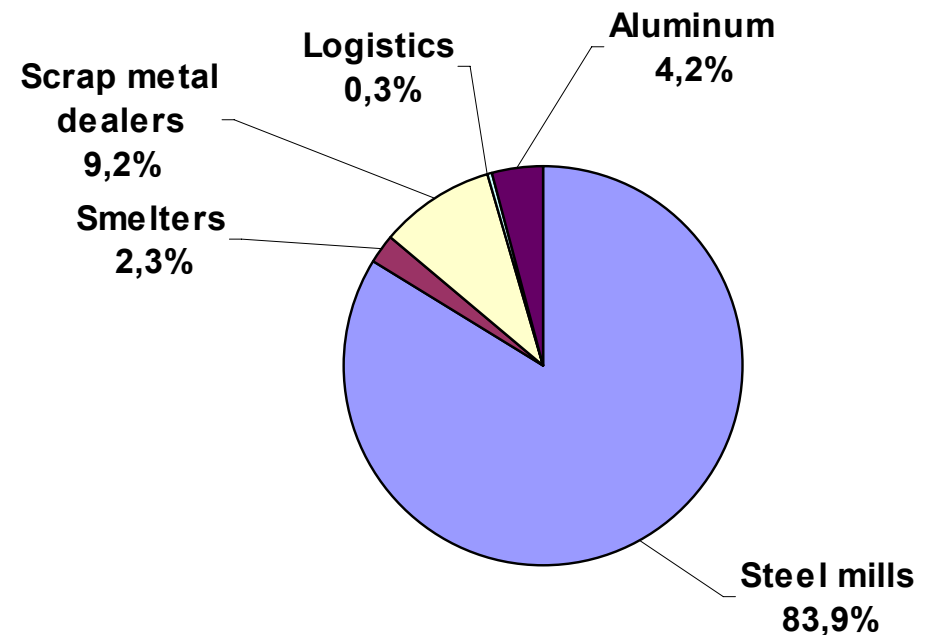
- Good cooperation with the industry
- 20 authorized measurers
- Drastically smaller possibility for
 - Expensive industrial damage
 - Radiological accidents
- Less radwaste in the CSRAO
- No additional cost for state budget
- Relatively cheap solution for users – can organize themselves and optimise expenses



Measurements in 2008



- **78,605** measurements by 16 organizations reported so far.
~9 measurements every hour!
- **8** measurements exceeded the limit of **50 %** above background but less than **50 times** the background level
- No sources above **50 times** the background



Conclusion



- After one year the new Slovenian System is working fine!
 - Users are happy to protect themselves
 - Authorities are happy not to bother them
 - State is happy not to spend public money
 - Everybody is more aware of the potential danger and is acting accordingly
- International agreements should make notification of countries of origin and transit mandatory!

