

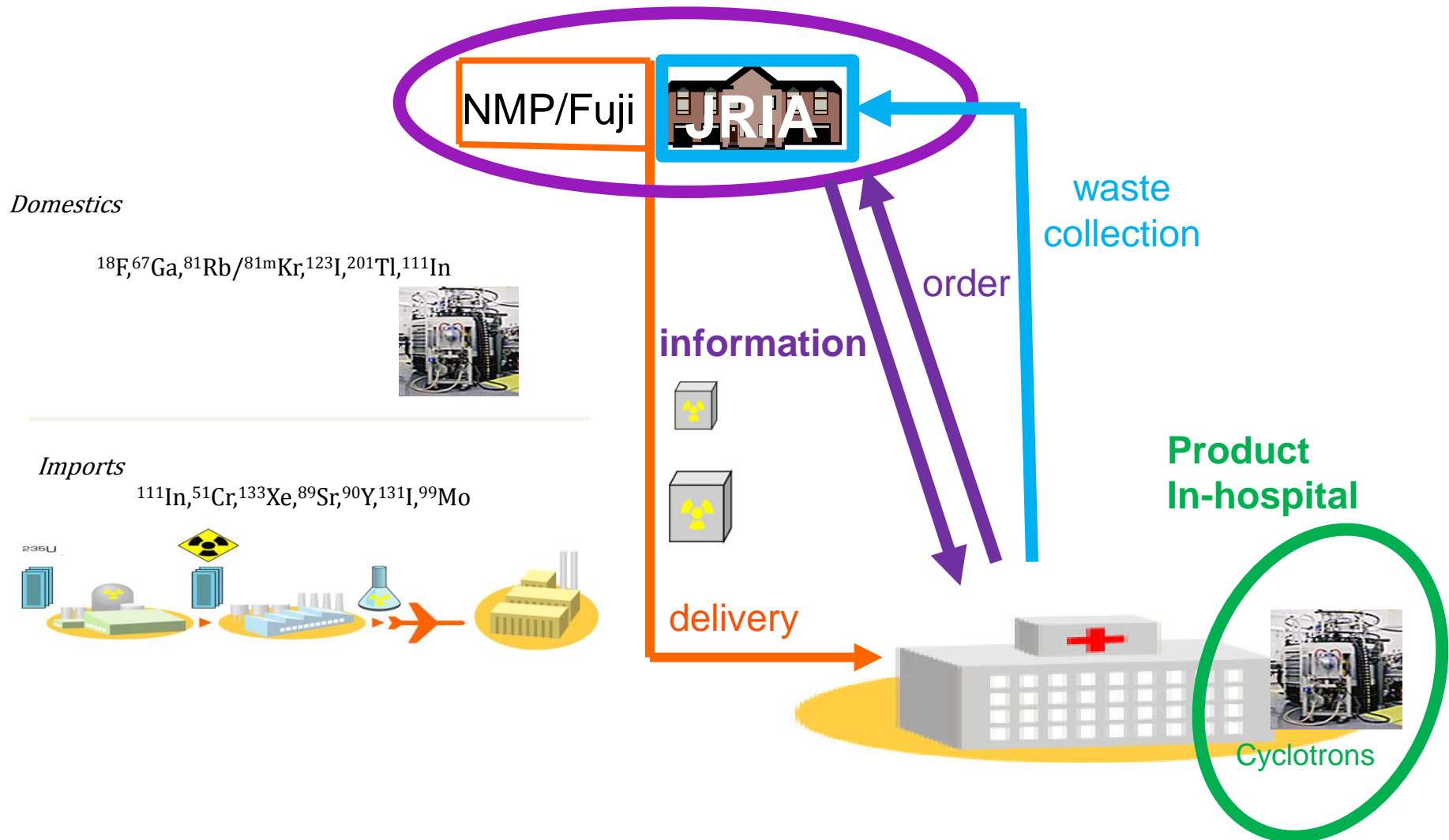
8. Concerns of the nuclear medicine community regarding reliable supply of ^{99m}Tc post-2016

Estimate of Japan's Post-2016 Demand for ^{99m}Tc

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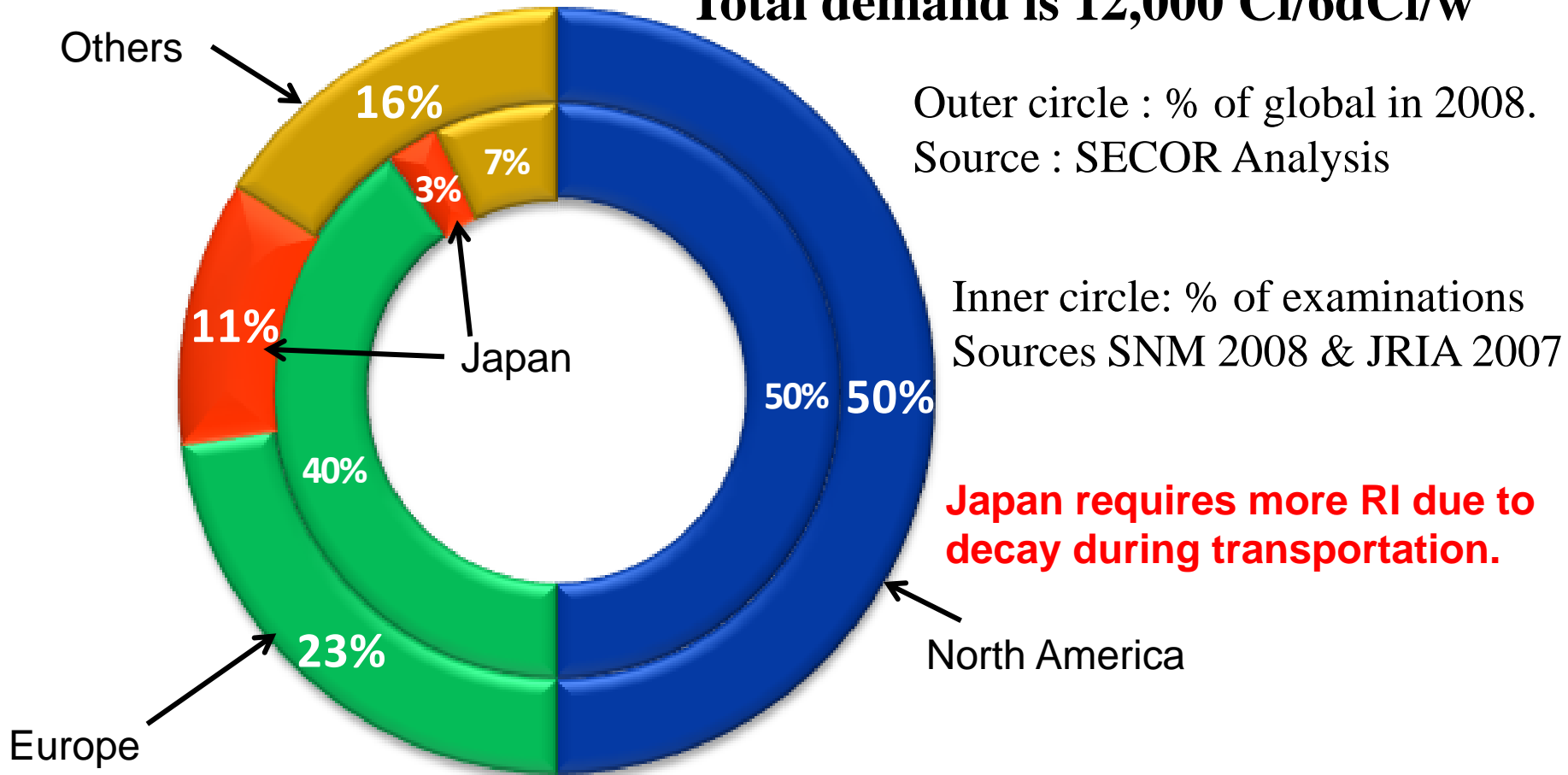
July 9, 2013 HLG-MR Meeting in Paris

Japan's Sources of Diagnostic and Therapeutic Radiopharmaceuticals



Global Supply and Examinations in 2008

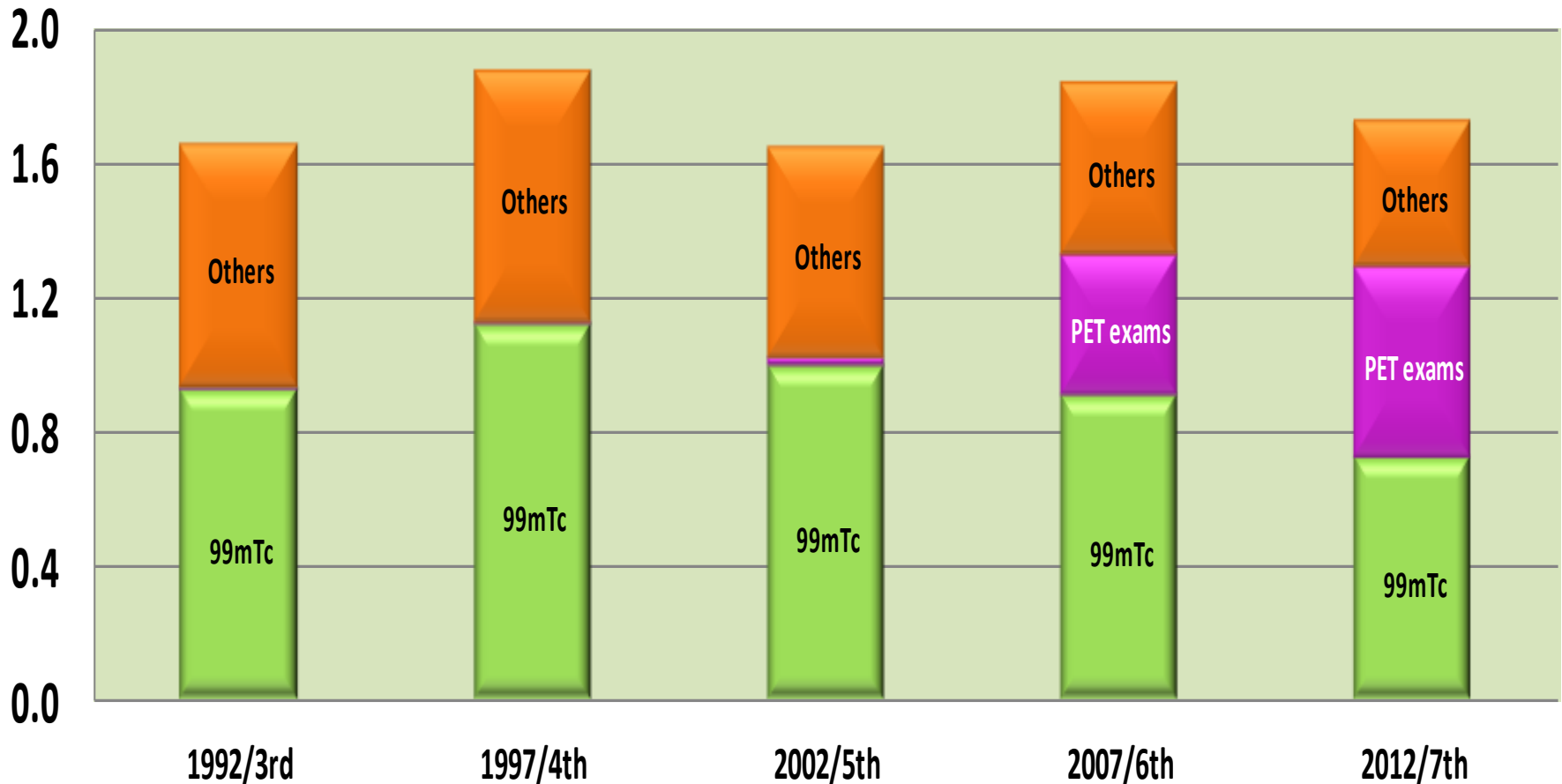
Total demand is 12,000 Ci/6dCi/w



	N-America	Europe	Japan	Others	Total
Exams	15,000,000	12,000,000	910,000	2,100,000	30,000,000
Demand	23.7	10.8	5.3	7.6	47.4 Million doses

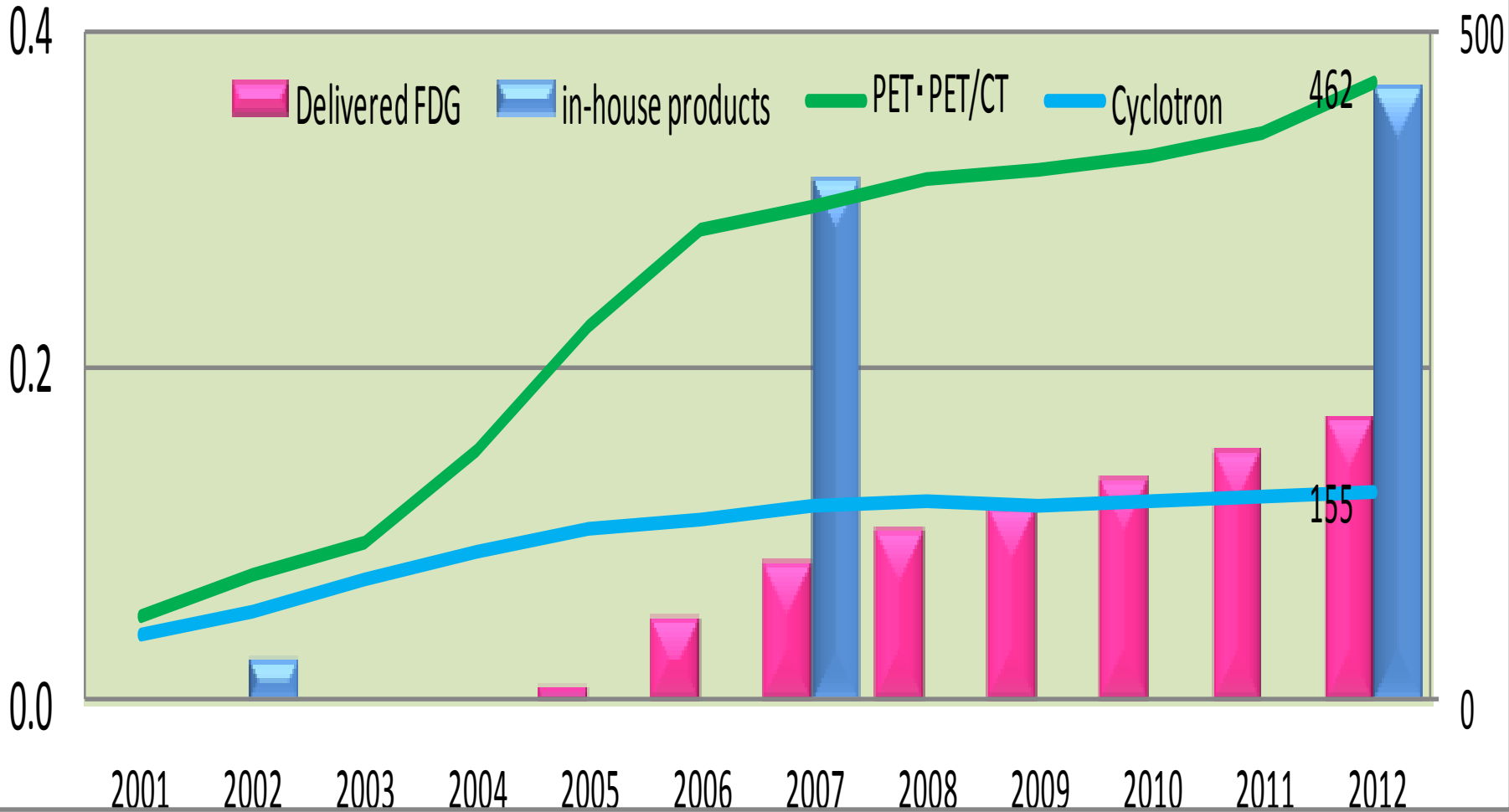
Nationwide Survey of Radiopharmaceutical Examinations in Japan

(Million exams)



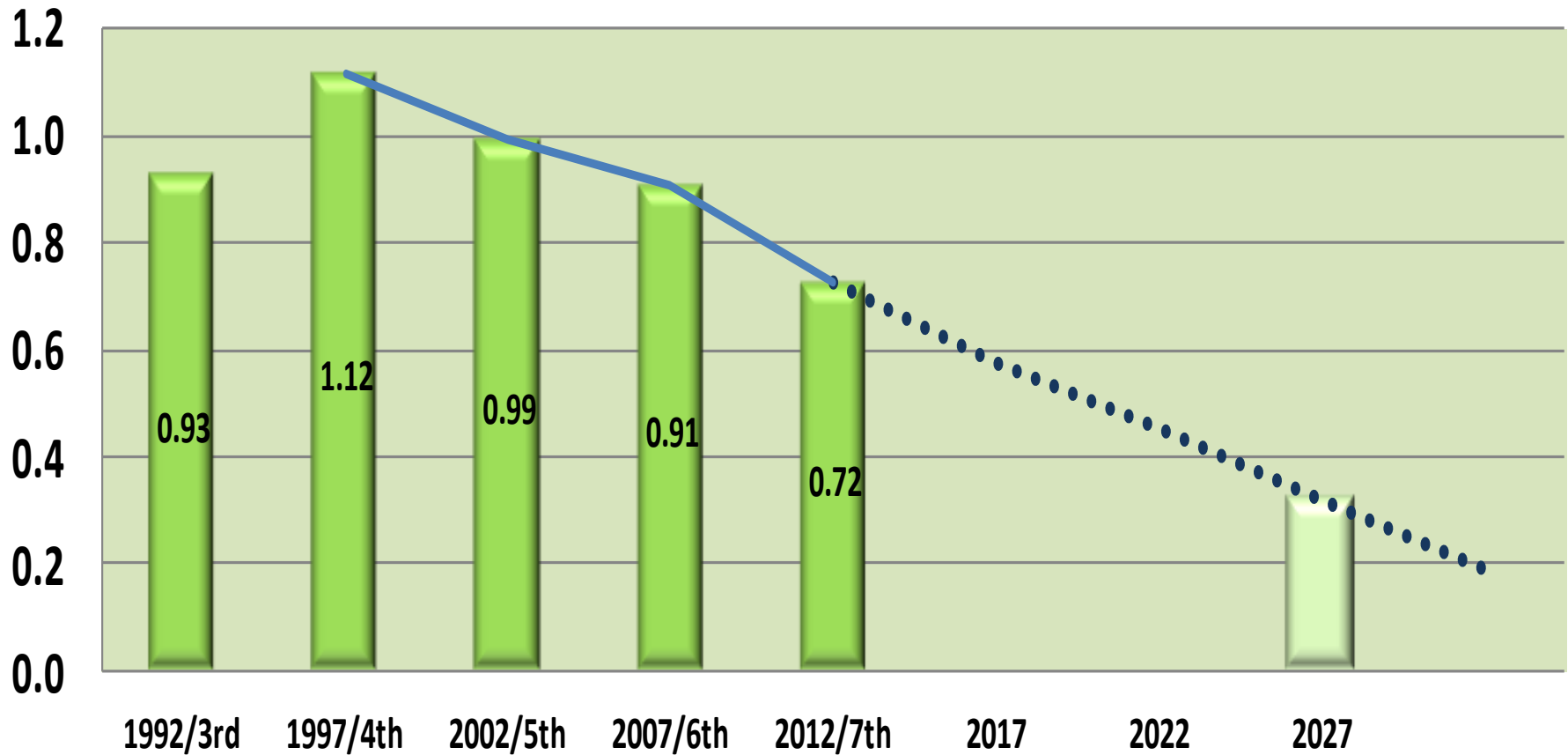
Shift to PET (FY2001-2012)

(Million exams)



Current and Future Tc-99m Examinations in Japan

(Million exams)



Plan for Future Domestic $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ Production

$^{98}\text{Mo}(n,\gamma)^{99}\text{Mo}$

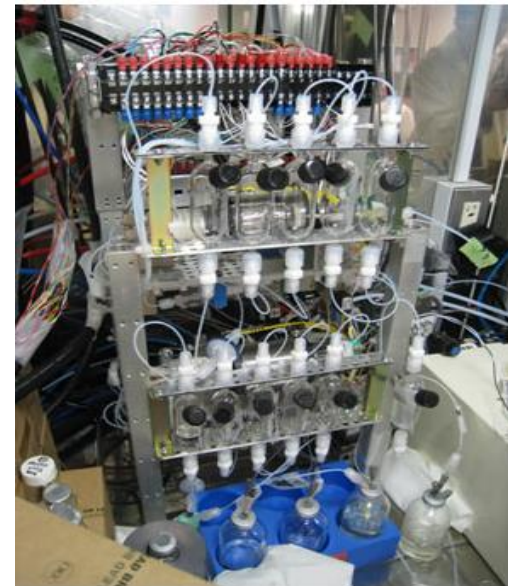
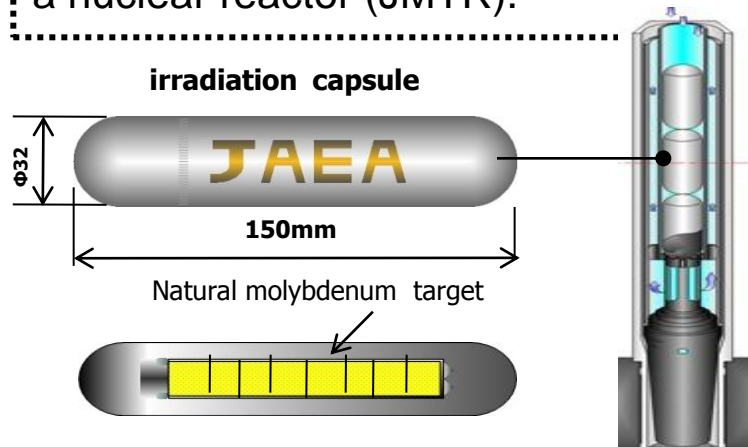
JAEA plans to produce ^{99}Mo by (n, γ) reaction with its JMTR (Japan Materials Testing Reactor, 50MW). JMTR will supply up to 25% of Japanese demand.

Radiopharmaceutical factories will supply $^{99\text{m}}\text{Tc}$ -radiopharmaceuticals using ^{99}Mo .

$^{100}\text{Mo}(p,pn)^{99}\text{Mo}$ & $^{100}\text{Mo}(p,2n)^{99\text{m}}\text{Tc}$

NIRS (National Institute of Radiological Sciences) has succeeded in producing $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ using an ultra-small cyclotron.

Development of irradiation equipment required for molybdenum production in a nuclear reactor (JMTR).



NIRS's Mo-99/Tc-99m separation/purification system (proto-type)

Outstanding Issues of Domestic Production

1. Low specific activity of ^{99}Mo
2. Method to separate $^{99\text{m}}\text{Tc}$ from ^{99}Mo
3. No precise estimate of production cost
4. Reactor shutdown in wake of Fukushima accident

Conclusions:

1. Accelerated decrease of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ examinations after 2016.
2. PET or MRI to replace about half $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ examinations in 2027.
3. Fukushima disaster affecting domestic production of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$.
4. Closely coordinated international response under auspices of HLG-MR required for a constant supply of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ and other radioisotopes.

<http://www.jrias.or.jp/index.html>