Use of ISOE Database and website

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Introduction

- ISOE website and Database provide resources to perform benchmarking analyses at various levels and to request information from all ISOE users.

- This presentation will address the following aspects:
  - Documents available on ISOE website
  - Use of ISOE forum
  - Presentation of available ISOE contacts
  - Use of ISOE Database
  - Use of data extraction module

The ISOE Website (www.isoe-network.net)

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Information System on Occupational Exposure

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The Information System on Occupational Exposure (ISOE) System was created in 1992 to **provide a forum for radiation protection professionals** from nuclear electricity utilities and national regulatory authorities worldwide to **share dose reduction information, operational experience and information to improve the optimisation of radiological protection at nuclear power plants**.

Examples of documents available on ISOE Website

- Proceedings:
  - Symposia classified by year or by theme
  - Workshops (Reactor cavity decon., EGSAM)
  - Topical sessions
- Annual country reports
- Information sheets
- Working groups reports
- Benchmarking reports (public or restricted)
- RP Experience reports (public or restricted)
- Plant information (SGR, RVHR, Zn injection)
- OpEx reports
- Thematic documents (Source Term management, Severe accident management, Reactor cavity decontamination)

ISOE RP Forum

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ISOE Network forum

Welcome to the

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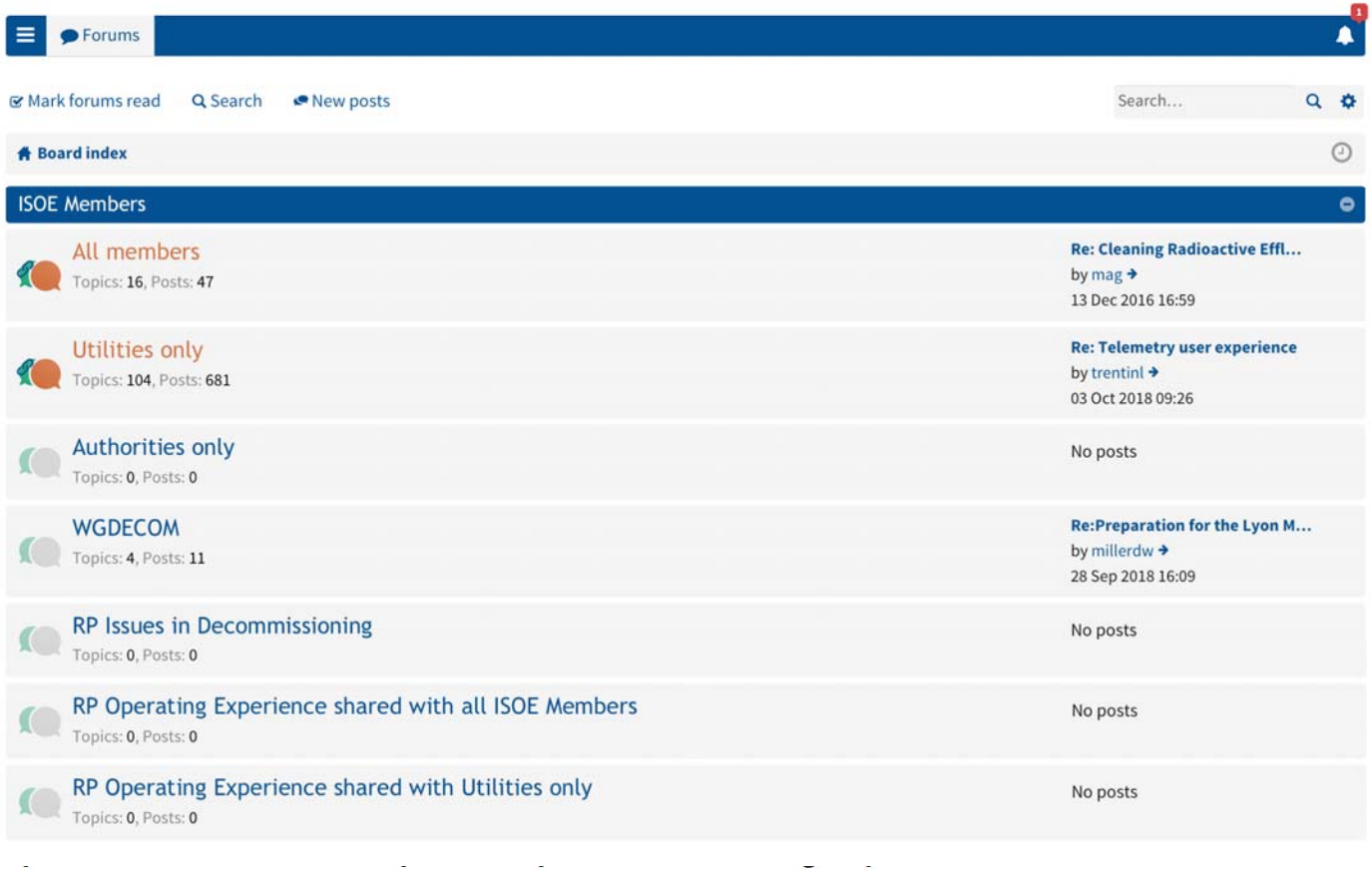

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Examples of requests on ISOE forum for Utilities only

- Telemetry user experience
- Special radiation shieldings for outages
- RCP operation practices during shutdown
- Mobile air radioactivity monitoring device alarm
- Management of alpha contamination
- Pre-use check of portable monitoring instruments

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- National Coordinators
- RP Managers
- Authorities

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ISOE is jointly sponsored by the OECD Nuclear Energy Agency and the International Atomic Energy Agency.

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Use of ISOE contacts

- Organisation of benchmarking visits – examples with reports available on ISOE website:
  - EDF visit at Exelon corporate
  - Comanche Peak visit at Doel NPP
  - Japanese delegation visits to US plants (Fermi,Limerick, Susquehanna, Dresden, etc.)

- Sending of requests directly to National coordinators, Authorities or RPMs:
  - Example: Survey on the values and uses of the monetary value of the man.Sievert realised in 2017. Results published in ISOE ETC Information Sheet No. 61

Access to the ISOE Database

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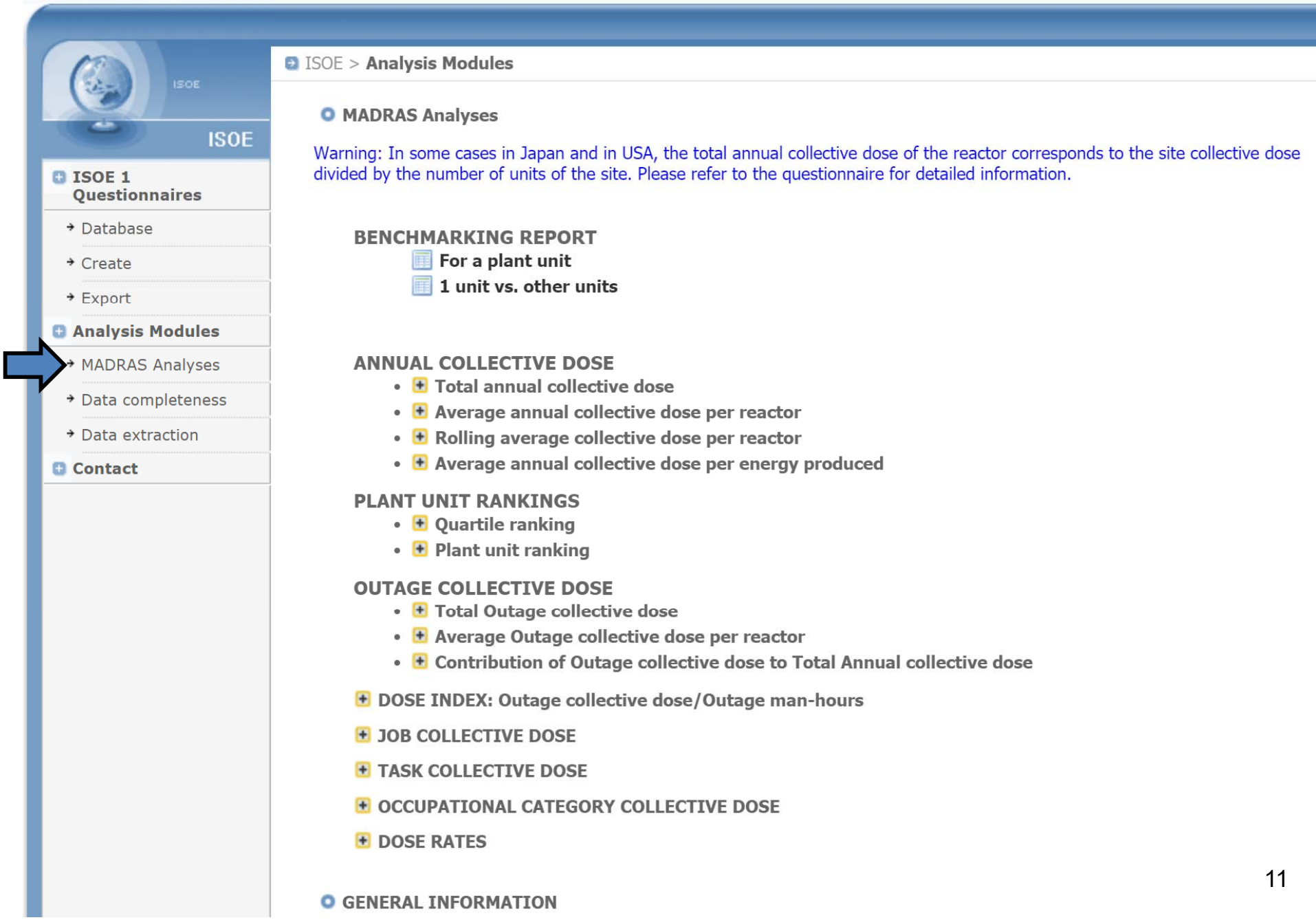
Content of the ISOE Database

- Dosimetric information from commercial NPPs in operation or in some stage of decommissioning, including:
  - annual collective dose for normal operation
  - maintenance/refuelling outage dose
  - forced outage dose
  - annual collective dose for certain tasks and worker categories
  - dose rates

Database Analyses and Benchmarking

- Data available in database provides a solid basis for analyses on issues in operational RP such as dose trends, doses related to certain jobs and tasks, identification of good performance, etc.
- Several ways to use the database:
  a) MADRAS analysis package : main trends in occupational exposure
  b) Direct access to ISOE 1 questionnaires, including contact information and complementary data
  c) Direct access to all the data available using the data extraction module

Database Analyses and Benchmarking



MADRAS Data Analysis Package

- A set of pre-defined data queries to facilitate analysis of main trends in occupational exposure, benchmarking between plants, sister units, etc.
  - Benchmarking at unit level
  - Annual collective dose
  - Outage collective dose
  - Plant unit ranking
  - Total annual collective dose vs. number of operating reactors
  - Total annual collective dose by reactor age
  - Job collective dose
  - Occupational category collective dose
  - Dose rates

Using ISOE Database as a Benchmarking Tool

- Analyses at country or regional level:

  Trends in Annual average collective dose per reactor / Annual total collective dose

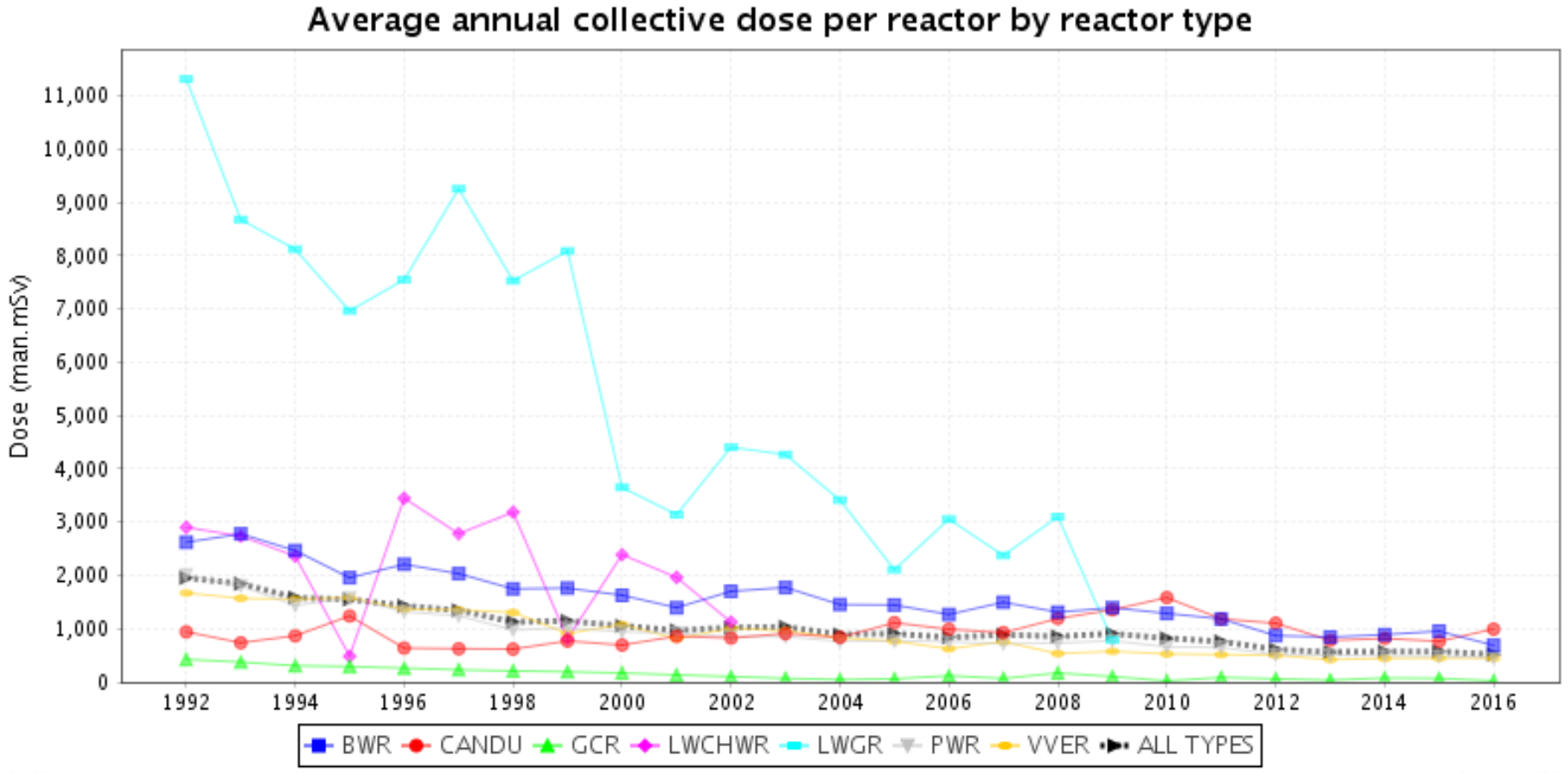
  - Between countries or regions: by country/region for a given reactor type, or all reactors, including rolling average over several years
  - Within a country: Specific unit versus another unit or by type of reactor

- Analyses at utility level:
  - Specific utility versus other utilities
  - Specific utility by reactor type

- Analyses at unit level
  - Specific unit versus another unit / sister group / reactor type
  - Benchmarking at the job and task level

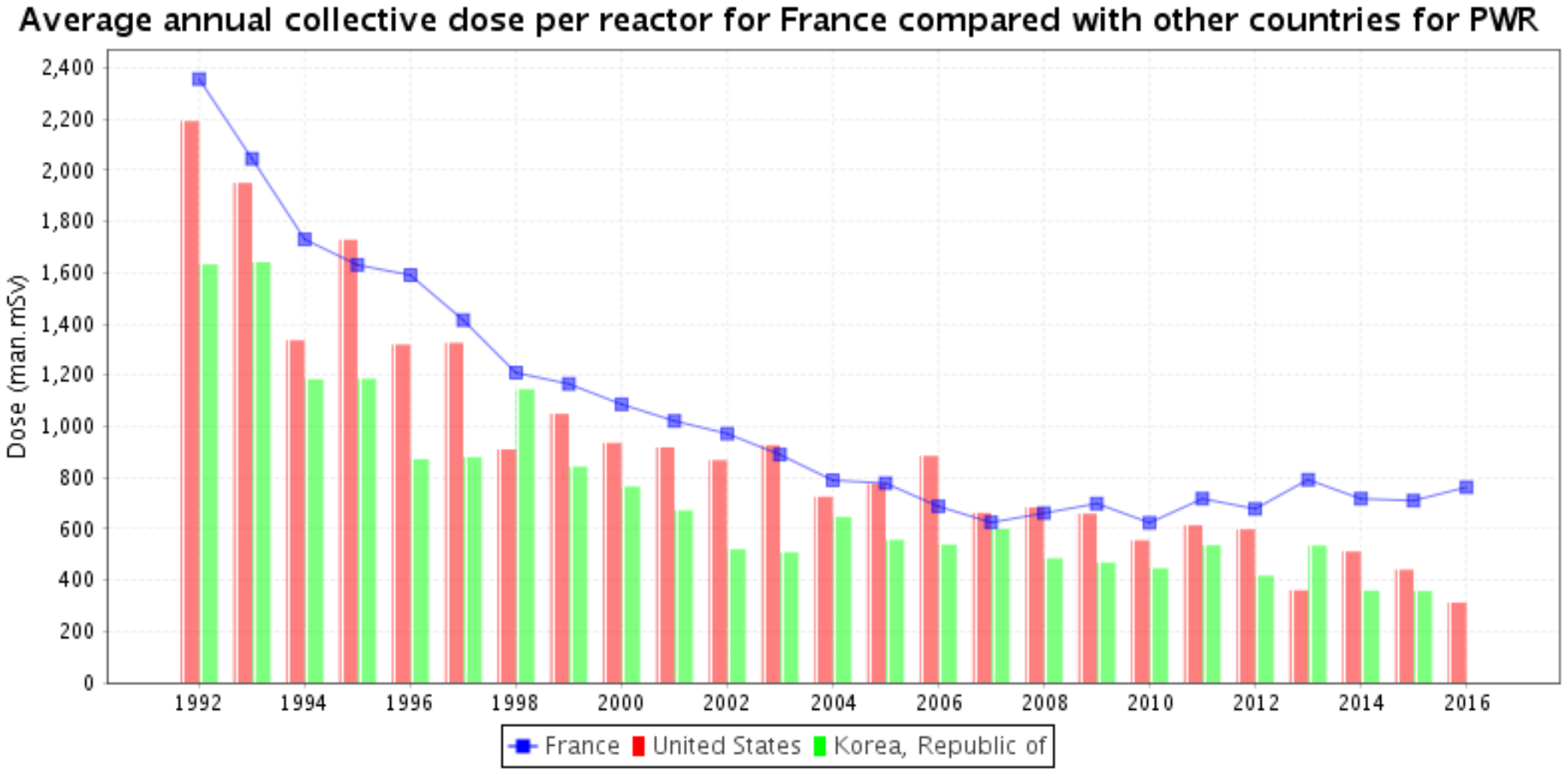
Global Dose Trends by Reactor Type

- The annual average collective dose per operating reactor has consistently decreased over the time period covered in by ISOE



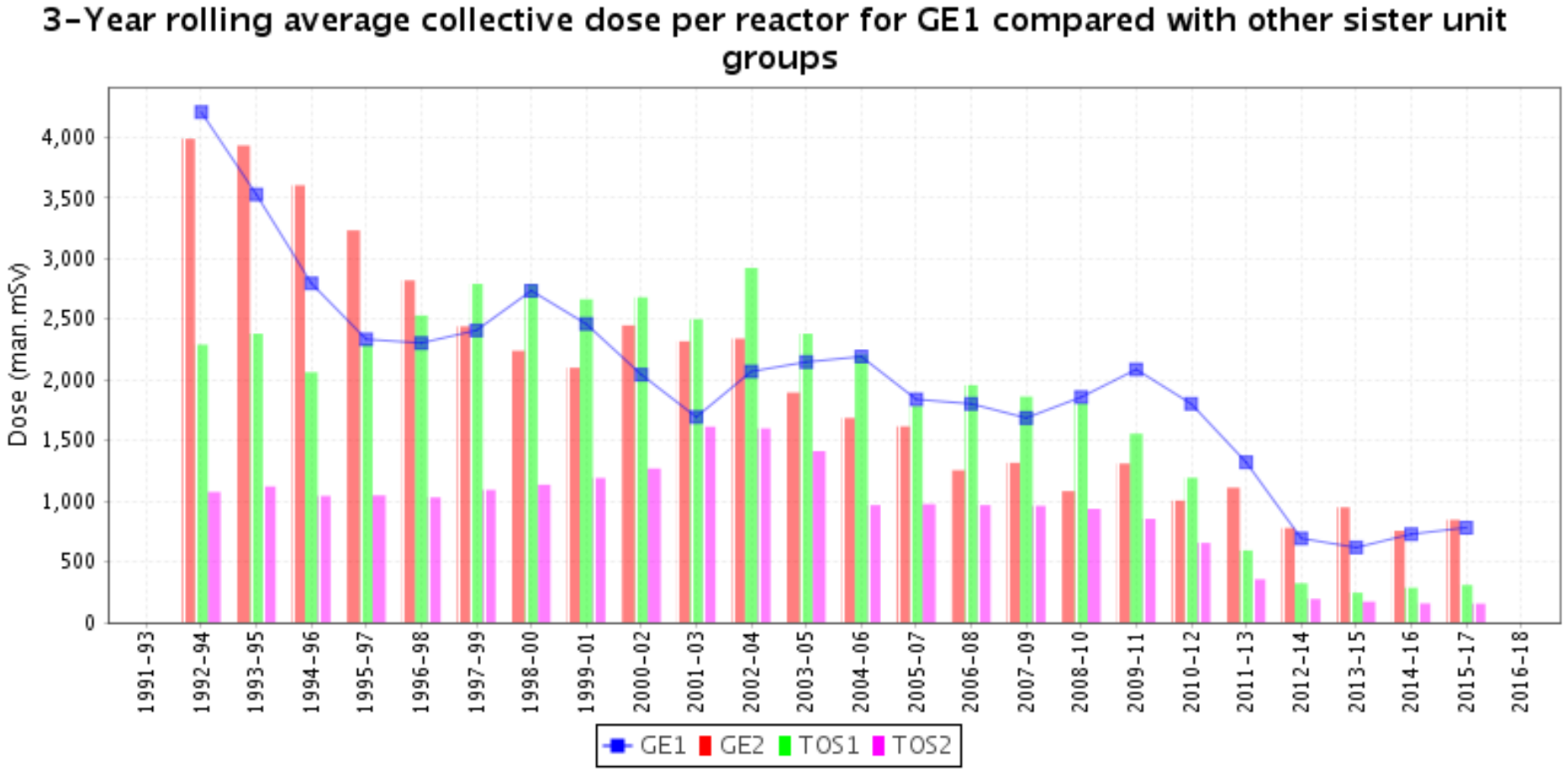
Country Dose Trends by Reactor Type (PWRs)

- For most countries, the annual average collective dose per operating reactor decreased over the time period



Collective Dose Trends by Sister Unit Group Comparison Toshiba – General Electric reactors

- **BWR reactors**: 1st and 2nd generation of Toshiba reactors shows globally lower dose than respective generations of General Electric reactors



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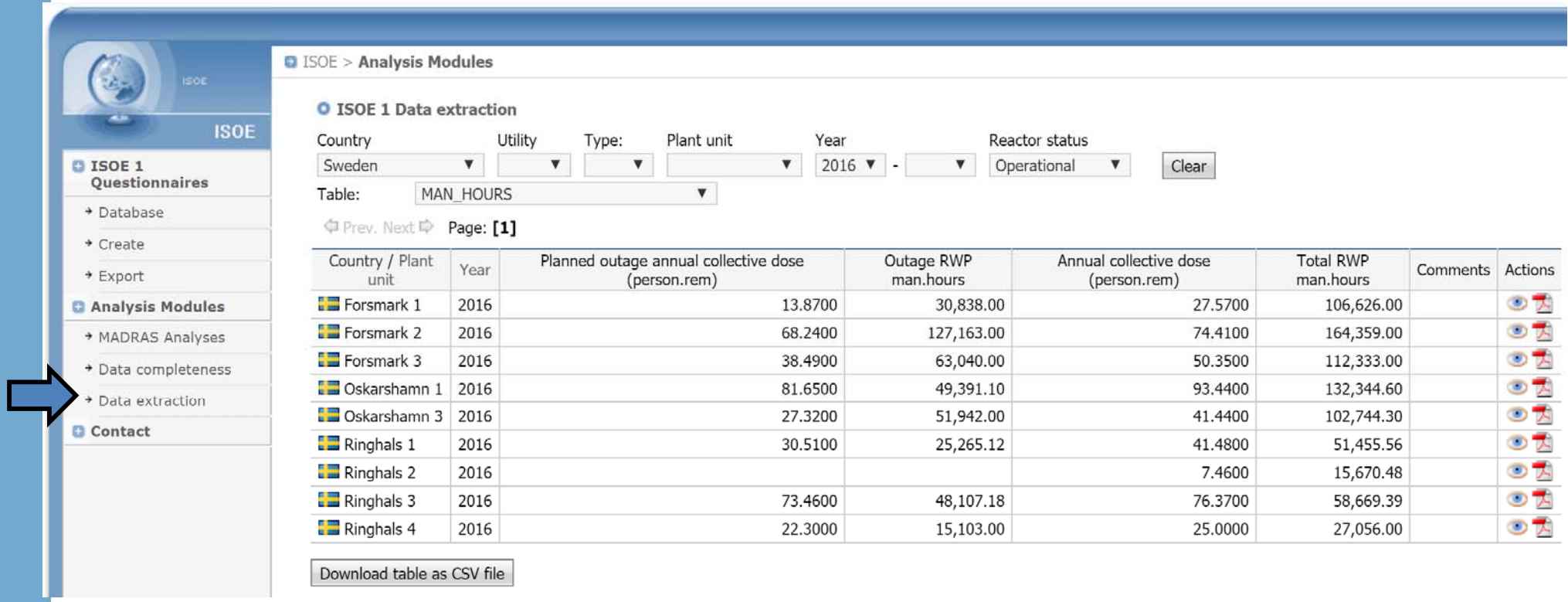
Source: ISOE

Data Extraction



Country / Plant unit	Year	Planned outage annual collective dose (person.rem)	Outage RWP man.hours	Annual collective dose (person.rem)	Total RWP man.hours	Comments	Actions
Forsmark 1	2016	13.8700	30,838.00	27.5700	106,626.00		
Forsmark 2	2016	68.2400	127,163.00	74.4100	164,359.00		
Forsmark 3	2016	38.4900	63,040.00	50.3500	112,333.00		
Oskarshamn 1	2016	81.6500	49,391.10	93.4400	132,344.60		
Oskarshamn 3	2016	27.3200	51,942.00	41.4400	102,744.30		
Ringhals 1	2016	30.5100	25,265.12	41.4800	51,455.56		
Ringhals 2	2016			7.4600	15,670.48		
Ringhals 3	2016	73.4600	48,107.18	76.3700	58,669.39		
Ringhals 4	2016	22.3000	15,103.00	25.0000	27,056.00		

Possibility to extract any type of data of the ISOE Operational and Shutdown Questionnaires in order to perform your own analyses

The ISOE Website and Database

Thank you for your attention!

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For more information, please visit:

www.isoe-network.net