

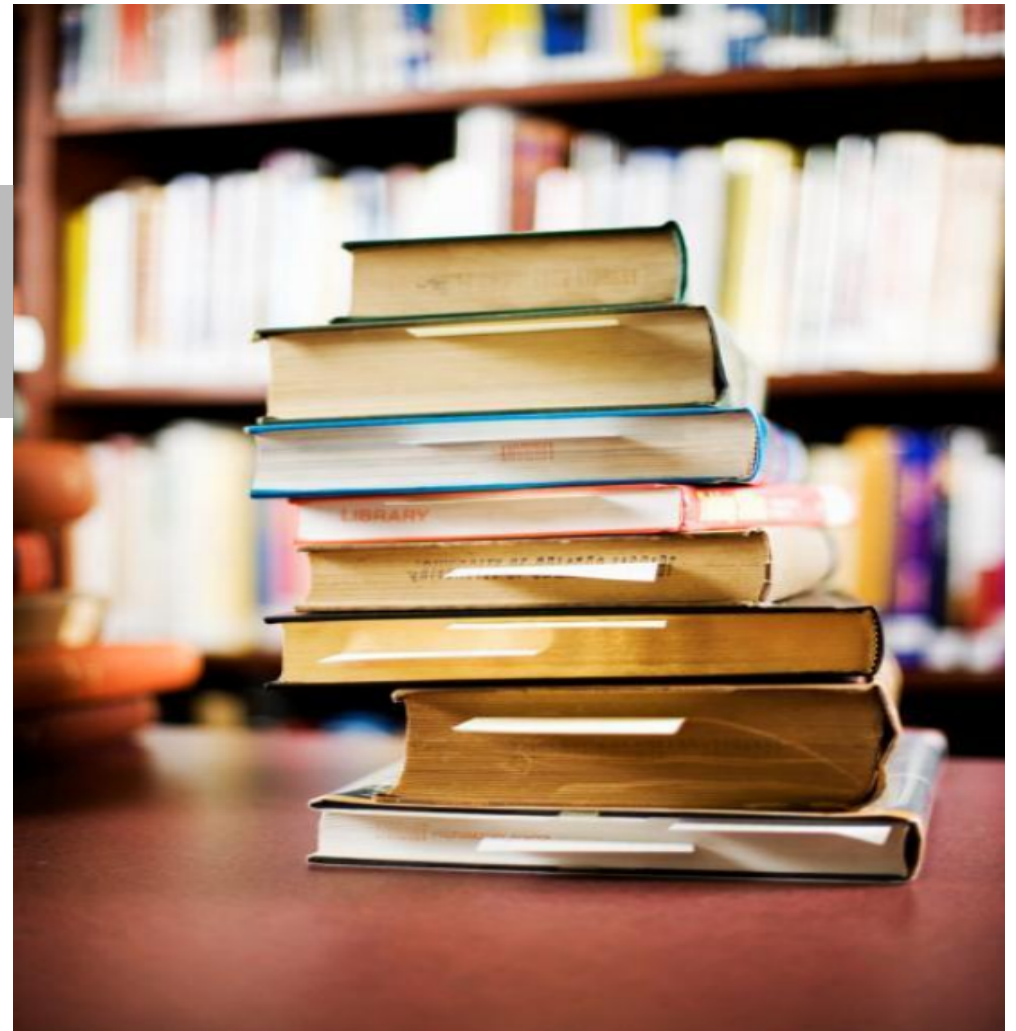
# THE 5 THREATS THE TURKISH MANUFACTURERS FACE IN THEIR DOMESTIC MARKET

- Strategies on how to create a protective and innovative environment for the Turkish nuclear industry–



Research conducted by :

**DYNATOM INTERNATIONAL  
GmbH**



## Areas covered

- The nuclear power market is controlled by 10 companies
- The 5 threats your industry is facing
- 3 Steps to protect the Turkish industry
- Case Studies



# The nuclear power market is controlled by Ten major EPC



**... And the global supply chain does not welcome new comers**

## ...and Turkey is not in their manufacturing program

- Rosatom has its own supply chain, and plans to subcontract only non safety equipment and construction, while Mitsubishi and Areva have their own procurement base



## International key suppliers are already in Turkey

1. Erzhong Group
2. Dongfang Electric
3. Haerbin Electric
4. Dongfang Boiler
5. Fangda Carbon New Material Technology
6. Wujian Dongwu Machinery
7. AB Sandvik Materials Technology
8. Aerzen
9. ALFA LAVAL LUND AB
10. Alstom Power Turbomachines
11. Andritz AG
12. AREVA
13. Armaturenfabrik Franz Schneider GmbH&Co.KG
14. BERNARD CONTROLS S.A.
15. CAMERON INTERNATIONAL CORPORATION
16. Canberra Industries, Inc.
17. Emerson Process Management S.A.S.
18. Erndtebrücker Eisenwerk GmbH&Co.KG
19. Habia Cable AB
20. Instalaciones Inabensa S.A.
21. KSB Aktiengesellschaft (KSB AG)
22. Manoir Industries
23. NFM Technologies
24. Rotork Control Limited
25. Sandvik Materials Technology
26. SCHOTT Electronic Packaging GmbH
27. Siemens AG
28. Sumitomo Metal Industries, Ltd.
29. Swagelok Corporation ...

Source: Dynabond Powertech Service



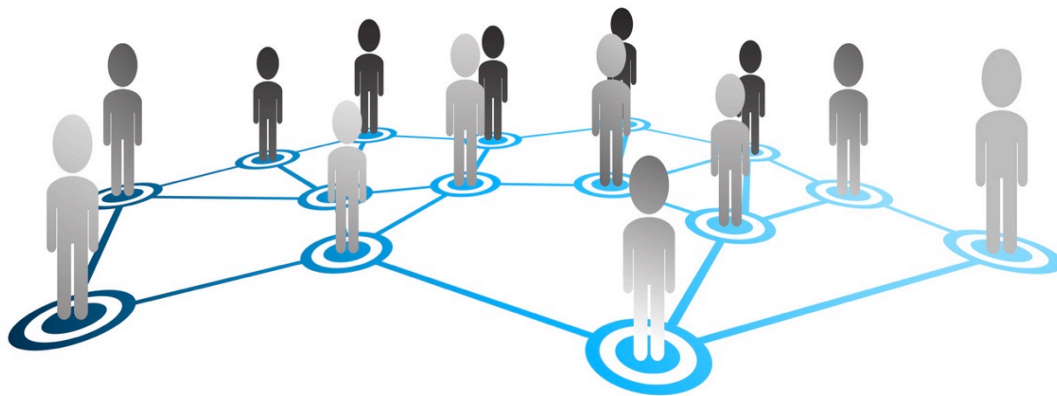
...and for the third plant, a larger threat is to be expected

- SNPTC-WEC Nuclear Power Technical Services (Beijing) Co., LTD. Was established by SNPTC and Westinghouse Electric in Beijing.
- The joint venture will provide global customers with certification service for AP/ CAP nuclear power equipment and materials suppliers, and procurement and supply chain services.
- It is a new bridge for China's nuclear power equipment manufacturers to enter international market.

Source <http://www.swnptsc.com/>



# The Turkish nuclear cluster is just being assessing



**... The study will not  
focus on the macro  
economy impact**

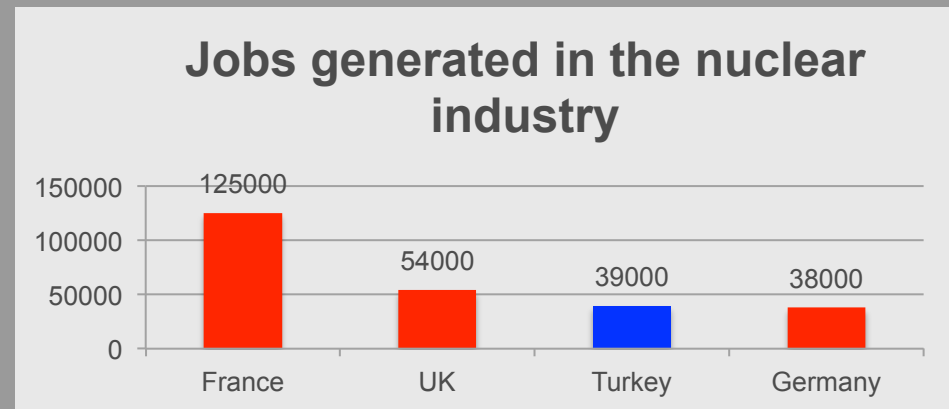
## The Nuclear Cluster focus on a limited number of companies

- From a large survey of the 1,000 top Turkish companies in the energy sector, a small number will gather into a nuclear cluster, others will get involved in construction and non safety equipment



Source: Istanbul Chamber of Commerce and Ankara Chamber of Commerce

- “One job created in the Nuclear industry will create ten other jobs in other segments “Viktor Karmatsky, June 8, 2012. Nuclear Intelligence Weekly



Sources: EDF, NIAUK, State of the World 2013, Dynatom International

## And a major challenge is the lack of an experienced human resource in nuclear

### Two examples with VVER: Jordan and Turkey

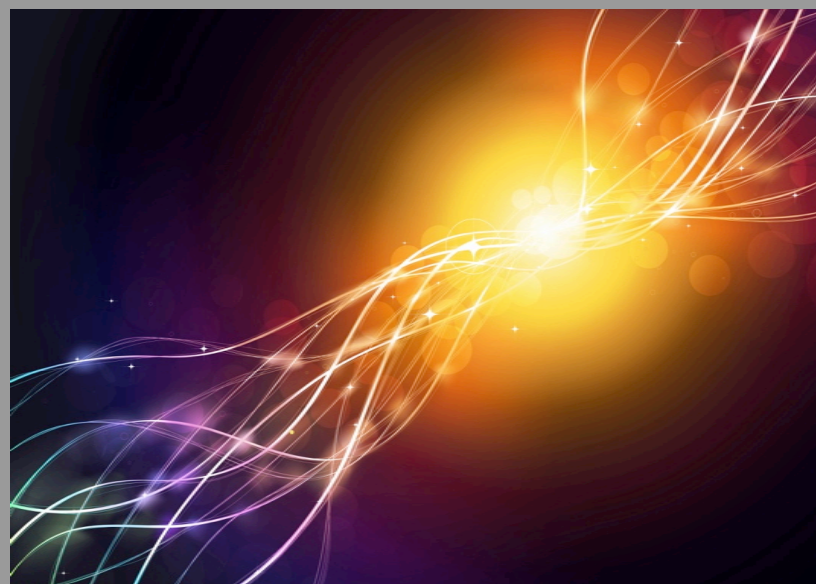
- Jordan can neither afford the same level of direct investment in its nuclear power assets nor the same level of support for educational and governmental institutions with a role in nuclear sector.
- Turkey has no operational experience of commercial-scale nuclear power, and may be vulnerable to a situation of information asymmetry in which the regulator may not have sufficient expertise and capacity to competently oversee an experienced Russian project company

*John Banks, Kevin Massy, Charles Ebinger  
Human Resource Development in New Nuclear Energy States: Case  
Studies from the Middle East, Energy Security Initiative, Nov. 2012*



# Timid harmonization between the research and industry

- Europe SNETP set up a Task Force comprising research organizations and industrial partners to develop the European Sustainable Nuclear Industrial Initiative (ESNII) in support of the SET-Plan.
- The National Nuclear Laboratory (NNL) welcomes the establishment of the Nuclear Innovation and Research Office (NIRO). NIRO is the body responsible for providing advice to Government, industry and other bodies on R&D and innovation opportunities in the nuclear sector under the guidance of the Nuclear Innovation and Research Advisory Board (NIRAB) *Snept.eu, National Nuclear Laboratories*



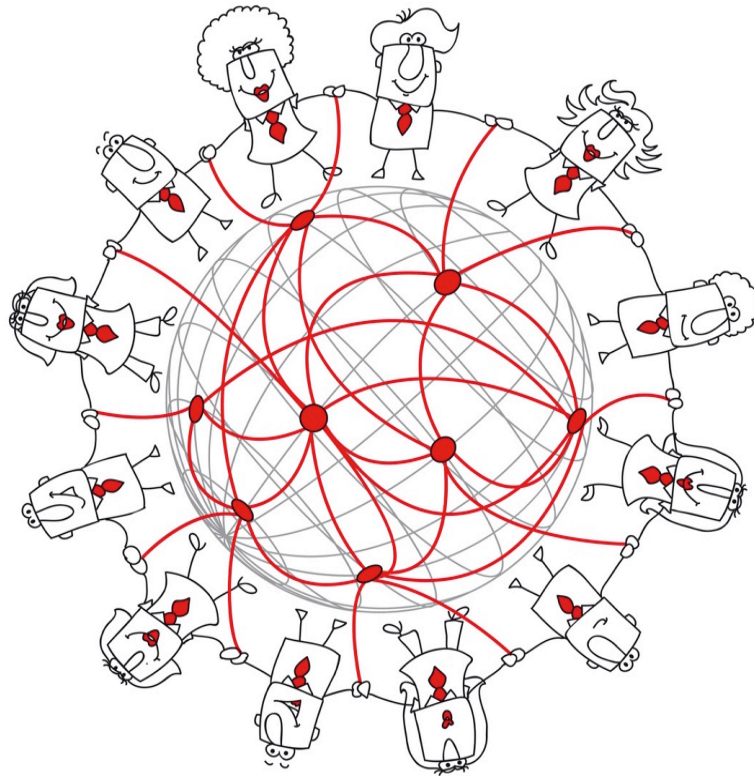
- **The interaction between the academic and industry is essential to fasten the applied research**

Since its creation, the PNB gathers 160 entities. More than 3 000 jobs were created in Burgundy and investments of above 700 Million Euros. Nuclear represents 12,000 jobs in the region, 70 square kilometers around Dijon

*Pole Nucléaire Bourgogne*



# The nuclear cluster is not a think tank



**... While foreign competitors have their strategic partnership in place**

## From European Associations...

- Spanish Nuclear Group is a consortium of four Spanish companies, ENSA, ENUSA, RINGO and TECNATOM in order to coordinate, increase and promote these companies operations in the marketing sector of goods and services for nuclear power stations in which the core business carry out their activities.

<http://www.sngc.es/en/about-us/>



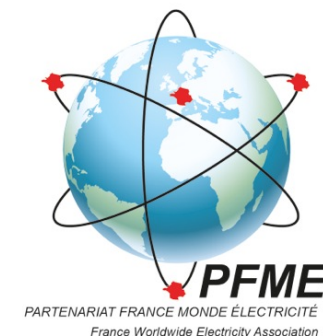
- Founded by industrial organizations, FinNuclear purpose is to promote Finnish companies' general preconditions, cooperation, competences, international profile in manufacturing, construction and service activities in the nuclear energy field.
- It covers the whole lifecycle of nuclear power plants and associated plants, including design, licensing, construction, operation, maintenance, modernization, fuel cycle, waste management and decommissioning as well as related research activities.

<http://english.finnuclear.fi/finnuclearassociation>



- PFME is an association of EDF suppliers for the French nuclear program who provide equipment and services for nuclear power plants around the world.
- The main objective of the association is to support PFME countries wishing to develop or redevelop their nuclear industry giving them the benefit of the experience and expertise of French suppliers.

<http://aifen.fr/site/membres/membres-n-r/pfme-partenariat-france-monde-electricite/>



## ...To Asian Consortium

- The CNEA's missions are to implement throughout the national policies on nuclear energy development, promote industrial independent innovation and technical advance, and support for improving safety, reliability and economics of nuclear energy utilization.

[http://www.china-nea.cn/html/About\\_CNEA/](http://www.china-nea.cn/html/About_CNEA/)



- JINED is engaged in activities leading to the creation of proposals to support nuclear power plant projects in the emerging countries.
- Under legislative and financing support from the Japanese Government, JINED contributes to the dissemination of Japanese technologies and know-how, such as seasoned experience includes actual power plant construction, O&M and human resources development.

*Establishment of "International Nuclear Energy Development of Japan Co., Ltd."*



- the management of the nuclear export business is ultimately in the hands of the Korean Ministry of Knowledge Economy (MKE)
- Thanks to an active national program of Nuclear Power Plant (NPP) construction, Korea has developed distinct competitive advantages in terms of low cost, high credibility and high performance

*Korea nuclear exports: Why did the Koreans win the UAE tender? Will Korea achieve its goal of exporting 80 nuclear reactors by 2030? HAL Id: hal-00585316*



## The Domestic Industry is scattered



... No Nuclear industrial park is foreseen

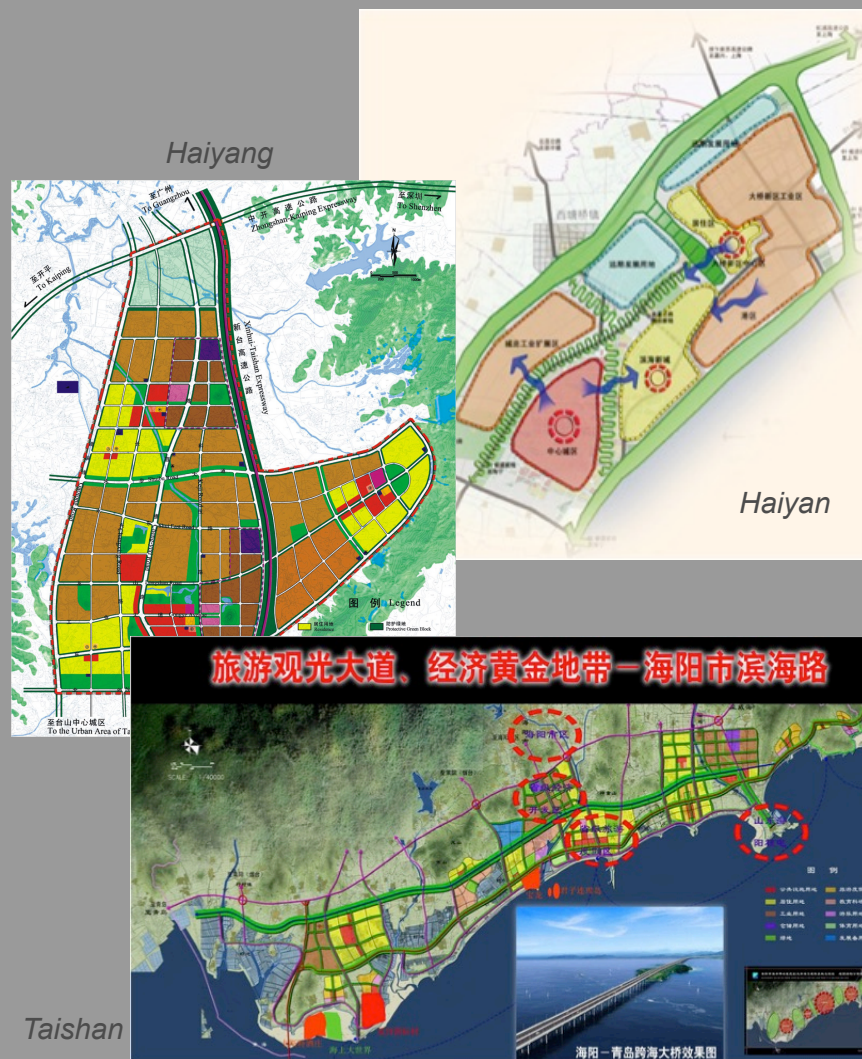
**MADE IN  
TURKEY**

# Inexistence of a Nuclear Industrial Park

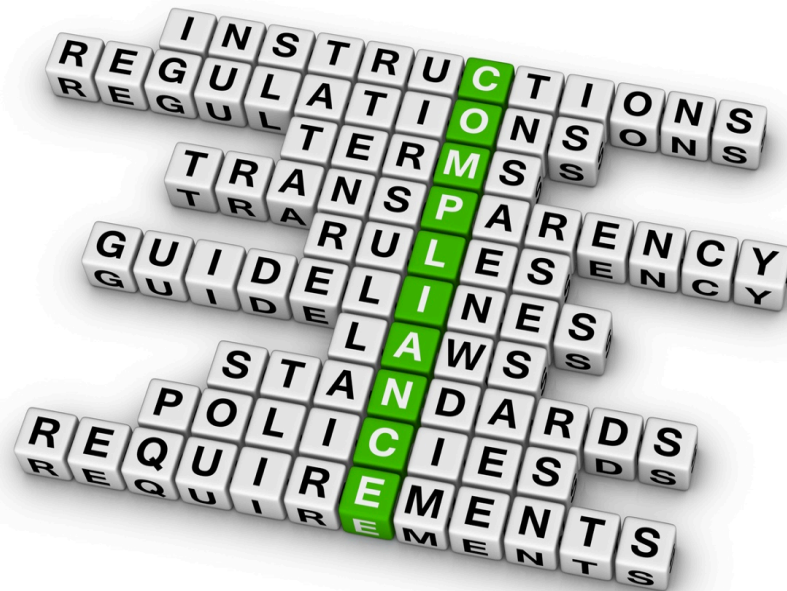
- Sinop and Akkuyu do not have a local supply chain, in particular a nuclear industrial park
- The creation of a local park dedicated to nuclear is a magnet for new ventures and investment.

*Areva, signed an agreement with Haiyan that it would invest 300 million yuan to establish Areva (China) Nuclear Power Service which is exclusively foreign-owned with a registered capital of 100 million yuan in Qinshan Sub district (The nuclear power operation area of the China Nuclear City). This company to be established will offer main services to the local enterprises, and also to other nuclear power enterprises in China.*

Haiyan Government



# No Regulation yet defined for the local industry



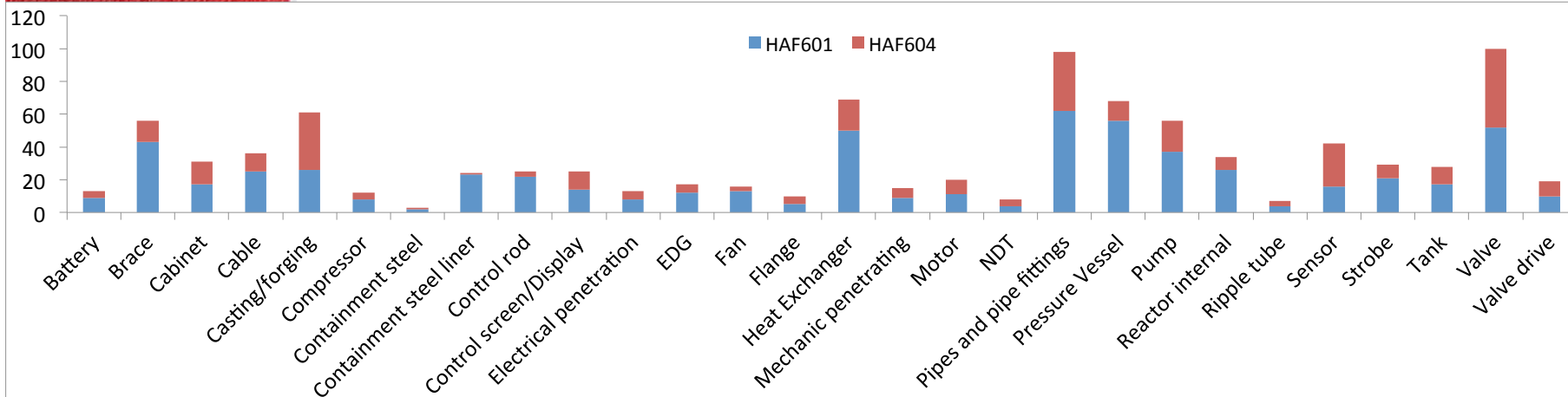
... The domestic  
Industry is not protected  
from foreign  
competitors

## 2. Lack of Local Regulation and industrial strategy

- The regulator does not have any regulation to control or monitor the foreign competition
- The HAF regulations in China allow the safety authority to monitor foreign companies and support the local industry



HAF 604 Man Diesel



## 3 Steps to create a protective Environment



1. **Design a regulation for Foreign imported safety equipment**
2. **Use the tactic of “internal regulation”**
3. **Block the safety level 3**

# Design a regulation for Foreign imported safety equipment

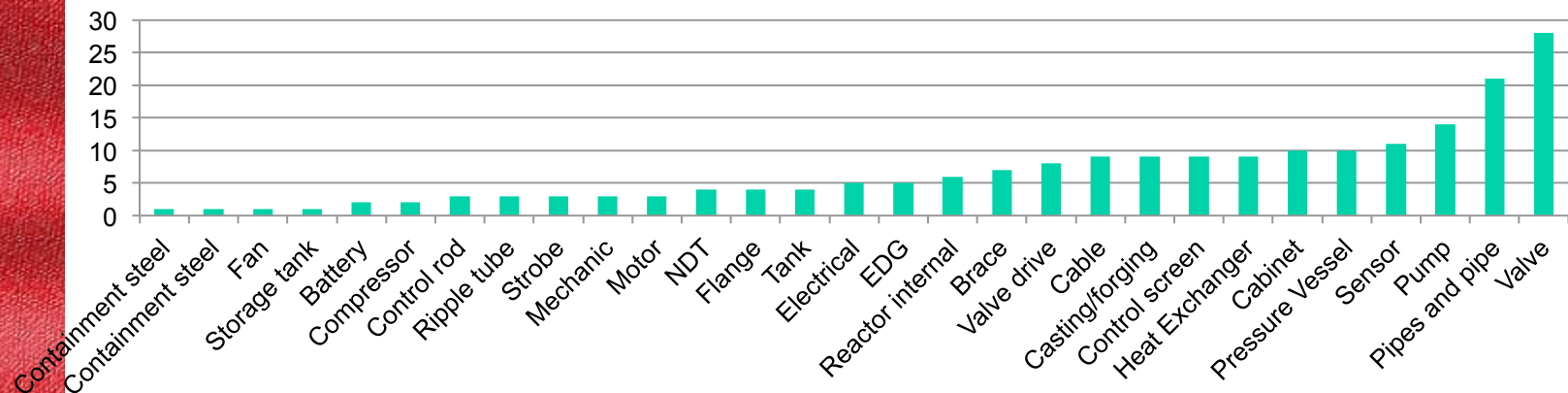
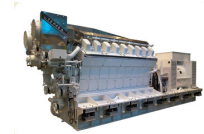


**Use foreign experience such as the Chinese nuclear market**

# Regulated Equipment

- Regulation on Imported Civilian Nuclear Safety-related Equipment (HAF604)
- Issued by NNSA (National Nuclear Safety Administration)
- Come into effect at the beginning of 2008
- One-year moratorium period

- Any Mechanic Equipment must be already certified by a foreign safety entity: ASME 1, 2, 3 Classified, OTT, GOST, RCCM 1,2, 3, Others (KTA...)
- Any Electric Equipment face different situation depending on the technology, i.e. EDG for AP1000: 1E classified, RCCE...



## Use the tactic of “internal regulation

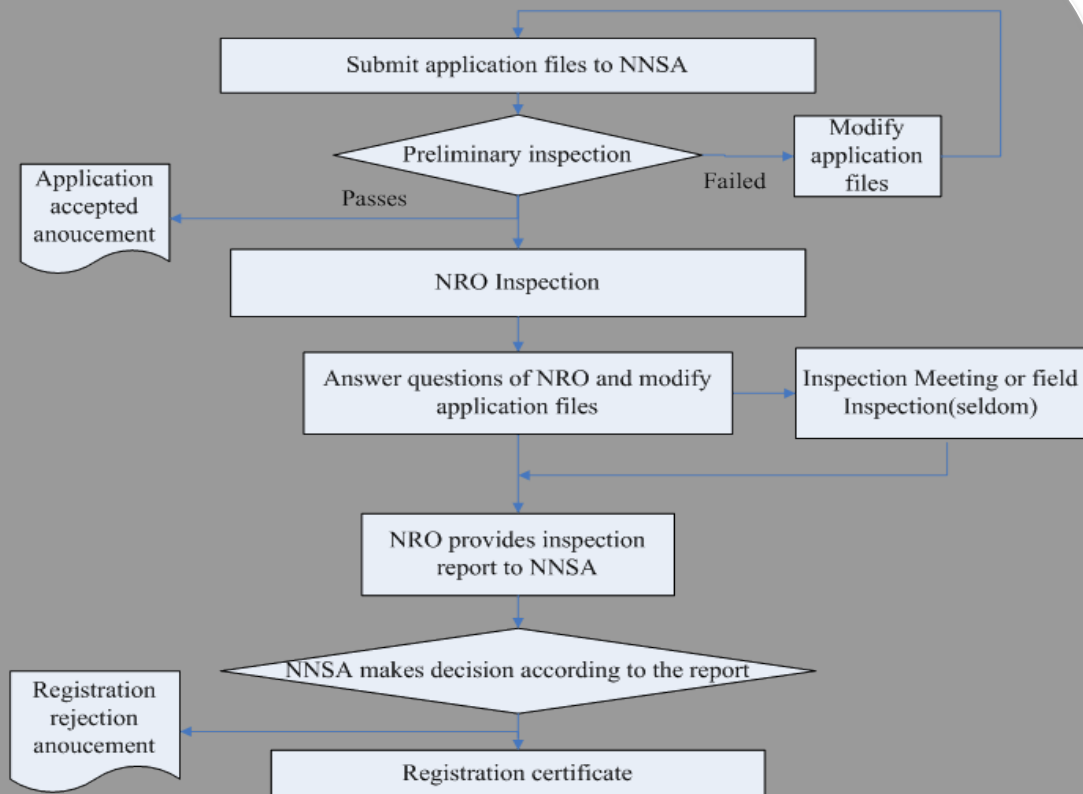


**The certification can take up to two years**

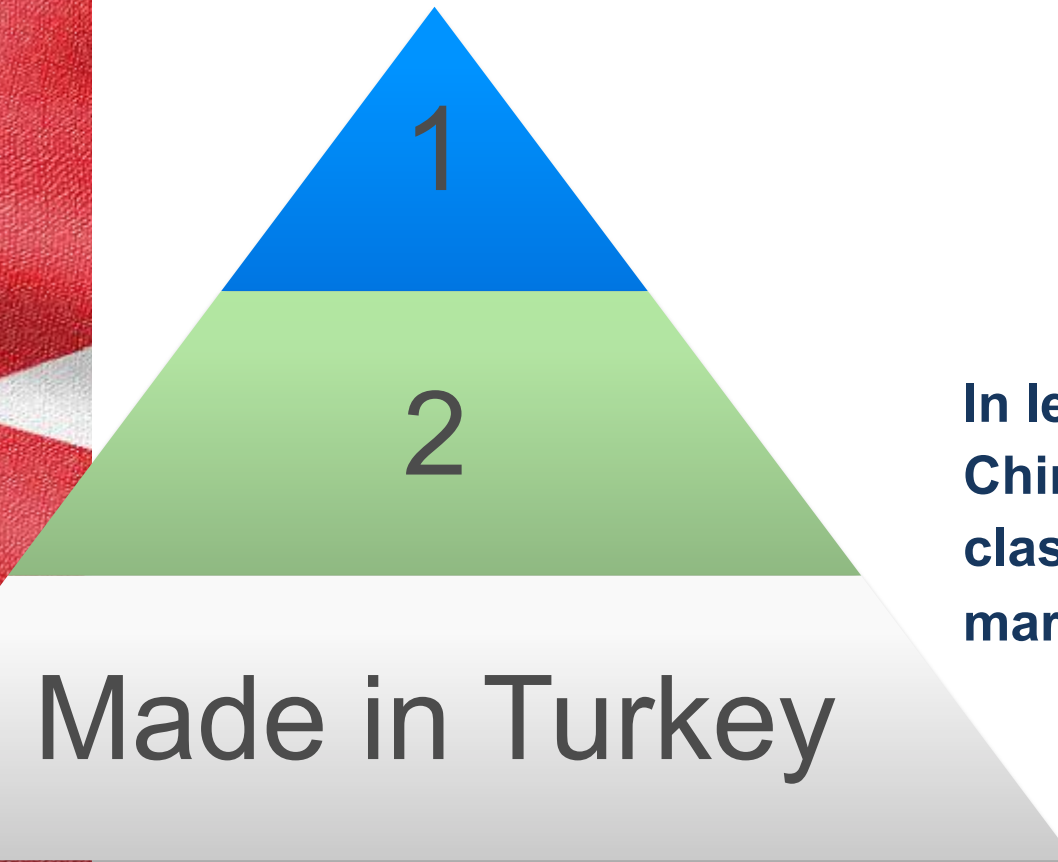
## Regulated Activities:

### Designing Manufacturing, Installation Non-Destructive Test

- The applicant must fill documentation in Chinese ( Turkish in that case)
- Required documents:
  1. A registration application form;
  2. Business License;
  3. Certifications;
  4. References;
  5. Facility and staff profile; technology and standards used;
  6. Quality Manual;
  7. Other documents...



## Block the Safety Level 3



**In less than 10 years the Chinese controlled 85% of class 3 tenders in their market**

## Create a scope of market dominance

- Battery, Transformer
- Brace
- Cable
- Casting and Forging
- Compressor
- Containment steel liner
- Control board & panel, Control Screen, display component
- Control rod drive mechanism, Reactor internals
- Electrical penetration
- Emergency diesel generating sets
- Fan
- Graphite component
- Mechanic penetrating piece
- Motor
- Pipes and pipe fittings
- pressure vessel, Heat exchanger and storage tank
- Pump, Valve, Valve Drive
- PV, Shell and tube exchanger, gate, main heat exchanger, SG, regulator
- Ripple tube, expansion joint
- Steel Containment, Equipment Module
- Strobe

Certification Level 3 covered in ten years by Chinese companies



## A Word from our Sponsor



- Dynatom International is consulting firm focused in nuclear market only
- Located in Fribourg, Switzerland, with branches-representation in Beijing, Chicago, Valencia and Istanbul
- Specialized in Technology transfer in China and overseas market dominance
- Since 2014 expansion in Turkey to develop the industry has a hub for all NPP in the MENA and Africa

## Expertise in the regulation since 2008



- Registration strategy planning;
- Translation in Chinese of every document;
- Adjustment of the application according to NNSA needs;
- Analysis and consulting of NNSA remarks during the application review process;
- Communication with regulators and technicians.

# YOUR NEXT STEP

**Any industrialized country that uses nuclear power controls 90% of the supply chain.**

**China, India, the Middle East, Asia Minor, Africa and Latin America are no exceptions to this rule, it is just a question of timing.**

**Your role is to overcome this challenge and create the local regulation to control your foreign competitors.**

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*“Action without thinking is the cause of every failure” Peter Drucker.*