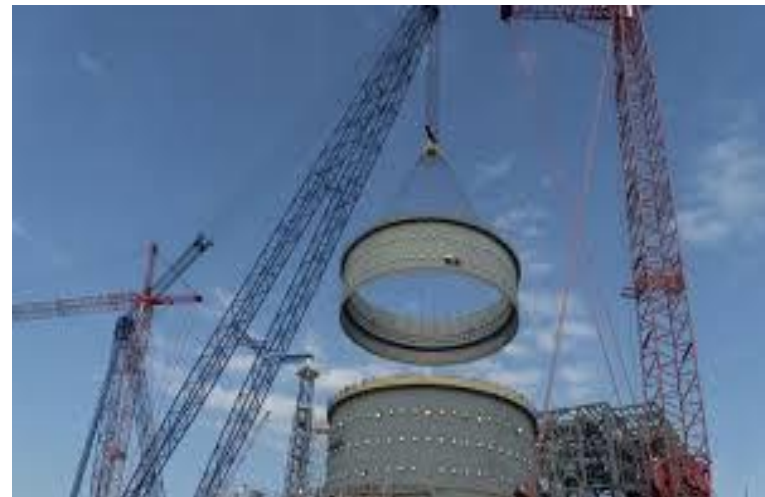


CONSIDERATIONS FOR STRUCTURING NEW NUCLEAR BUILT

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New Nuclear Build Face New Challenges

Historically

- **the nuclear projects were built:**
 - To ensure security of supply in the energy mix
 - Predominantly by public bodies
 - In regulated market environment
 - With state subsidies and long term commitments ensuring steady financial flows
 - With certain level of political bias
 - Lower level of competitiveness

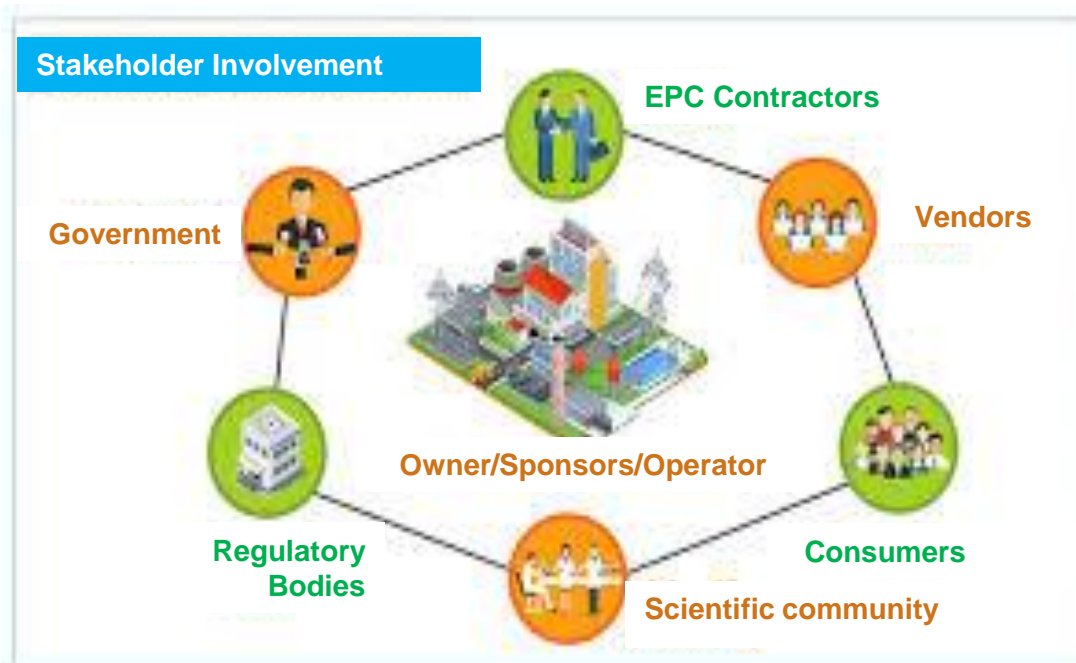


Present days

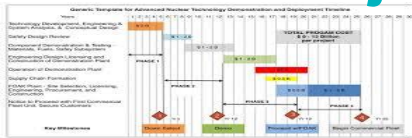
- **new nuclear projects face:**
 - Low level of market regulation (except for safety)
 - Less involvement of public bodies
 - Limited or no state support and/or incentives
 - Economical logics would rather prevail political bias
 - Higher competition at liberalized markets from other technologies incl. RES
 - Higher safety standards post Fukushima

New Nuclear Build – Conditions for Success

- New build nuclear must demonstrate it is competitive in an economic sense
- Nuclear projects are capital intensive with long project schedules. This entails ensuring sustainable regulatory and legal framework and contractual certainty
- New nuclear projects must be structured to manage risks and delivered to cost and schedule so to ensure successful financing and sustainable operations while ensuring the highest possible environmental and safety standards



Nuclear Project Risks, Mitigation and Control Matrix



	Development	Construction	Operation
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	Development	Construction	Operation
Technical	<ul style="list-style-type: none"> Regulatory assessment Site Suitability Environmental impact Planning approvals 	<ul style="list-style-type: none"> Safety & Quality Design completion/changes Regulatory approvals Vendor/contractor performance Supply Chain and transport Industrial relations Plant performance 	<ul style="list-style-type: none"> Safety Plant performance Workforce experience/skills Nuclear events The Environment Fuel supply chain Outages
	<ul style="list-style-type: none"> Internationally accepted or new improved designs Improved project planning and management Advanced engineering Upfront licensing 	<ul style="list-style-type: none"> Sound contractual arrangements b/n parties Invest in supply chain infra. Good training programmes & previous experience Strong project management 	<ul style="list-style-type: none"> Involvement in WANO etc. Training programmes Invest in new nucl. facilities Fleet approach in reactor management Continuous invest in O&M
Business Case	<ul style="list-style-type: none"> Economics Demand forecast Market design Used fuel and radioactive waste management/disposal Regulatory certainty Equity expectations Funding 	<ul style="list-style-type: none"> Design changes Delays Contractor management Regulatory impact Technology 	<ul style="list-style-type: none"> Electricity trading arrangements El. market and carbon prices Fuel cost Capital additions Early closure Waste and spent fuel costs decommissioning fund costs
	<ul style="list-style-type: none"> Seek investment from major power users Build business case on various demand scenarios Creditworthy owner/operator 	<ul style="list-style-type: none"> Stick to standardised designs Use good mix of permanent and contract staff 	<ul style="list-style-type: none"> Develop sound long term contracts Develop good balance of fuel contracts Nuclear knowledge mang-nt
Social & Political	<ul style="list-style-type: none"> General public support and local approval Policy supporting need for nuclear power Decommissioning and nuclear waste management Policy for waste management Environmental policy & Carbon pricing mechanism 		
	<ul style="list-style-type: none"> Regular opinion polling Public debates and hearings Gaining cross party political support Develop waste management policy with government Emphasize environmental advantages of nuclear power 		

Risks

Mitigation & control

Legal Framework in Structuring New Built



MUST BE: Clear, Predictable and Consistent

International Framework

- **Conventions –**
 - Nuclear safety,
 - Support in nuclear accidents,
 - Nuclear Liability - Vienna,
 - Physical protection,
 - Security
 - Spent fuel and nuclear waste safe management etc.
- **Treaty** for nonproliferation of nuclear weapons. Etc.
- IAEA – Safety Standards

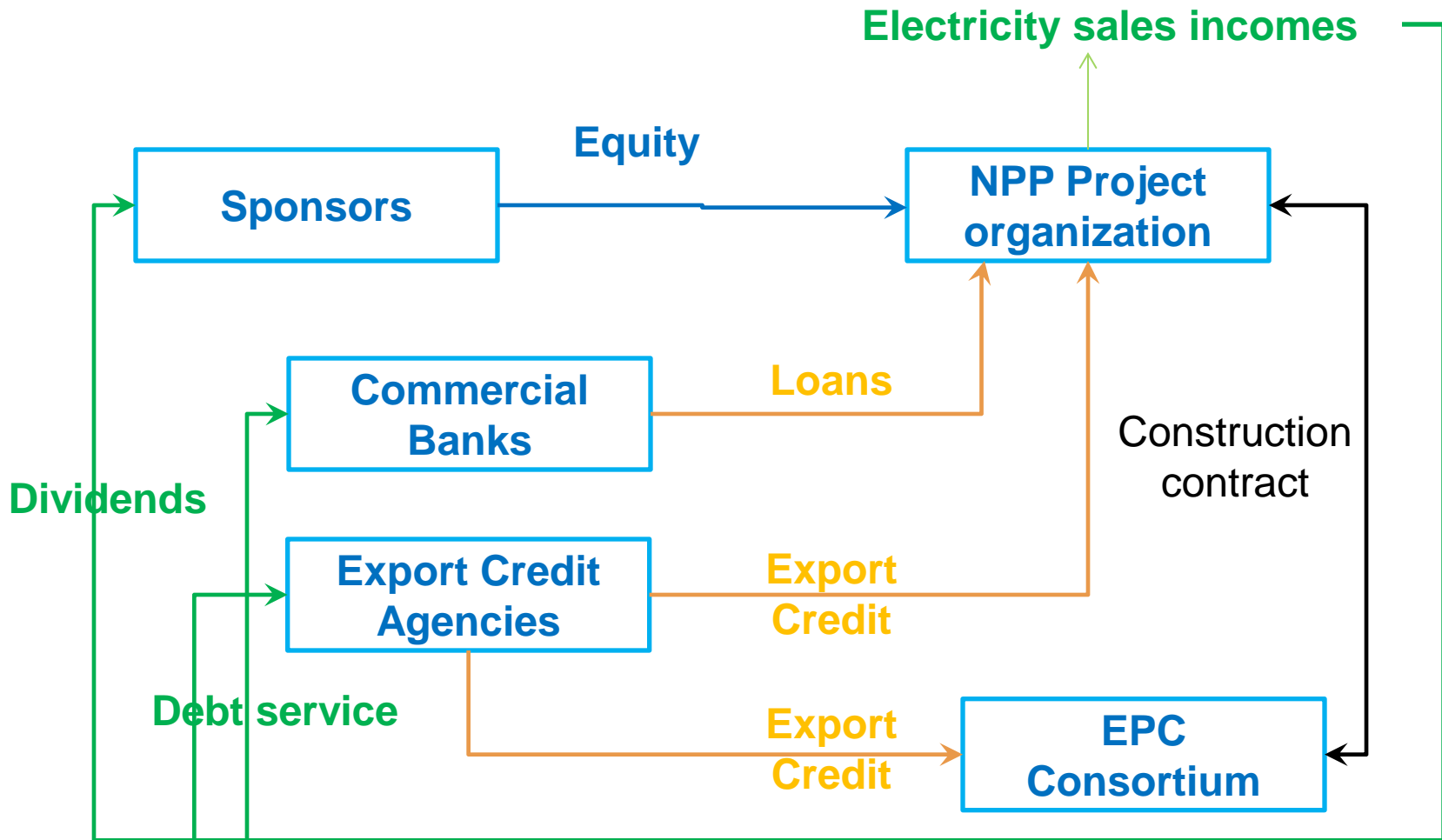
EU Framework

- **Regulations**
 - EURATOM Safeguard measures (302/2005)
 - Shipments of radioactive substances. etc.
- **Directives**
 - Community nuclear safety framework (2014//87)
 - Ionizing basic norms (2013/59)
 - Nuclear safety in nuclear installations (302/2005)
- **Communications of EC**
- **Opinions etc.**

Bulgarian Framework

- Bulgarian Energy Strategy
- **Primary**
 - Safety -ASUNE,
 - Licensing- ASUNE & EA,
 - Construction – SDA
 - Environment -EPA
- **Secondary** – Ordinances (19 pcs. +), Orders, Regulating Guidelines
 - Technical,
 - Safety
 - Radiological protection
 - Constructions
 - Qualifications
 - Security

Typical Financing Structure



The different stakeholders and their roles entail and require careful risk allocation when project structuring

Few Current Examples

Traditional Financing Model

- **Project:** Barakh NPP – UAE; APR 1400 MW
- **Status:** under construction
- **Estimated project price:** 24, 4 bln. USD
- **Sponsor:** UAE Government + political support from R. Korea
- **Vendor:** Korea Electric Power Corporation (KEPCO)
- **EPC:** Fixed price 20 bln. USD
- **Financing:** Debt-80% (MInFin+Banks): Equity-20% (Vendor+ProjectCo.)
- **Securitization:** UAE Government Sovereign Loan Guarantees for the financing and the PPA full output
- **Electricity Off-take:** PPA

Mankala (Finnish) Corporate Financing Model

Project: Hanhikivi 1 NPP – Finland; VVER 1200 MW
Status: - under construction
Estimated project price: £ 20,3 bln.
Sponsor: Fennovima (66% Voimaosakeyhtiö SF - ~58 companies & municipalities as shareholders) & (34 % RAOS Voima (subsidiary of Rosatom))
Vendor: Rosatom
EPC: n.a. info
Financing: Debt-76% (Rosatom): Equity-24% (Owners);
Securitization: No
Electricity Off-take: free market and tax-free power at producer prices, in proportion to shareholder's portions

BOO Model Vendor finance

Project: Akkuyu NPP (1-2;3-4)– Turkey; 4x VVER 1200 MW
Status: - under construction
Estimated project price: [~ 20 bln. USD, Unit 1]
Sponsor: Akkuyu NGS Elektrik Uretim Corp (Rosatom subsidiary) (discussions for 49 % of Turkey companies)
Vendor: Atomstroyexport (Rosatom)
EPC: n.a. info
Financing: Vendor 100 % (Rosatom)
Securitization: No
Electricity Off-take: PPA (15 years TETAS 70 % from U1 &U2 and 30 % from U3&U4) (> 15y full liberalised)

Vendor financing against strike price under CFDs

Project: Hinkley Point C NPP – UK; 2 EPR 1630 MW
Status: - under construction
Estimated project price: [£20.3 bln. in July 2017]
Sponsor: EDF - France
Vendor: EDF – France [/CGN – China]
EPC: n.a. info
Financing: Vendor 100 % EDF [/CGN – China]
Securitization: “Strike price” £92.50/MW.h (2012 prices) for 35 years from the end of construction reducing. Including several additional mechanisms to protect the UK government, including a construction gain share and an equity gain share
Electricity Off-take: CfDs

IN BRIEF

REAL PRESENCE ON THE GROUND – OUR OFFICES IN 13 COUNTRIES IN THE CEE/SEE REGION ENABLE US TO PROVIDE OUR CLIENTS WITH FULLY INTEGRATED AND EFFICIENT SERVICE, IRRESPECTIVE OF THE JURISDICTIONS INVOLVED

ONE OF THE LARGEST AND MOST EXPERIENCED TEAMS IN THE CEE/SEE REGION

340 LAWYERS, FOCUSED ON NOT ONLY MEETING BUT EXCEEDING CLIENTS' EXPECTATIONS WHEREVER POSSIBLE

COMPREHENSIVE FULL-SCOPE LEGAL ADVICE TO HELP MAKE YOUR OPPORTUNITIES HAPPEN

VISION

TO BE INSTRUMENTAL IN BUILDING AND SAFEGUARDING THE FUTURE PROSPERITY AND SUCCESS OF OUR CLIENTS, OUR PEOPLE AND THE MARKETS IN WHICH WE CHOOSE TO OPERATE

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