Cost item	Type of cost	Description	Estimation issues	Risks (not exhaustive)
Civil Engineering (Buildings and Plants)	Investment / capital cost	Regular building costs of offices and laboratories, including commissioning costs	These costs typically include the costs related to architectural services and technical supervision The estimation of the construction cost should follow a thorough “value engineering exercise” in the case of a physical RI in particular	Misspecification leading to adjustments and extra costs + overruns due to delays in construction
Scientific Equipment	Investment / capital cost	Technical Design, R&D, manufacturing, assembly/integration, configuration/change, testing, commissioning	Complexity of the equipment, sometimes experimental and never done before, so no easy benchmark Should include additional needs (such as computing needs)	Cost overruns caused by maturity risks, delays in development//delivery, currency risk
Personnel and training costs	Start-up costs + operational costs	Salaries + training costs	Country differences (low wage-high wage) availability -peak load rigidity: the balance between in-house and outsourcing should be analyzed	Low Wage country cannot deliver, personnel has to be hired in high wage country
Overhead, services	Start-up costs + operational costs	All costs not directly related to executing the core tasks of the RI: financial, HR, facilities like cleaning etc., but also knowledge transfer activities.	Estimation requires relevant attribution criteria to infer costs from scale of RI (no. person-hours, square meters used, type of tasks etc)	
Maintenance	Operational cost	Regular maintenance of	Data available on the market in	Lack of data for new equipment

		existing material	case of industrial supplier of technology Need for ad-hoc estimation in case of new technology	+ reliability of data coming from industrial supplier + market dependency in case of sole supplier of maintenance
Utilities	Operational cost	Electricity, gas, water, ...	Need for reliable data, in particular from technical team and industry on needed capacity and consumption. In some instances, it may be useful to internalise the supply (internal power station or gas production) or choose long-term energy-efficient approaches , set up consortia with other large consumers	Market volatility (in particular for energy), reliability of consumption data
Reinvestments	Investment cost	Replacement and upgrade of scientific and technological equipment	Economical / technical lifetime for experimental equipment not necessarily known, difficulty to establish a re-investment timing from the outset	Underestimation or unrealistic timing of re-investment may eventually lead to situations where the RI cannot remain competitive
Decommissioning	Investment cost	Dismantling the facility (handling of redundant buildings, sale of decontaminated land, equipment)	Decommissioning strategy should be established from the outset. However, many constraints (in particular regulatory) are very uncertain.	Regulatory uncertainty
Taxes	Attached to cost (investment or non-investment)	VAT, excise duties, local taxes, tax on generated income, taxes and contributions on personnel costs, taxes on energy, etc.	Depends very much on legal status of the RI + difficulty to predict future fiscal policy	Legal uncertainty connected to unstable fiscal policy