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The Planning of Public Investments in EU Member States: Long-Term Strategy, Selection & Budgeting Issues

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Abstract

Leveraging insights from the academic literature, this paper discusses the challenges and practical solutions in the planning of public investment projects and illustrates them with survey evidence from the EU Member States. The paper starts with strategic planning, which covers a 10-to-20-year planning horizon and can help to identify shared rather than competing goals across sectors and regions. It then moves to the appraisal and selection of large investment projects and discusses the benefits of multiple decision gates and external quality assurances. Finally, it outlines budgeting tools such as multi-annual commitment appropriations and multi-annual budgeting of capital and maintenance costs that bring clarity on the available resources and protect availability of capital during and beyond implementation. Each of these three stages is supported with available evidence from the EU Member States, which helps to identify good practices but also hints at areas for improvement. Overall, the analysis suggests there is much room for improvement across the EU in the early stages of planning as well as in terms of the use of long-term budgeting tools.

JEL Classification: H54, H82, H41, H3, E2.

Keywords: efficiency of public investments, project governance, multi-annual budgeting, front-end governance, external quality assurance, multiple decision points.

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1. INTRODUCTION

Sound management of public investment starts with sound planning. In the current juncture of large investment needs against limited fiscal space, the quality of public investment management is more important than ever. In addition, the much-needed green transition and rapid adoption of artificial intelligence and digitisation are expected to imply profound societal and economic changes. These two elements underline the importance of strategic planning of public investment, namely an anchoring of investment projects into a long-term development vision for the country and designing processes for the monitoring and implementation of this vision.

This paper contributes to the literature in two ways. First, looking at strategic planning, appraisal/selection and budgeting, this paper discusses interlinkages between these three first stages of the investment cycle and highlights practical tools. The paper uses the framework of Belu Manescu (2021) which includes five stages in the project life cycle, namely strategic planning, project appraisal and selection, budgeting, implementation, and ex-post reviews. This is a simplified version of the assessment frameworks of the OECD (2017) and the IMF Public Investment Management Assessment framework (IMF, 2019). The three first stages are sometimes referred to as the "front-end" or "upstream" part of the public investment cycle. The front-end covers the planning of public investment in a wide sense, from long-term strategy to project appraisal and selection, and budgeting elements. Conceptually, the discussion in this paper relies on Samset, Volden, Olsson, & Kvalheim (2016) – a leading contribution discussing elements of the front-end cycle in a comparative analysis of practices in several countries.

Second, the paper reviews the national, sectoral and/or sub-sectoral strategies that Member States submitted to the 2022 COM survey on public investment management practices. In the survey, Member States were asked to report the name and link to the main national, sectoral, and sub-sectoral strategies. This is a novel data source not previously analysed. In addition, this paper re-examines evidence from the survey and identifies practices that can support some of the new insights. The survey covers all five stages of the investment cycle and includes closed-form and open questions on a limited number of key information. The survey questions and main findings of the analysis are published Belu Manescu (2022). Relevant data from the Global Investment Hub[1], the OECD and the IMF[2] also informed the analysis. Finally, in-depth interviews and useful insights from exchanges with the informal EU network of national experts on public investment management also informed this analysis.[3] Still, the survey data is subject to typical survey data limitations, in particular the varying scope of reporting with some respondents focusing on key sectors while others reported on the whole economy, and the internal consistency of the closed-form answers, despite validation with the free text answers to the extent possible.

The paper focuses on the public investment planning system at the national level. In this context, practices, and requirements for various types of EU funds (e.g. Cohesion Policy or Recovery and Resilience Facility) – which apply uniformly to all Member States – are seen just as a component of the national system and not discussed in detail.

Effective strategic planning includes a vision for long-term development, coordination across government levels and setting measurable objectives within a fiscal constraint. As common elements of effective practice, this paper finds high-level long-term planning strategies fully aligned with comprehensive and costed investment plans and medium-term budgetary frameworks. Built on hard-data and co-ordinated across government and levels of government, high-level visions typically reflect

[1] The Global Investment Hub is a not-for-profit organisation, formed by the G20 and acting as a knowledge sharing hub to produce data, tools, and programmes for public and private infrastructure delivery.

[2] In 2017, Ireland was the first EU country to undergo an IMF Public Investment Management Assessment. Since then, ten others have completed or planned such an assessment.

[3] Three virtual meetings with the informal national expert group on public investment management took place in 2023 and 2024. The group is set-up with the help of the Economic and Financial Affairs Committee and coordinated by the European Commission, DG ECFIN. Further input provided by Luuk van der Meijs, Senior Policy Officer, and Thomas Hoving, Policy Officer, both within the Dutch Ministry of Infrastructure and Water Management is gratefully acknowledged.

elements of spatial planning and follow a well-defined review and monitoring process. The National Development Plans are developed by the Ministry of Finance in many countries, with input from line ministries. The implementation of the high-level strategy also depends on regular monitoring by a dedicated unit, on data transparency and, not least, on strong political support.

On selection and appraisal of large infrastructure projects, this paper highlights that the selection of project investments works more effectively as a process rather than a one-off event. Project selection is arguably the most important stage of the public investment cycle. For the so-called "mega-projects", this can be one of the most consequential decisions in public policy, with impacts on, for example, productivity, innovation, and quality of life. Multiple decision points and independent external reviews prior to implementation increase scrutiny and avoid too early lock-in before projects gained too much political support. Called the "stage-gate" model in the academic literature, it emerged in the late 1990s and spread through some advanced economies (Box. 1).

On the budgeting side, tools such as multi-annual commitment appropriations and carry-over arrangements are found to support effective planning and spending. It is useful to consider planning and budgeting elements simultaneously, to maintain the fiscal realism of investment planning and transparency on the investment portfolio over the relevant horizon. More transparency on the investment budgeting side can also lead to more efficient spending. Multi-annual budgets, that are comparable across ministries, updated annually and publicly available help increase accountability and efficiency in public spending.

Within the institutional diversity of the EU, the findings outlined above are useful for developing a common understanding of key principles for efficient planning of and spending on public investment in the EU. Such principles are rooted in scientific research and supported by effective practices around the world. The analysis also shows that these principles are compatible with national choices and the institutional set-ups specific to each Member State. Each country has its own system of planning which depends on its institutional history, government structure, preferences etc. Still, these systems fulfil common functions and address common challenges. The paper aims for uncovering such commonalities, while illustrating how they can be achieved through a diversity of practices. Ultimately, this paper can assist countries that wish to develop their planning system for public investment. Evidence here highlights that, especially since the Great Financial Crisis, many EU countries have sought to reform their public investment systems.

This paper does not provide a gap analysis of missing practices. It is not meant to provide a comprehensive assessment of practices within or across countries, or to identify overall good/bad performers. This is particularly true with regards to strategic planning because of incomplete information in the survey as some countries chose to focus on national planning while others on sectoral planning. Instead, the paper intends to illustrate good practices where they show up in the analysed documentation and give an indication of missing practices where feasible.

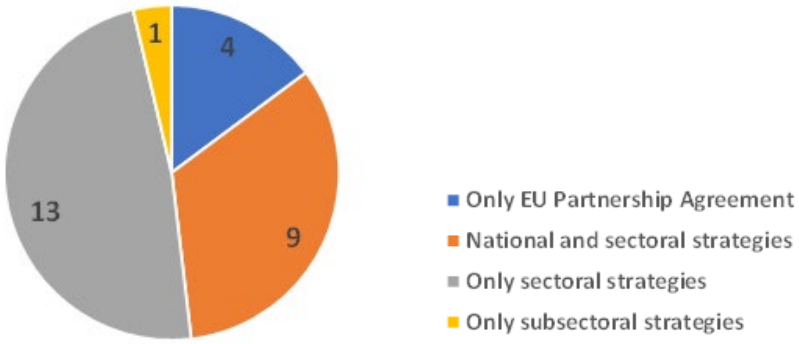
The paper is organised as follows: Section 2 discusses strategic planning, while Section 3 discusses the "stage-gate" model for integrated front-end management of large investment projects; finally, Section 4 discusses the role and features of multi-annual investment budgets in supporting investment planning; two case studies of the stage gate model are presented for The Netherlands (Annex II) and Ireland (Annex III); Section 5 concludes.

2. STRATEGIC PLANNING

Strategic planning is in place in all Member States, albeit with varying sectoral coverage. A third of the Member States reported national strategies as their long-term strategic planning documents (Chart. 1), covering all sectors and accompanied by sectoral and sub-sectoral strategies. These countries are Bulgaria, Croatia, France, Greece, Ireland, Latvia, Lithuania, Poland, and Portugal. Half of the Member States predominantly referred to the transportation sector (occasionally defence as well), while four of them (Czechia, Cyprus, Hungary, and Slovenia) identified the EU Partnership Agreements as their main

long-term planning document at national level.[4] The EU Partnership Agreements between Member States and the European Commission set out national authorities' strategic priorities to be co-financed by EU Cohesion policy funds during the seven years financing period[5]. All EU Member States prepare EU Partnership Agreements. Still, national strategic planning documents may still exist in more countries although they did not report them in the survey. The horizon threshold for documents to be considered in the analysis for strategic planning is of ten years. Recovery and resilience plans, national reform programmes or stability and convergence programmes which were reported by some countries are regarded, in this analysis, as (short-term) implementing plans.

Chart 1. **Strategic planning document in place in the Member States**



Source: COM 2022 Public Investment Management survey.

The strategic planning documents were screened for known practices of good governance[6]. The key elements considered include institutional set-up, namely the institutions coordinating the process and other institutions involved in the process, notably the Ministry of Finance; horizon, sectoral coverage, and degree of integration at sectoral and sub-sectoral level; level of detail in terms of deliverables, and estimated costs (including some elements of multiannual budgetary planning) and degree of integration across sources of financing; and transparency elements such as data availability on the list of projects and their implementation progress and pre-defined review process of the strategy. The analysis is separated into three main groups: national strategy excluding EU partnership agreements, sectoral only and EU partnership agreements only. See Annex I for a list of the main documents that were reviewed by country.

2.1. EFFECTIVE STRATEGIC PLANNING AT THE NATIONAL LEVEL

Effective strategic planning includes a vision for long-term development, coordination across government levels and setting measurable objectives within a fiscal constraint.[7] A vision for long-term development helps to identify key strategic goals for the country, that are shared rather than competing between decision makers and society at large. Usually, a meaningful horizon for these visions is of at

[4] Slovakia referred only to the sub-sectoral strategies in rail and roads sectors, while Belgium reported sectoral strategies only at the lower levels of government.

[5] See here the EU Partnership Agreements in all Member States for the 2021-2027 financial period

[6] The following keywords were searched for in the English automated-translated version of the documents: Asset; Capital; Cost; Department; Estimate; EU-funding; Expenditure; Measure; Ministry; Objective; Outcome; Plan; existing infrastructure; inventory; maintenance; replacement; asset management.

[7] The Global Investment Hub offers a pragmatic definition of planning for public investment: "A government's ability to plan, coordinate, and select infrastructure projects. Planning, not just of projects, but transparent setting of strategic social-economic-environment goals and integrated sectoral and system plans, enabling projects to be measured against clear objectives." The OECD offers a more elaborate definition: "A long term national strategic vision is a politically sanctioned document that demands concrete action in terms of infrastructure services to society over the long term. This might go beyond a normal political mandate period. The design of the vision requires a process that distils complex and multi-faceted infrastructure issues, cutting across a multiplicity of actors, sectors, and interests, into a coherent set of decisions with long term impact, including projects and processes. Such a process should be anchored in central agencies (Chief Executive, Finance, similar) have substantial input from policy departments, sub-national governments and civil society, business stakeholders" OECD (2017).

least ten years. This vision requires significant coordination and consultation with stakeholders (OECD, 2017). As such a vision can only be very general, setting measurable objectives is indispensable to anchoring the shorter-term plans into the vision and to monitoring how the vision is being delivered. Central agencies close to the highest-level decision-making power tend to have a key role in coordinating and implementing the vision (IMF, 2019). Finally, long-term visions need to be accompanied by operational strategies which can crucially include realistic financial estimates of what is fiscally possible. They can cast the priorities within fiscal constraints Kim, Fallov, & Groom (2020). This highlights the indispensable role of the Ministry of Finance already at the strategic planning phase.

This section identifies elements of good practice in the Member States by examining long-term strategic planning documents that cover the entire economy. Some of the countries report other long-term strategies, which cover either a thematic area (i.e. integrated sectoral plans) or a single sector (i.e. uni-sectoral plans). However, these integrated or uni-sectoral strategies have not been analysed in detail, nor the extent to which they are aligned with the overarching national strategy. The integrated sectoral strategies include national energy and climate plans, circular economy plans, and EU partnership agreements; while the sectoral ones cover environment, defence, law and order, education, transportation, agriculture, R&D, and digital transformation.

Ireland

Ireland is covered in detail because of data availability in the survey and online. Ireland has reformed its strategic planning system in 2018 and has put in place many of the good practices identified in the literature (OECD, 2017, IMF 2019, Kim, Fallov and Groom, 2020). Similar practices found in other countries reporting national strategies are documented later in the section.

Ireland uses an integrated spatial development and investment strategy in the EU. Effectively introduced in 2018, Ireland's strategic vision for the country, Project Ireland 2040, consists of two aligned and mutually reinforcing documents[8]. First, an overarching spatial planning framework outlines ten national strategic desired/planned outcomes over a 20-year horizon (called "The National Planning Framework") to guide planning and investment at all levels of government and all economic sectors[9]. Second, a separate 10-year national investment plan presents the financial envelopes for each outcome ("The National Development Plan"). With previous public investment plans, the link with the national spatial strategy was weak or absent.

The National Planning Framework is the result of extensive coordination within and across levels of government, underpinned by the challenges posed by long-term population growth. The long-term planning framework offers a vision for the whole country, with shared rather than competing goals across levels of government and sectors. It defines ten national strategic outcomes as objectives, such as "compact growth", "enhanced regional accessibility", "sustainable mobility", "transition to a low carbon and climate resilient society". Led by the Ministry of Housing, Local Government and Heritage, the planning framework is the product of intense formal consultations with regional and local authorities as well as other stakeholders, spread over four years[10]. The planning framework is framed around long-term population growth projections and related jobs, housing, and other necessities for a balanced growth across the country. Long-term population and economic developments are modelled using robust and independently produced methodologies, mainly by the Economic and Social Research Institute.

The National Planning Framework is further detailed in regional and sectoral strategies, all based on the same long-term growth projections. Regional Spatial and Economic Strategies (adopted in 2019 and 2020), as well as County and Local Development Plans (2022) are fully in line with the national planning

[8] In reforming its public investment management system, Ireland relied on an IMF Public Investment Management Assessment, concluded with a report published in November 2017.

[9] According to Wikipedia, spatial planning systems refer to the methods and approaches used by the public and private sector to influence the distribution of people and activities in spaces of various scales. Spatial planning can be defined as the coordination of practices and policies affecting spatial organisation and it typically is a component of land use, urban, regional, transport and environmental planning.

[10] The preparation work is organised in working/steering groups by thematic areas within the Government (e.g., infrastructure, environment, and climate action cabinet sub-committee). Econometric modelling provided by the Economic and Social Research Institute offers key input at the initial stage of the process. October 2014 marked the beginning of the work on Project Ireland 2040 which was published in 2018.

framework published in 2018 (Chart. 2). Using a common planning framework encourages inter-departmental connections, aligning efforts to achieve the ten national strategic outcomes. For example, a transport-led housing development approach will allow for the emergence of sustainable and well-connected communities where active travel is feasible (Government of Ireland, 2021).

Chart 2. **Planning process in Ireland**

Source: Project Ireland 2040.

The National Development Plan sets out the funding available to support the delivery of the ten national strategic outcomes identified in the National Planning Framework over a ten-year period. Produced by the Ministry of Public Expenditure National Development Programme Delivery and Reform, the plan includes indicative five-year capital allocations and overall ten-year expenditure ceilings[11]. The capital allocations and priority programmes are the outcome of negotiation and engagement across departments, including the Treasury Department, based on evidence and analysis. As a result, all departments' capital programmes are fully funded for the five-year period. The strategic investment priorities underpinning the expenditure commitments are determined by the relevant departments themselves and in such a way that they are central to the delivery of the planning framework vision. With the responsibility for the planning and the funding of the National Planning Framework shared by different ministries, close cooperation between these departments becomes essential for the effectiveness of the planning process.

The National Development Plans allows for a unified process across all funding sources and policies. The National Development Plan spells out all sources of funding over a 10-year horizon: national budget (Exchequer), state-owned enterprises own investment, recovery and resilience plan and EU Cohesion policy funds. Broad strategies such as the UN sustainable development goals or EU requirements (e.g., EU climate and energy plans) can be integrated into the national planning process in a consistent and transparent manner (Chart 2). Climate action and the environment can be addressed in an interconnected way Government of Ireland 2021 (Ch 3).

Dedicated bodies monitor how sectoral strategies are aligned with the planning framework, which is essential for effective delivery. The National Investment Office[12] emphasises that delivery of the strategic outcomes requires a *process* and an *output* monitoring framework. The former assesses how the national planning framework targets are reflected in the sectoral strategies and in the project

[11] The Exchequer capital ceilings set out in the 2021-2030 National Investment Plan are informed both by the Macro-Economic Analysis produced in Phase 1 of the NDP Review as well as by the level of demand indicated in the submissions from Departments, and the subsequent engagement at official-level and Ministerial bilateral meetings involving each Department.

[12] The National Investment Office is part of the Department of National Expenditure NDP Delivery and Reform.

selection for public investments. The latter assesses the degree to which actual public investments, either delivered or planned, align with, and support the achievement of national planning targets Government of Ireland (2021). While the National Investment Office monitors the alignment between the sectoral strategies and the planning framework, the Office of the Planning Regulator[13] oversees how the regional targets are being translated into County Development Plans.

Requirements to verify alignment with the national planning framework have been introduced in the appraisal and selection process to facilitate the monitoring of delivery in terms of process. The Public Spending Code sets out the value for money requirements for the evaluation, planning and management of public investment projects in Ireland[14]. These requirements apply to all public bodies and all bodies in receipt of Exchequer capital funding. In 2019, a new Strategic Assessment stage was introduced Government of Ireland (2019). A key element of this stage is to ensure the strategic fit of public investment proposals with government policy, and particularly the National Planning Framework. In the preparation of Strategic Assessment Reports for public investment proposals, public bodies must ensure that strategic alignment with the National Planning Framework, and particularly regional, city and compact growth targets as appropriate, is addressed Government of Ireland (2021).

Data transparency and digitalisation were strengthened to facilitate the monitoring of delivery in terms of outcomes. The National Investment Office continues to develop better data on project/programme planning and delivery through the MyProjectIreland mapping tool and Investment Tracker[15] and it reports to the Project Ireland 2040 Delivery Board on consistency and alignment within Project Ireland 2040. The Project Ireland 2040 Delivery Board is a non-statutory board to, *inter alia*, provide strategic decision and leadership to the implementation of Project Ireland 2040. The National Investment Office monitors strategy and investment alignment by region, city, and compact growth on an annual basis in the Project Ireland 2040 Annual Report, based on headline metrics. The Major Capital Projects Tracker, which is published on the Department of Public Expenditure NDP Delivery and Reform's website, details the capital investments due to commence in the next four years, and will be updated following the publication of the National Development Plan. Finally, an overview of the 50 largest investment projects is published regularly, with a view to inform the private sector on the sequencing of major public investments Government of Ireland (2023).

The revision of the planning documents follows a well-defined process. A revised draft national planning framework was published in November 2024, subject to finalisation following environmental assessment, according to a clear roadmap Government of Ireland (2023). Apart from taking stock of the implementation track-record, key elements of the review include updated population projections with the latest 2022 Census data and an update with the changing policy context (e.g., Climate Transition – addressing sectoral emission targets and Climate Action Plan 2023). The revised National Development Plan was already published in 2021 for the period 2021-2030.

Specific features of other national planning formats

In federal states, spatial planning provides a common framework underpinning investment planning across all levels of government. In Austria, for example, the Austrian Conference on Spatial Planning (OEROK) – founded in 1971 – is an organisation established by the federal government, the Länder and municipalities to coordinate spatial development at the national level. It prepares the Austrian Spatial Development Concept, a set of guidelines followed by all represented institutions and updated every ten years. OEROK 2030, the latest plan, was prepared in 2021 and contains a ten-point programme with priority themes to be implemented by 2030[16]. Germany also has in place a shared system of

[13] The Office of the Planning Regulator was setup in 2019 to ensure that strategies of, *inter alia*, local authorities correctly implement national and regional policy at all stages of the planning process.

[14] The Public Spending Code is developed by the Department of Public Expenditure and Reform and updated regularly. The most recent reform (of March 2023) aims *inter alia* to speed up approvals for smaller projects (threshold increased from €100 to 200 million), following recommendations from the 2022 Spending review of the Public Spending Code (Connoly & Newman, 2022). After this reform, the Public Spending Code will be titled "The Investment Guidelines".

[15] Both MyProjectIreland Interactive Map, available in a desktop and mobile phone version, and the Major Capital Projects Tracker (in excel format) can be found here. As of Q1 2023, the Tracker focuses on almost 320 projects and 140 programmes, including almost 100 projects more than €50 million.

[16] See Oerok 2030 in Brief, 2021.

responsibilities for spatial planning, defined at the federal, state (Länder) and local level and managed via the Conference of Ministers of Spatial Planning. Unlike Austria, the federal government in Germany defines legally binding basic goals and principles of the country's spatial organisation, which then, the Länder operationalise at the state level and ensure compliance with by local level plans Scharmann (2020).

High-level visions guide public investment plans in Bulgaria, Croatia, Latvia, Lithuania, Poland, and Portugal. These documents usually define key strategic objectives at the level of the entire economy and a set of measurable performance indicators to monitor their achievement via the sectoral strategies. Those documents reflect inputs by scientists, experts, academics, and the wider society, led by different bodies, in which the government is always represented. They usually provide an integrated view on how funding from all sources shall be used (i.e., national, European, other).

Latvia and Lithuania have very long-term high-level visions for the country. Like Ireland, the long-term development visions ("Latvia 2030" and "Lithuania 2030") outline a 20-year development vision rooted in spatial planning. In Latvia, the Ministry of Regional Development and Local Government led the preparation of "Latvia 2030". In Lithuania the strategy "Lithuania 2030" was developed by the State Progress Council whose secretariat is based at the Office of the Prime Minister[17]. The status of these strategies as the highest-level planning documents is established by law[18]. Finally, a monitoring implementation report is discussed by the *Saeima* (i.e., the Parliament of Latvia) every two years – in the first and third year after election of the *Saeima*. The report should be prepared by an independent institution (Sustainable Development Institute "Latvija2030"), created primarily for this role.

These long-term visions define broad objectives and set values for objective indicators. Strongly influenced by the Sustainable Development Goals, the strategic objectives include "investments in human capital" or "change of paradigm in education" in Latvia and "smart society", "smart economy" in Lithuania. These are in turn accompanied by a set of (related) objective statistical indicators provided by various institutions including Eurostat with values set for the end of the period (Latvia) and an intermediate value (Lithuania). Such indicators include "learning for all life" (Eurostat), energy dependence (Eurostat) or "Greenhouse gas emissions into the atmosphere in million tonnes of GDP CO2 equivalent" (European Environment Agency).

In Latvia and Lithuania, the long-term visions are complemented by investment plans which present indicative expenditure allocations by investment programmes. In Latvia, the latest 2021-2027 National Development Plan presents six-year expenditure allocations across several directions, with mention of the responsible authorities and sources of funding in each case[19]. Similarly, in Lithuania, the 2021-2030 10-year National Progress Plan presents for each strategic objective a detailed breakdown by source of financing and main users. The essential role that alignment between investment and budget planning plays in implementation is recognised by law in both countries. Moreover, in Lithuania, the Ministry of Finance is explicitly tasked to coordinate the preparation and implementation of the National Progress Plan.

In Portugal, the National Investment Programme outlines the 10-year expenditure allocations at the programme and project level. It outlines three high-level strategic objectives, based on the framework of the EU Partnership Agreement ("Portugal 2030") and in conjunction with other national strategies. These objectives are further detailed by four thematic areas and related deliverables, whose achievement is to be measured based on results indicators. Finally, the plan specifies all available funding sources and main users. It distinguishes between national, European (Cohesion Policy and Recovery Facility) and others (e.g., private sector) as funding sources, and considers public administration, state-owned enterprises, and private operators as main users. The allocated amounts are also included by funding source. To the extent possible, the results indicators are quantified.

In Bulgaria, a ten-year strategic framework document includes detailed funding and results indicators by axes of development and priorities. The National Development Programme "BULGARIA 2030" is a

[17] The State Progress Council consists of representatives of the public (50%), parliamentary groups (20%) and authorities (30%) and must hold meetings at least once every three months.

[18] "Latvia 2030", was adopted by the Parliament of Latvia in June 2010, while "Lithuania 2030" was adopted by Parliament on 15 May 2012.

[19] The 2021-2030 National Development Plan contains 18 directions.

strategic framework document of the highest order in the hierarchy of national programming documents. Replacing "Bulgaria 2020", "Bulgaria 2030" sets out 13 national priorities across all sectors and levels of the general government. The Council of Ministers is the monitoring and reporting body which uses the "Triannial action plans" as the main tool. These – yet to be developed – action plans, reflect all funding sources, are updated annually, and are necessarily linked to the medium-term fiscal framework and the annual budget.

In Croatia and Poland, overarching strategies provide a vision for the country and a strong basis to negotiate the EU Partnership Agreement. Established in 2017, the National Development Strategy to 2030, provides strategic goals for Croatia over more than a 10-year horizon and was adopted by the Croatian Parliament in February 2021.[20] Coordinated by the Ministry of Regional Development and EU funds, it includes elements of spatial planning, economic modelling, reflects intergovernmental and across levels of government coordination, and is regulated by law[21]. Similarly, in Poland, the Strategy for Responsible Development of 2017 sets out a new development model based on strategic vision, objectives, and priorities, with measurable milestones set for 2020 and 2030. A clear monitoring and reporting on the implementation of the strategies is foreseen in both these countries. In Croatia, the first annual implementation report for year 2021 was adopted by Parliament on 24 May 2023.[22]

These overarching strategies provide only broad financial envelopes by all sources of financing. National funding and EU Cohesion Policy funding are clearly indicated. A single vision for the country that is integrated across all sources of financing is expected to also strengthen the absorption of EU Cohesion Policy Funds in both these countries. Unlike Croatia, in Poland, the crucial role of the Ministry of Finance in implementing the strategy is explicitly acknowledged. In particular, the main tool for capital allocation is the three-year Convergence Programme prepared by the Ministry of Finance.

Cyprus, Czechia, Greece, Hungary, and Slovenia reported the EU partnership agreement for regional development as their main investment planning document. The EU Partnership Agreement is a strategic document outlining the key priorities for regional development over the seven-year financial period and it exists in every Member State. It is usually prepared by the Ministry of Regional Development and is in line with other national strategies. In Greece, for example, these include the "National plan for energy and climate", the "National plan for digital transition" or the "National transport strategic plan". In addition, in 2021, Greece introduced the" National Development Plan" which sets the rules for the development planning of projects financed solely from national funds. It is drafted upon public consultation with the competent authorities as well as with social and economic partners, and sets the midterm national development goals, considering the complementarity and synergy with the co-funded programmes.

The EU partnership agreements are further detailed in thematic operational programmes, especially in terms of measurable indicators and indicative funding for the entire period. The indicators are derived from the relevant regulations. For example, in Greece, there are seven operational agreements for the 2014-2020 period, including "Competitiveness, entrepreneurship and innovation", "Infrastructure for transport, environment and sustainable development" and "Human resources development, education and lifelong learning".

France uses the "France 2030" investment plan to accelerate investment in strategic areas. "France 2030" sets out ten strategic priorities for the French economy, each with allocated funds. This programme, which succeeded "Programme d'investissement d'Avenir", is maintained and managed outside the regular budget process. Funds have a long-term time span and include their own management structure and decision process, under the supervision of the "Secretariat General de d'Investissement", with direct reporting line to the Prime Minister.

[20] The National Development Strategy was published in the Official Journal of 5 February 2021.

[21] In Croatia, the implementation of the National Development Strategy is supported by 79 strategic planning acts. The Law on Strategic Planning and Development Management (NN 123/2017) regulates the new system of strategic planning.

[22] First annual implementation report for year 2021 (in Croatian).

2.2. SECTORAL STRATEGIES

All countries report sectoral or sub-sectoral strategies in place. In the survey, eleven countries chose to focus on sectoral or sub-sectoral strategies only (and not on the economy-wide level). Austria, Belgium, Estonia, Germany, Sweden, Netherlands, and Slovakia reported exclusively on the transportation sector[23], while Denmark, Finland, Luxembourg, and Malta also included other sectors (e.g., defence, housing). In addition, Italy focuses mainly on infrastructure investment, while Spain and Romania primarily on the transportation sector. Some of these countries report additional strategies that guide the sectoral strategies. For example, Finland refers to the Government report on the medium-term climate policy plan for 2030 (of 2017).

This section focuses on the transportation sector in countries that did not report a national strategy. Many of the countries analysed in Section 3 reported additional sectoral strategies, including transportation. However, to avoid repetition, this section focuses on those countries not covered under the previous section.

As the sector typically with largest investment needs, transportation generally benefits from well-developed strategic planning and costed investment plans. Strategic plans in transportation often cover a longer than 10 years horizon. EU requirements have also supported strategy development. For example, Directive 2012/34/EU[24] requires EU Member States to publish a guiding strategy for the design of railway infrastructure to meet future mobility needs for the maintenance, renewal, and development of railway infrastructure based on sustainable financing.

Many transportation planning systems are characterised by a unified modal approach to strategic planning. For example, Austria, Greece, Estonia, Finland, Germany, and The Netherlands prepare long-term strategies that jointly cover all modes of transport (i.e., road, railway, maritime transport, and airports). In Greece, the "National strategic transport plan" is a unified and integrated strategy with a horizon of twenty years (2017-2037). It offers the long-term framework for the design, implementation, and monitoring of all future investments in infrastructure and the required organisational and institutional measures. The Federal Transport Infrastructure Plan (Bundesverkehrswegeplan) is Germany's long-term strategic planning document, which is set up by the Federal Ministry of Transport and Digital Infrastructure every 10 to 15 years and decided by the government.

Planning for and delivery of transportation infrastructure often benefit from well-established specialised institutions. These include, for example, the National Infrastructure Institution in Ireland[25], the National Transport Agency in Finland and the Transportation Authority in Sweden. In Estonia, in 2019, the task of creating a unified administration for transport planning and investments and a unified administration for transport supervision was explored.

A multimodal approach to transportation infrastructure planning facilitates synergies with other goals, such as climate efficiency goals. Austria, Estonia, Denmark, Finland, and Germany, for example, use this approach. For example, Austria has set out a high-level climate action framework for the transport sector: "Austria's 2030 Mobility Masterplan". Established in 2021, this plan outlines targets in terms of freight and passenger transport, among others, that are compatible with climate neutrality by 2040. It uses elements of spatial planning as well as model estimations to backcast the end-target of climate neutrality by 2040 into intermediate measurable targets. The integrated nature of the plan is highlighted by the competences of the department that produces it: Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology. In Spain, in 2021, the Council of Ministers adopted the Sustainable, Safe and Connected Mobility Strategy.

Multi-annual capital allocations plans are often in place. Indicative capital allocations are for example in place in The Netherlands, Sweden, Germany, Denmark. Denmark has put forward a plan with a very long,

[23] Slovakia focused on sub-sectoral plans in transportation such as railways and roads. Belgium reported sectoral strategies only at the sub-national level of government.

[24] Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012, which establishes a single European railway area.

[25] Establishment of the National Transport Authority (NTA) in 2009 was intended to deliver a more focused and integrated approach to the planning and delivery of integrated transport infrastructure and services both on a national basis generally and especially in the Greater Dublin Area (GDA) where the NTA has a more detailed remit.

15-year perspective. Usually, there is good transparency in allocation of funds by uses and sources (including trans-border EU funding). For example, in Germany, the Federal Ministry of Transport and Digital Infrastructure draws up a medium-term five-year financial planning document for the realisation of the Federal Transport Infrastructure Plan. The financial planning document contains detailed information about estimated costings for ongoing and future projects. Further, it stresses capital needs to facilitate appropriate funding for maintenance, renewal of assets at the end of their life cycle and creation of new assets.

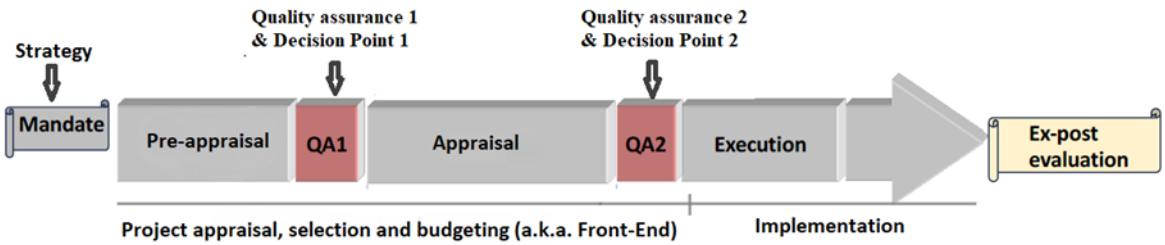
Public corporations are key to deliver transport/energy services in many countries. As a result, significant investment planning is done outside budgetary processes via public corporations, which requires monitoring.

3. AN INTEGRATED MODEL FOR THE APPRAISAL AND SELECTION OF LARGE INVESTMENT PROJECTS

An integrated governance approach to appraisal, selection and budgeting is key to effective management. Such an approach is useful to anchor investment into strategic planning and maintain transparency of the investment portfolio. Typical problems in megaprojects around the world include different incentives and asymmetric information between the key stakeholders Samset, Volden, Olsson, & Kvalheim (2016), which are difficult to resolve (Box. 1). In the 1990s, poor front-end planning was identified as the main reason projects failed Samset, Volden, Olsson, & Kvalheim (2016). Too many projects were initiated by agencies and local stakeholders with little consideration for strategic alignment and value for money. Projects were appraised and planned for years until they were presented almost as a *fait accompli* to the government, which was reluctant to reject projects with much political and popular momentum.

The "stage-gate" model emerged as a useful way to structure the selection and budgeting of major investment projects. Essentially, this model gives more weight to the front-end phase relative to the implementation phase, compared to traditional approaches. As its name suggests, in this model, the project selection process includes several decision points (gates) as the project moves through the different stages of the front-end phases and becomes more concrete (Chart. 3). Importantly, some of the decision points, at least, would critically depend on external quality assurance by independent reviewers. The decision points are introduced at especially important junctions, and the project cannot move into the next phase until a positive decision to that effect has been made. In practice, the number of external quality assurance and decision points will vary from country to country. Valden & Samset (2017) provide an international comparison of this model in Denmark, The Netherlands, Norway, Canada/Quebec, Sweden, and the UK.

Chart 3. **Example of a stage-gate model embedded into the typical project lifecycle**



Source: Adapted version of (Samset, Volden, Olsson, & Kvalheim, 2016). The stage-gate model uses the "front-end" terminology to refer to the interaction between the three stages involved in planning identified in (Belu Manescu, 2021). These stages are strategic planning, project appraisal and selection, and budgeting.

This model applies to major infrastructure projects. The larger the project, the more can go wrong and the larger the consequences if that happens; hence the more quality assurances and decision points are required. The threshold for what constitutes large infrastructure projects varies from country to country

and can be a function of sector (e.g., The Netherlands, Sweden, Denmark) or value (e.g., Ireland, Slovakia). In all countries, the schemes focus on projects that are large, complex, or otherwise involve risk on the part of the central government. Depending on the number of projects, such schemes can be applied at the government level (e.g. Ireland), or at ministerial level (e.g. The Netherlands).

While not the focus in this paper, political economy elements play a significant role in the effectiveness of public investments. Political will plays a crucial role in successfully implementing policies and reforms, including public investment projects. World Bank (2017) puts forward reasons why policies and reforms fail, not only in public investment management. They focus on the importance of commitment, coordination, and collaboration as success factors, thereby moving away from traditional implementation gap narrative. According to Kim, Fallov & Groom (2020), approaching PIM reforms through the lens of the political economy has enormous potential to strengthen the driving force of reforms and to identify obstacles to reform with an eye to designing more appropriate institutional solutions.

Box 1. **Origins of the stage-gate model**

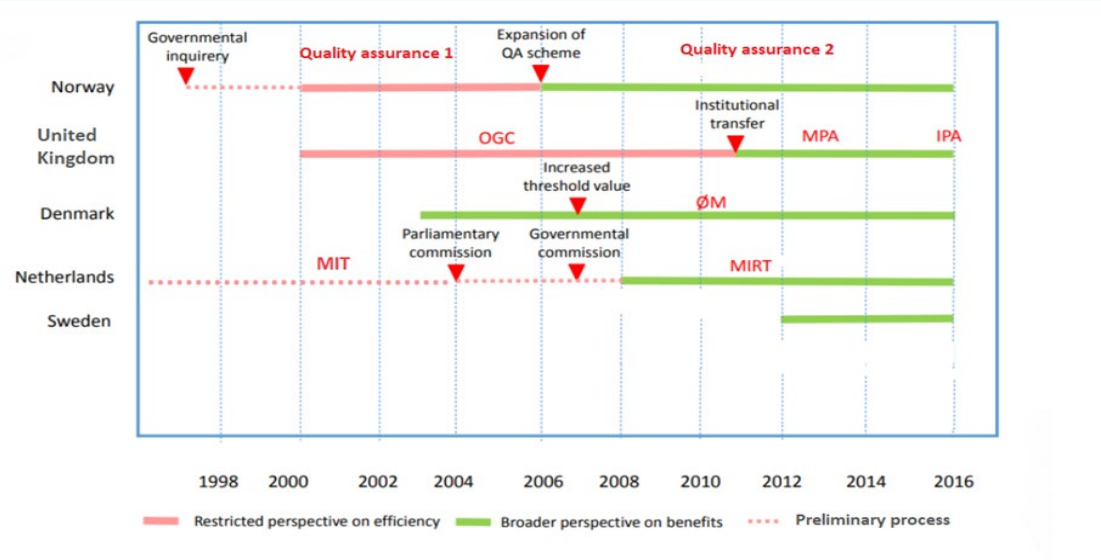
Flyvbjerg, Bruzelius, & Rothengatter (2003) find that the main problem with mega projects is that the stakeholders have a self-interest in their implementation, whether financial or political, that they underestimate the risk, and that they are not held accountable to central government, which adopts a more overarching perspective of maximising public benefits.

The authors propose the following alleviating measures:

- (1) That risk and accountability must be given a much more prominent role in decision-making processes,
- (2) that risk analysis and risk management requirements must be imposed,
- (3) that the authorities should remain at "arm's length", and not become involved in promoting the project, but limit their role to formulating overarching objectives and ensuring that such objectives are attended to by the project,
- (4) that, to bring about responsible decisions, one should (a) ensure transparency, (b) specify performance requirements, (c) impose clear requirements for the construction and operation of the project and (d) involve venture capital from private investors, since their willingness to invest will be a project viability test.

In the 1990s, negative experiences with public investment projects included cost overruns, delays, and benefits that did not materialise. Samset, Volden, Olsson, & Kvalheim (2016) recall that, in 1997, in Norway, an interdepartmental committee chaired by the Ministry of Finance, concluded that the basis for decision making was inadequate and that poor front-end planning was the main reason projects failed.

Chart. **Examples of state-gate models in Europe**



Source: Adapted version of Samset, Volden, Olsson, & Kvalheim (2016).

Notes: QA - Quality assurance; OGC - Office of Government Commerce; MPA - Major Project Authority; IPA - Infrastructure and Projects Authority; ØM - Economic and Governance Framework; MIT – Multiannual Programme for Infrastructure and Transport; MIRT - Multi-year Plan for Infrastructure Spatial Planning and Transport.

The stage gate model helps address these concerns and has gradually been adopted across the world (Chart). A key project governance issue is that the interests of the implementing agent will not necessarily be aligned with those of the financing party or project owner Valden & Samset (2017). Project governance is thus a system of appropriate checks and balances that enables transparency, accountability, and defined roles, while at the same time supporting project managers in delivering their objectives.

Evidence with implementation of these models is largely positive, although there is still room for improvement. In Norway, recent evidence across a sample of 96 projects suggests that 73% of projects have largely been within budget Welde & Klakegg (2024). Also, available evidence from The Netherlands, suggests that MIRT has on average halved the time required to reach a final choice of concept, thereby saving resources on too lengthy processes Samset, Volden, Olsson, & Kvalheim (2016).

3.1. MAIN ELEMENTS OF THE STAGE-GATE MODEL

This section will discuss the front-end part of the investment cycle as included in the stage-gate model, focusing on the idea of the project, pre-appraisal, and appraisal stages. This model is broadly compatible with the assessment frameworks of the OECD (2017), the IMF (2019) and the World Bank (Kim, Fallov & Groom, 2020), with an important difference. While all frameworks emphasise the benefits of rooting the idea of a project in strategic planning and rigorous and standardised appraisals, they differ in the way pre-appraisal is considered. In the World Bank framework (Kim, Fallov & Groom, 2020), the "pre-appraisal" has the same characteristics as in the stage-gate model and it also comes before appraisal. The IMF framework does not distinguish between pre-appraisal and appraisal; instead, it distinguishes between project appraisal and selection, with the implicit sequencing of selection following appraisal. The OECD framework uses value for money, affordability, and cost benefit analyses which cover analysis, risks, and prioritisation, but not an implicit sequencing in the decision-making process. Independent external reviews are included in the World Bank and IMF frameworks.

Phase 1. Idea of a project

The mandate for the project is the first stage of the project and is usually rooted in a strategic document. It is where the idea of the project is first formulated. Analysis in Section 2 and best practices suggest that when the idea of a project is rooted in strategic planning, it ensures stability, consistency, and monitoring.

No financing commitments are made at the very start of the process. Strategic documents, by definition, would typically give an indication of what is desirable with some broad fiscal constraints. However, strategic plans are usually not binding documents from a budgetary point of view. It is the gradual commitment of funds as the projects become more concrete that turn strategic documents into effective planning tools.

Phase 2. Pre-appraisal

Once an idea of a project is agreed, the project moves to pre-appraisal which, in the stage-gate model, tends to be as significant and thorough as the full appraisal, while requiring less information and taking less time and resources than a full appraisal. A comprehensive pre-appraisal process may involve the following steps Kim, Fallov, & Groom (2020):

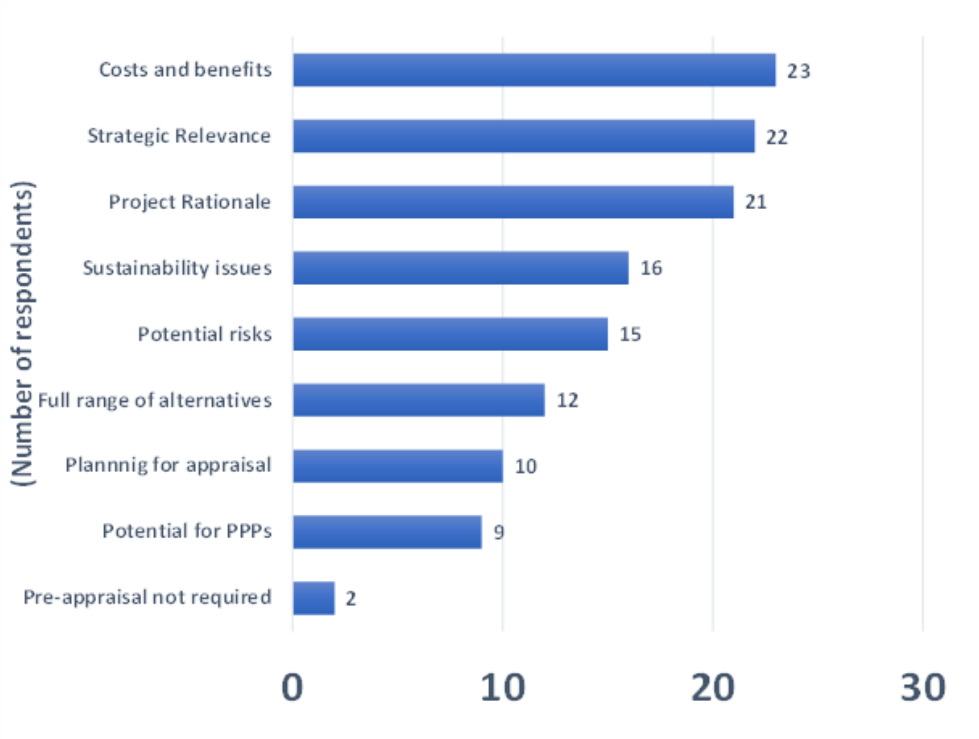
- checking the project rationale, including by looking at all relevant stakeholders,
- verifying strategic relevance,
- ensuring that a full range of alternatives to achieving the outcomes is considered, including an alternative without infrastructure construction,
- managing the project pipeline,
- verifying costs, and benefits assessments,
- checking sustainability, potential risks, and constraints,
- flagging potential for adopting public-private-partnerships, and
- planning for appraisal.

Pre-appraisal is a fundamental decision-making point and may be the only genuine "*go / no-go moment*" in project selection. Pre-appraisal provides an opportunity to address weak concepts before they advance too far in the planning process or before they have gained too much political commitment (Belu Manescu, 2021). Pre-appraisal identifies a preferred option to deliver the objective and provides a significant risk analysis. It may also be the best time to discuss early on issues such as whether the responsible public authority has sufficient capacity to manage the project. Given the more limited information requirements at pre-appraisal than appraisal, stopping a project or putting it on hold at this stage is easier in practice than after the full range assessment in the appraisal phase.

According to survey data, pre-appraisal is entirely missing in some Member States. Where it is present, it tends to be focused only on preliminary costs and benefits, strategic relevance, and project rationale (in about 20 Member States). By contrast, the assessment of a full range of alternative solutions, potential

for public-private-partnerships and the planning of the appraisal process, are present in less than half the Member States (Chart. 4). Potential risks and especially environmental sustainability risks are considered at pre-appraisal in about 15 Member States.

Chart 4. **Pre-appraisal must include the following elements (survey)**



Source: COM 2022 public investment management survey. Note: PPPs refers to public private partnerships

Considering an alternative without construction is a fundamental principle of pre-appraisal yet missing in many Member States. For example, the Swedish Transport Administration uses a four-step principle to investment planning, consisting of rethink, optimise, repurpose, and build new. Only after steps one to three have been considered, can a new construction be built. A similar requirement is also found in The Netherlands and Ireland (Annex II and Annex III). According to the survey, in the EU, this requirement to consider and compare several alternatives to achieve the same objective is missing in more than half of the Member States (Chart. 4).

Importantly, pre-appraisal requires sufficient details on costs and clarity on the sources of financing. Pre-appraisal includes details on the life-cycle costs of the project, i.e., management and maintenance costs. It is also when possibilities for pre-financing by local authorities and when private partners may be considered. In The Netherlands, for example, a project moves to the pre-appraisal phase (called the "exploratory phase") only once 75% of the project funding has been identified and is available and committed. In addition, co-funding by regional governments can be required in certain situations (see Annex II).

Phase 3. Project appraisal

Appraisals provide detail and understanding on life cycle costs as well as outline the implementation plans. It is key to establish the most realistic cost-benefit analyses and risks of the project, hence the importance of external assurance processes. Obstacles in permits and authorisations can be a key source of risk and need to be appropriately dealt with. The implementation plans will elaborate on relevant details of costs, roles, and responsibilities as well as the implementation strategy, including interlinkages between programme components. The steps to be taken in the implementation process are largely determined by procedures and legal regimes. The implementation strategy may include specific

governance agreements. These are critical governance tools to manage implementation of sub-projects that often fall under the responsibility of different public authorities. In some countries, for example The Netherlands, 100% of financing must be available for projects to move to the appraisal phase.

As far as cost control in budgeting is concerned, contingency reserves or budgetary margins are useful tools in managing cost over-runs. A key element of some stage-gate models has been the introduction of a budgeted cost and a distinct, lower target cost for the agency tasked with project implementation Valden & Samset (2017)[26]. The difference between the two figures is the contingency reserve, which is normally controlled by the line ministry. Different methods to estimate the contingency reserve are used in Denmark, Norway, and Sweden[27]. The Netherlands also applies contingency reserves. If a supplement is required, the parliament must be involved.

External assurance process and decision points

External quality assurance checks before decision-making at pre-appraisal or appraisal is another key feature of the stage-gate model. The external quality assurance helps mitigate underrepresentation of risks, ensure that sufficient alternatives had been considered and overall gauge the quality of information. External assurances may come in at multiple points during the project journey. In the EU, independent external reviews are relatively common during appraisal, especially for transportation projects or for EU co-financed investments Belu Manescu (2022). Only six Member States report to not have such processes in place. The practice in Ireland provides an example. First, independent expert reviews are in place at two stages during the front-end part of the cycle (approval in principle and prior to tendering) (Annex III). In addition, a Major Projects Advisory Group (MPAG), consisting of independent external experts, supports the Department of Public Expenditure, National Development Plan Delivery, and Reform in assimilating the outputs from these reviews, before seeking government approval to proceed with the project.[28]

Capital allocation is typically organised in several steps. The first step of capital allocation is usually a political decision for the key priorities for the next year (in the annual budget) or the coalition agreement or the medium-term framework (in the multi-year perspective). This will determine the available envelope by ministry/sector for that period. The second step concerns capital allocation by projects. This may relate to projects under construction, in which case it is largely a technical exercise as it depends on progress and with generally little leeway to move funds to different uses. Or it may relate to new projects, in which case the allocation is both a technical exercise (financial, etc.) but also political one in which valuable projects are compared against each other (Valden & Samset, 2017).

Different bodies may be involved in the capital allocation decision and there is no clear preferred approach. For smaller projects, this decision can be taken at the ministerial level (with support by or fully delegated to specialised agencies). For example, in Sweden, the capital allocation by projects is done by the Swedish Transport Administration, in the 12-year infrastructure plan revised every fourth year, or in the annual decision of the construction part. In The Netherlands, the decision is taken within the MIRT process, led by the Ministry of Infrastructure or Ministry of Interior. In other countries, for major projects or politically sensitive projects, the decision can be taken at government level (e.g., France, Denmark, Ireland). In all cases, the parliament takes the final decision to proceed with the project based on a proposal by the government, which ensures highest degree of transparency and legitimacy. Rivadeneira & Mcmaster (2023) discusses the different institutional arrangements behind major investment projects.

[26] A typical feature of large public investment management projects is that specialised agencies are usually tasked with the day-to-day implementation of investment projects and must report to an overseeing ministry. These are typically called implementing or sponsoring agencies.

[27] Norway and Sweden use a probability-based cost estimation reviewed by external consultants who will normally recommend a budgeted cos at or close to percentile 85, and a target cost at percentile 50. Parliament's decision normally follows the recommended figures. Denmark has an advanced system and methods for cost estimation, including an extensive cost database, but a basic cost estimate is applied, to which is added a general supplement of 10% for the implementing agency and 20% for the ministry. The 20% supplement is thus available at the portfolio level and is transferable from one year to the next.

[28] See Valden & Samset (2017) for a comparative analysis of quality assurance processes in Denmark, The Netherlands, Norway, Canada/Quebec, Sweden, and the UK.

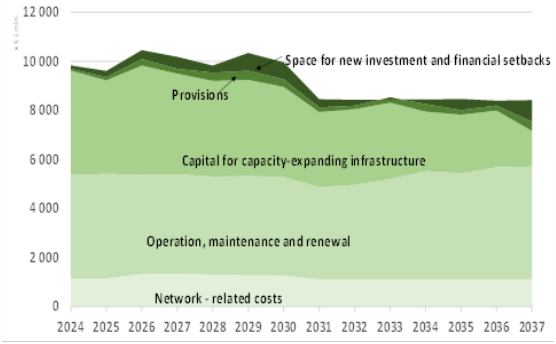
4. MULTI-ANNUAL INVESTMENT BUDGETS

Multi-annual budgets are indispensable tools for capital allocation. While the stage-gate model offers a framework to organise decision making for projects during different rounds, multiannual budgets offer transparency and critical information on the funding of such projects for the decision-making process. Multi-annual investment budgets with clear breakdown on maintenance needs, capital costs and the available investment space provide clarity on the ongoing investment portfolio and the progress of projects each year. Committing (scarce) funds at the planning phase (before actual implementation) increases responsibility at the selection phase and avoids spending resources on unpromising projects.

In the EU, multi-annual budgets for capital investment are present in only half of the Member States. 14 Member States report such multi-annual commitment appropriations (Chart. 6). Yet, some of these appropriations are only indicative which can lead to large deviations between appropriations and execution. Moreover, only eight Member States report having in place a standard methodology for estimating maintenance costs in the budget (COM 2022 survey), while maintenance costs are found in budgetary documentation in most countries. Some countries also flag that unlike maintenance, costs due to major improvements or renewals are not reported in budget documentation for budget classification limitations (e.g., Poland).

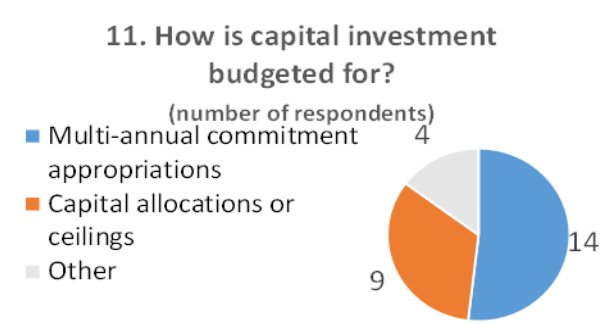
Multi-annual budgets offer transparency on projects at different stages of development. Aggregating plans of all projects in execution at ministry level will yield a profile over time with clear information on initial costs, maintenance and renewals and other relevant costs. Parliamentary approval for the multiannual infrastructure budget is in place in several Member States. Chart. 5 illustrates the investment portfolio at the Ministry of Infrastructure in The Netherlands, managed via the Mobility Fund. Information on the investment portfolio is provided over a rolling T+14 years horizon, with breakdown available by several categories such as initial capital, operation/maintenance/renewal, network-related costs, and reserves. Scope-wise, this fund was recently revised to cover mobility solutions and to include interactions between urbanisation and mobility (The Mobility Fund Act of 1 July 2021)[29]. In other Member States, such multi-annual funds tend to be area-specific. For example, in Poland, the financial plan of the national roads strategy and national railway strategy includes a detailed breakdown for the period 2014-2023.

Chart 5. **The Dutch mobility Fund: allocation of funds as of 2024**



Source: Dutch Ministry of Infrastructure and Water Management.

Chart 6. **How is capital investment budgeted for?**



Source: COM 2022 public investment management survey.

Binding multiannual commitment appropriations are one key element of efficient budgeting in multi-year investment projects (Belu Manescu, 2022; Radu, 2023). A key feature is that money stays within the project/programme and cannot be shifted to other priorities. For example, in The Netherlands, through the Mobility Fund, every year, the budget for a new year T+14 becomes available, and a capital

[29] In such a case, a MIRT route may lead to urban location choices to alleviate the mobility system or, on the contrary, to generate enough passengers to enable certain public transport measures.

allocation decision is made for that year. This is the main budget allocation decision to be made as the funding for previous years has already been committed to and is binding. While the parliament has the authority to change the budget allocation, in practice, previous decisions have generally been respected. The budget for year T+15 is usually an automatic carry over of the previous year's budget.

The difference between the committed resources and the new resources available through the multiannual budget year is the space for new investments. Chart. 5 illustrates, for every year, the amounts that are available for new projects in the Mobility Fund in The Netherlands. These amounts will determine which projects move to the exploratory phase or planning phase. There tends to be very limited space for new projects. A medium-term budgetary framework thus facilitates the planning of new investments.

A second key element of efficient budgeting of multi-annual investment projects is the carry-over arrangements. Carry-over arrangements allow for unspent funds to be shifted to the following year. This is particularly useful in multi-annual investment projects to protect slower-than-expected executed projects from losing funding Belu Manescu (2022). While this practice tends to be restricted with current expenditure, as it carries some risks (Belu Manescu, 2021), it is quite helpful in multi-annual investment projects. For example, The Netherlands, Estonia, and Austria have no cap on the amount of carry-over in investment projects.

5. CONCLUSIONS

Over the last decade many Member States have been reforming (parts of) their public investment management systems. In their pursuit, Member States often explain this by a need to adapt to rapidly changing technologies and to competing demands. They recognise the need for a common and inclusive vision that could allow for synergies and attract private capital for balanced growth across regions. In some cases, the reforms are far-reaching such as setting-up new independent bodies, in addition to streamlined or new processes. This underlines a recognition of the size of current challenges.

With regards to strategic planning, this paper reviewed the governance process in terms coverage and horizon of the strategies, institutions involved and transparency of the process, based on planning documents submitted in the 2022 COM survey on public investment management. It identified the following common elements in the EU Member States which are also highlighted in the literature to support effective public investment management:

- **High-level long-term planning strategies**. Built on hard data and well-co-ordinated across sectors and levels of government, such strategies contain transparent performance indicators to facilitate monitoring. Anchoring in spatial planning and econometric modelling offers structure to discussions and reviews. All other regional, local, sectoral strategies are fully aligned with the high-level strategy and share the same targets. Streamlined and coherent sectoral strategies, underpinned by the same targets, facilitate finding new, more efficient solutions. A well-defined review process of the strategy also supports predictability and confidence in the process.
- **Effective coordination across government, levels of governments and consultation with stakeholders**. It is essential to prioritise and build support for a small number of shared strategic objectives.
- **Five-to-ten-year national investment plans**. Provide capital plans that support delivery of investment priorities. Typically developed by the Ministry of Finance, and supported by a medium-term budgetary framework, these plans offer the fiscal constraint necessary for prioritisation at the programme and project level. Therefore, the delivery of the high-level strategy crucially depends on investment plans being fully aligned with the high-level strategy.
- **Medium-term capital expenditure allocation by programme or ministry**. Offer predictability in planning and a clear anchoring of investment plans in the annual budgetary process. In some countries, there is an explicit legal requirement that a progress report on public investment implementation informs the annual budgetary decision.
- **Regular monitoring of both process and outcomes, often by a specialised unit. Data, research, and analysis is essential for evidence-based decision-making and prioritisation**. Independent

institutions or bodies within the government with focused and clear mandates were created to monitor on a regular basis the delivery on strategic outcomes. In some cases, monitoring of the alignment between operational and strategic plans was also put in place. Such bodies also help to build, maintain, and disseminate expertise. Note that this is quite different from monitoring of implementation progress.

- **Data transparency**. Publication of analysis, but also detailed progress reports on implementation facilitates learning and improvement of the process. Digitalisation of project implementation should greatly facilitate data transparency and timeliness.
- **Political support**. Strong political support is indispensable to drive change, especially when it is wide-ranging.

These elements are present to different degrees in the EU Member States. Based on the available evidence, the elements of good practice identified above are found to coexist in a few Member States. An overview of gaps, however, was beyond the purpose of this paper. Instead, this paper aimed to acknowledge and highlight good practices where available.

On the appraisal and selection of large infrastructure projects, this analysis discusses the merits of the stage-gate model for major projects' governance, introduced in many countries around the world in the 2000s. Essentially, this model highlights the importance of the front-end cycle (including strategy, selection, and budgeting), relative to implementation, by introducing multiple decision points and external quality assurances. Such checks-and-balances were found to fundamentally help address the different incentives and information asymmetries between the different stakeholders. It is particularly helpful for major infrastructure projects.

In this model, the projects flow across the different stages in a non-automatic way. To be effective, each stage ends with a decision to continue or not. In some cases, it is possible for projects to revert to earlier stages. The stages usually include strategic planning or the idea of a project, pre-appraisal ending with appraisal decision and appraisal ending with final decision. The pre-appraisal phase largely includes all the elements required at appraisal, but in a simplified form. This can include consideration of multiple alternatives to achieving the desired objective, including through no-build options, assessments of costs and benefits, risks including environmental impact and options for public-private partnerships. Pre-appraisal is entirely missing in some Member States, while key elements such as the assessment of a full range of alternative solutions, the potential for public-private-partnerships and the planning of the appraisal process are present in less than half of the Member States.

Sound investment planning of major infrastructure projects includes a variant of the stage gate model with multiple decision points and multi-annual investment budgets with strong commitments. Committing funds already at the planning phase (before actual implementation) increases responsibility at the planning phase, by avoiding spending resources on unpromising projects. Multi-annual investment budgets, with clear breakdown on maintenance needs, capital costs for committed projects and the available investment space bring clarity on needs and available resources. Such multi-annual budgets also provide clarity on the available investment portfolio and the progress of projects each year. Less than half the Member States use multiannual commitment appropriations for investment planning. Multi-annual budgets, that are comparable across ministries, updated annually and publicly available, help increase accountability and efficiency in public spending.

These findings are useful for developing a common understanding of key principles for efficient planning of public investment in the EU. Such principles are rooted in scientific research and supported by practices around the world. The analysis also shows that these principles are compatible with national choices and an institutional set-up specific to each Member State.

These findings highlight some gaps with respect to good practices across the EU. Data-wise, evidence from the 2022 COM survey served to illustrate important gaps in practices across the EU with respect to the planning of public investment management. For example, in the early stages of planning, many Member States do not consider several alternatives to the main project, including the "Do nothing" alternative. On the budgeting side, detailed evidence on the horizon for the multi-annual commitment appropriations, how binding they are and the use of carry over arrangements is missing in many countries.

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ANNEX I LIST OF ALL REVIEWED PLANNING DOCUMENTS

Country	Name in English
Austria	Austrian conference on spatial planning (Örok) overview, at www.oerok.gv.at
Austria	Austria's 2030 Mobility Master Plan (2021)
Belgium	(federal) SNCB company plan 2023-2032
Bulgaria	National development programme Bulgaria 2030 (January, 2020)
Croatia	National development strategy of the Republic Croatia by 2030 (2020?)
Denmark	Denmark Forward - Infrastructure plan 2035 (April 2021)
Estonia	Transport and mobility development plan 2021-2035 (2020)
Estonia	Road maintenance plan for national roads (2021-2030)
Finland	The national transport system plan for 2021-2032 (2020)
France	France 2030
Germany	Federal transport infrastructure plan 2030 (2016)
Greece	Greece growth plan to 2030 (2020)
Greece	EU Partnership Agreement 2021-2027
Hungary	EU Partnership Agreement 2014-2020
Ireland	Project Ireland 2040
Ireland	National development plans 2018-2027 and 2021-2030
Italy	Strategic Guidance Document for Infrastructure and Mobility
Latvia	Sustainable development strategy of Latvia until 2030 (June 2010)
Latvia	National development plan of Latvia for 2021-2027 (July 2020)
Lithuania	Lithuania progress strategy "Lithuania 2030" (May 2012)
Lithuania	National progress plan 2021-2030 (Sept.2021)
Luxembourg	National mobility plan 2035 (2022)
Malta	National transport strategy 2050 (2016)
The Netherlands	Multiannual programme for infrastructure, space and transport
Poland	The strategy for responsible development by 2020 with a perspective to 2030 (February 2017)
Poland	The national investment programme 2021-2030
Romania	National strategy for sustainable development of Romania 2030
Slovakia	Priorities for road infrastructure construction by 2030 (September 2020)
Spain	Spain 2050 - grounds and proposals for a long-term national strategy (2021)
Sweden	Proposal national plan for transport infrastructure 2022-2033

ANNEX II THE NETHERLANDS: RULES OF THE MULTIANNUAL PROGRAMME FOR INFRASTRUCTURE, SPATIAL PLANNING AND TRANSPORT (MIRT)

1. Description

In The Netherlands, each ministry has its own process and procedures for planning, prioritisation and decisions making (Shiferaw, 2013). Given the number of projects, there is no joint system for large investment project governance that applies to all ministries. The rules of the Multiannual Programme for Infrastructure, Spatial Planning and Transport (MIRT) apply to projects or programmes in the physical domain, in which the Ministry of Infrastructure and Water Management is involved as a (potential co-) financing party (Ministry of Infrastructure and Water Management, 2022). Depending on the scope and legal requirements, other ministries are also involved. This is, by far, the largest portfolio of investment projects (Samset, Volden, Olsson, & Kvalheim, 2016).

The overarching objective of the MIRT scheme has been to ensure that large investment projects are implemented in conformity with the policies of the government and in consultation with regional and local authorities. The MIRT rules are approved by the parliament. They define the administrative process from identifying a challenge to finding, planning, and achieving the most optimal and effective solution. The rules provide a framework for the central and regional governments to work together, define the decision-making process from inception to completion and assign clear roles and responsibilities at each stage of the project. Introduced in 2008, the MIRT rules were last updated in 2022. The phases of a project are discussed in the next section. The MIRT rules were preceded by the Multiannual Programme for Infrastructure and Transport (MIT) which was introduced in 1997.

The Mobility Fund governs all budgetary aspects related to the national MIRT investment projects regarding mobility. Key differences from the annual budget process include a 14-year horizon, the use of multiannual commitment appropriations and no cap on carry overs. Once a commitment appropriation is made, it can only be changed with parliamentary approval. Like the annual budget, it is approved by the parliament.

2. The planning phases of MIRT projects

The MIRT rules define four stages of projects. There is no automatic flow of a project from one phase to the next. An explicit administrative decision is taken per phase on whether to include the project (called a “go”/”no go” decision moment) in the MIRT, although it tends to be rather difficult to stop the project once it has reached Phase two. The further the project advances into the procedure, the more concrete the project becomes. The Ministry of Infrastructure is in the lead for Phases one and two, while the Implementing Agency is in the lead for Phases three and four. The four phases are:

1. The Preparatory Phase which may culminate with a Start Decision
2. The Exploratory Phase which may lead to a Preferred Decision
3. The Planning and Study phase which may lead to a Project Decision
4. The Construction Phase leading to an Acceptance/Delivery Decision

The MIRT rules define twice-a-year administrative meetings between the central, local, and regional government, and other stakeholders as needed. The June meeting is chaired by the Ministry of Interior, while the November meeting for the MIRT decision is chaired by the Ministry of Infrastructure. These meetings discuss which projects to start and the project pipeline but also the progress of projects in implementation.

2.1. The Preparatory Phase

The aim of the preparatory phase is to identify, examine and make concrete declarations in cooperation between the central government and the region (and other parties).

The process of choosing new MIRT projects usually starts with an interaction between the Integrated Mobility Analysis[30], updated every four years, the coalition agreement, and proposals from regional governments and parliament. The latest Integrated Mobility Analysis (from 2021) shows a shift from a purely congestion-focused analysis to a broader focus on road safety, cross-border traffic, climate, emissions, and accessibility. A new Integrated Mobility Analysis is planned in 2026. For a more 'strategic' approach to investments, work is under way for a Mobility Vision 2050, for which a first outline is available[31]. In this vision, the focus is on integrated goals for accessibility, the right differentiation/form of mobility on the right time and place, a safe and sustainable mobility system, and a regionally differentiated implementation.

The Preparatory Phase may end with the Start Decision. The Start Decision marks the start of the next phase, the Exploratory Phase. At this moment, it should be clear which sources are available to the participating parties to cover the different objectives. Funding from the Mobility Fund or the Delta Fund may become available if the objectives fit within the legal scope of these funds. At the start of the MIRT Exploration Phase, there should be available at least 75 % funding of the most obvious solution to address the challenge. This includes, in addition to the initial investment costs, the change in management and maintenance costs. Co-funding by the regional government is sometimes in place.

2.2 The Exploratory Phase

The aim of the Exploratory Phase is to work towards an appropriate and sustainable preferred decision to address a challenge, based on a thorough problem analysis and a comprehensive array of solutions.

The exploratory phase requires the consideration of alternative solutions, including a no-construction one, with detailed information on costs (including maintenance), environmental/sustainability assessments, including a description of how climate-resilient and water-resilient construction is implemented and risks.

In terms of financing, for each viable alternative, a cost estimate shall be prepared in accordance with a standard cost estimation system and including a maximum uncertainty margin of 25% for investment costs and 35% for maintenance costs; a description of how the actions shall be financed; a description of the risks associated with the project in the next two phases; a justification of how possibilities for public-private corporations and possibilities of pre-financing by local authorities and/or local parties have been considered.

The Exploratory Phase ends with a preferred solution for which a clear justification is needed of its usefulness, necessity, costs, and benefits, including any advice or second opinion (when given) from the independent Netherlands Institute for Transport Policy Analysis.[32]

2.3. The Planning and Study Phase

The aim of the planning and study phase is to further develop the preferred decision into a project decision defining the scope of the project, the realisation period, the funding, the allocation between parties and the market approach.

[30] The full document, which is very large is available here (in Dutch). The gist of this document can be found in the letter to Parliament, available here (in Dutch).

[31] Available here (in Dutch).

[32] The Netherlands Institute for Transport Policy Analysis (KiM) provides (scientific) research and knowledge inputs for the preparation of mobility policy at the Ministry of Infrastructure and Water Management. They carry out independent research and collect the results of studies conducted elsewhere. They ensure that the ministry can develop policy with a sound knowledge base. Typical activities include analysing and explaining developments, doing exploratory studies, drawing up scenarios and analysing the effects of policy instruments.

In this phase, a more detailed assessment than in the previous phase is required on largely the same indicators. Importantly, the cost estimates can include a maximum of 15% margin for uncertainty. It is not clear whether an external quality assurance is carried out at this phase.

2.4. The Construction Phase

During the construction phase, in line with the development of the planning and study phases, the plan is implemented and is progressing towards the acceptance decision, based on an assessment report.

The assessment report shall include the lessons learned and information on the financial justification for the total project costs, agreements on residual risks and management and maintenance costs, the efficiency of the project and its evolution over time.

ANNEX III IRELAND: THE PLANNING PROCESS AND THE INVESTMENT GUIDELINES

1. Description

The Investment Guidelines set out the value for money requirements for the evaluation, planning and management of public investment projects in Ireland (Government of Ireland, 2023).

These Guidelines are developed by the National Investment Office of the Department of Public Expenditure, NDP Delivery and Reform and updated regularly since 2013. The most recent reform (of December 2023) aims inter alia to streamline approvals for smaller projects (threshold increased from €100 to €200 million), following recommendations from the 2022 Spending review of the Public Spending Code (Connoly & Newman, 2022). The Investment Guidelines replace the Public Spending Code requirements for capital expenditure outlined in Public Spending Code: A Guide to Evaluating, Planning and Managing Public Investment, December 2019. These requirements apply to all public bodies and all bodies in receipt of Exchequer capital funding. The thresholds for what constitute major projects (currently €200 million) is reviewed every three years.

The project lifecycle is organised over five stages (below). A fundamental tenet of the approach is the incremental approvals process. To prevent lock-in, proposals are approved to advance to the next stage in the process rather than overall investment proposal approval. This is approval to a commitment of the level of resources required for the next stage in the lifecycle. This allows the commitment of relatively limited resources to the proposal only as required with the budgetary commitment increasing as the project moves through the lifecycle. While there may be a commitment in principle to the policy objectives being pursued, departments and public bodies can be prepared at any stage, despite costs having been incurred in appraising, planning, and developing a project, to abandon it if on balance, continuation would not represent value for money.

2. Project lifecycle and approval stages

The five stages in the project life cycle are:

1. Strategic Assessment & Preliminary Business Case – Approval Gate 1; approval by the Approving Authority[33] is approval in principle for the proposal.

   - Major Projects (proposals with an estimated cost above €200 million) are subject to review by the Major Projects Advisory Group, based on an external quality assurance process, then go for consideration by the government in principle.

2. Pre-tender - Project Design, Planning and Procurement Strategy – Approval Gate 2; approval by the Approving Authority is approval to proceed to tender.

   - For major projects, ministerial approval is required to proceed to tender.

3. Post-tender - Final Business Case – Approval Gate 3; approval by the Approving Authority is approval to award the main construction contract.

   - For major projects, Government approval is required to go to the next stage.

4. Implementing Stage

5. Post Completion Review and Benefits Realisation

The stages can occur over a significant period meaning that active management of the project is required throughout to ensure the project outcomes are achieved and value for money secured. The

[33] The Approving Authority is the department funding the programme/project. The Accounting Officer of the Approving Authority is a senior budget official who has ultimate responsibility for the project, notably to ensure compliance with the Investment Guidelines, manage capital budgets overall and manage budgets at an individual project level. For transport infrastructure and services, for example, the Ministry of Transport would act as the Approving Authority, while Transport Infrastructure Ireland would act as Sponsoring Agency charged with the day-to-day operations involved in delivery of the product.

project lifecycle is not necessarily linear. Investment proposals can move sequentially through the stages or loop back at different points as issues arise with the proposal or circumstances change.

2.1. Strategic Assessment & Preliminary Business Case

The Strategic Assessment & Preliminary Business Case Stage is the first stage of the project lifecycle and is critical for developing the strategic case for the proposal, considering in detail the range of options available and identification of risks to decide whether a project has a case for proceeding. The Preliminary Business Case incorporates the Strategic Assessment, detailed options appraisal and when finalised, will also incorporate assessments of risk, including assessment of climate and environment performance, and the procurement strategy.

The actions available to the Accounting Officer and Approving Authority at this point are: abandon the proposal, seek refinement or further development of the Preliminary Business Case, approve the proposal in principle to proceed to the Pre-tender – Project Design, Planning and Procurement Strategy stage.

The External Quality Assurance Process (proposals with estimated cost over €200 million) for major capital projects provides a standardised method to support both business and project and programme assurance. The Department of Public Expenditure NDP Delivery and Reform (DPER) established a framework of subject matter experts that Departments can tender to carry out these reviews. These are made up of consultants with expertise in financial analysis, economic analysis, engineering, and public service delivery. In addition, a Major Projects Advisory Group, consisting of independent external experts, supports DPER in assimilating the outputs from these reviews, informed by views of those who have successfully delivered major public infrastructure in Ireland. Project proposals and external reviews will be scrutinised by this group as a prerequisite to seeking government approval in principle to proceed with the proposal as well and government approval in principle for permission to tender at the end of the Final Business Case.

2.2. Pre-tender - Project Design, Planning and Procurement Strategy

The Pre-tender - Project Design, Planning and Procurement Strategy is the second approval stage in the project lifecycle. At this stage the preferred option is subject to more detailed scrutiny, assumptions are further tested and refined, risks are better understood, and the design stage is sufficiently advanced to arrive at the Detailed Business Case. This stage includes the development of the procurement strategy and project execution plan.

The actions available to the Accounting Officer and Approving Authority at this point are abandon the proposal, seek refinement, or further development to Detailed Business Case or procurement strategy, approve the proposal to proceed to tender.

For major projects, ministerial approval from the funding department must be sought to approve the proposal to proceed to tendering.

2.3. Post-tender: Final Business Case

The Final Business Case is the last and final approval stage in the project lifecycle. The purpose of the Final Business Case is to reassess the assumptions underpinning the Preliminary Business Case and reconsider the emerging findings. At this stage in the process there will be much greater understanding of a range of critical issues including costs, benefits, risks, delivery, and affordability. The Final Business Case reflects this enhanced body of knowledge relating to a proposal and reassesses the ongoing validity of continuing with the investment. External independent reviews as well as scrutiny by the Major Projects Advisory Group is a prerequisite before seeking approval from the government to proceed to tender.

The actions available to the Accounting Officer and Approving Authority at this point are: abandon the proposal, seek refinement, further development or retendering of an amended scope, approve the proposal to proceed.

For major projects, government consent must be sought to proceed to implementation.

2.4. Implementation

The Implementation Stage of an investment proposal begins once the final approval for the award of a contract has been secured. The critical tasks at this stage are to award the contract, manage and monitor the project to ensure that it is executed satisfactorily, within budget, to standard and on time. Implementation of the project is the responsibility of the Sponsoring Agency while the Accounting Officer and Approving Authority must be satisfied that the Sponsoring Agency delivers the investment proposal as approved.

2.5. Post-completion review and benefits realisation

This stage is the last stage of the project lifecycle and is critical for identifying lessons learned and driving the process of continuous improvement in how public bodies evaluate, plan, and manage public investment projects. The stage translates the lessons learned from an individual project or programme back into the bank of learning to inform sectoral and national guidance and future projects.

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