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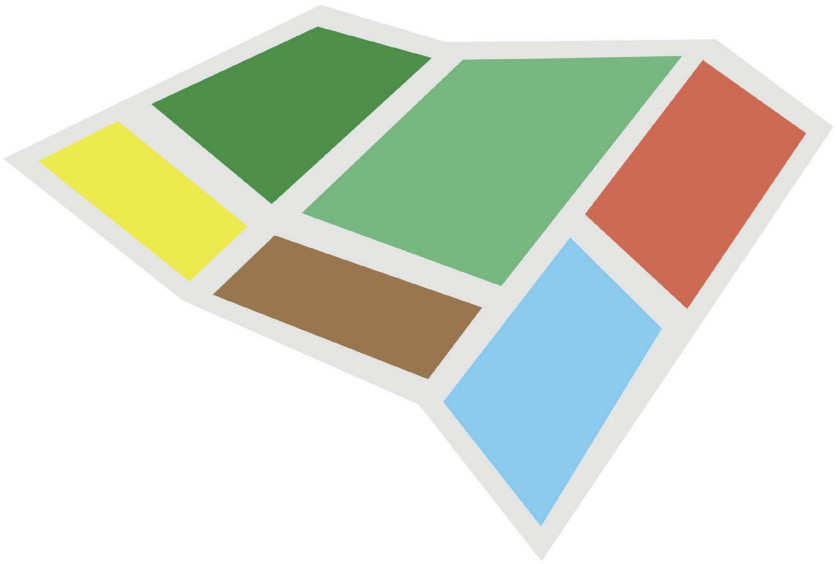

MINLAND: Mineral Resources in Sustainable Land-Use Planning

H2020 Project; Grant Agreement: GA 776679

Topic: SC5-15d - Linking land use planning policies to national mineral policies

Deliverable for Task 4.2: Land Use Policies and Valuation of Land

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The data for this report were collected and mapped in WP2 and WP3, decentralised and under the responsibility of the respective partners, as follows:

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Table 1: Contribution from the project partners to the data collection in WP2 and WP3 and data validation.

Content

1. Introduction

Raw materials and mineral resources play a crucial role in people's everyday lives. They also play an essential role for economic activities on local, regional, national and international level. Thus, sustainable supply and access to raw materials are considered crucial for economic stability and prosperity and is addressed in numerous EU and Member States (MS) policies. Different policies on EU level are addressing (exemplary list see table 1) the nexus between mineral policy and land-use planning, addressing among others the following difficulties and barriers:

- Identification of safeguarding measures, to secure the future demand by domestic supplies
- In-effectivity of mineral resource policy, due to dispersed location in various policies and unbalanced coordination between different levels of government
- Possible sterilisation of minable mineral deposits, due to clumsy land-use planning or competing land-use
- Weak horizontal coordination and cross-sectorial cooperation with other policy domains, even in just recently designed and thus 'modern' mineral policies
- Land-use planning systems and regulation should be better linked to mineral policies
- Perception of conflict of interest and bias of land-use planning towards mineral land-uses, in which land-use planning considers mineral activities mainly as environmental degradation, not as an economic activity and is weighed lower compared to other land-uses such as urbanisation/ residential development, nature conservation, agriculture, recreation etc.

Land-use is affecting environment, prosperity, economic development. Hence, private and public interest related to land must be balanced. Land use planning is about dealing with the scarcity of land, according to politically and societally defined goals, objectives and their spatial appropriation. Scarcity of land, and if that scarcity is considered problematic, depends on the particular perspective. Land-use regulation and property rights play a crucial in the availability of land resources. Zoning and delineation of permitted land-uses or private property are institutions that are setting boundaries and are organising the relationship between supply and demand of land. Hence, there are situations where demand and supply are not meeting or where the institutional regimes are regulating the supply based on characteristics and properties of a certain area (e.g. natural values). Different perspectives and interests and the scarcity of land might lead to tensions and territorial claims of various stakeholder, private parties, or organisations that are representing policy pillars.

Hence, land-use can be discussed from two main viewpoints: a) land-use planning as a sequence or network of different plans and instruments that are regulating and controlling actions of land-owners; whose actions (if not regulated) would result in in-efficient spatial patterns or lead to undesired outcomes; b) land-policy, is a broader term than land-use planning also including notions of land-development: "(…) Land policy aims to achieve certain objectives relating to the security and distribution of land rights, land use and land management, and access to land, including the forms of tenure under which it is held." (European Commission 2004) (p.4). Consequently, land policy includes all political-legal measures implemented by different governmental levels to 'implement politically defined spatial development objectives through changes in land-use, distribution and value of land (Gerber et al. 2018). Plans and strategies are responses of public authorities to undesired development or land-use. Those plans signify a series of decisions and activities on different levels of government trying to resolve those tensions and unde-

sired developments. Hierarchical, cascading planning systems are traditional instruments of land-use planning (spatial planning) in which land-use plans (zoning plans) on different spatial levels play a core role. Land-use Planning often plays two roles: a a) developing and b) ordering role; while the first one emphasises land-development and achieving societal objectives, the second on stresses the organisation of land and the aim to reduce conflicts based on spatial or timely proximity of certain land-uses.

Dealing and including the development and ordering of mineral land-uses (metallic minerals, construction minerals, industrial minerals) is facing some interesting challenges: (i) the extraction and land-use is location based given by the location of the geological resource/ deposit, (ii) impact on environment and surrounding land-uses, (iii) and decision making on different administrative levels regarding policy and planning, that are driving and impacting land-use and its organisation.

Mineral resources are finite and their availability is bound to a geographical location. While geology restricts their occurrence, 'minerals' – or 'mineral extraction' is one item in a bigger set of possible land-use options. While some land-use options are easily compatible in a timely (parallel or consecutive) or spatially (e.g. forestry and recreation) manner, others are in a more difficult 'relationship'. There are also (combinations of) land-use options (on surface) that might 'sterilize' mineral deposits, exacerbating or hindering possible extraction in the future, such as residential development, social or technical infrastructure or similar (Wrighton et al. 2014) This 'sterilisation' might occur based on the zoning or actual use of the plot itself, or due to the proximity on non-compatible land-uses (i.e. due to safety regulation blasting, noise and air pollution, etc.). Additionally, societal and spatial developments are linked to mineral policies: i.e. urbanisation and increased demand for housing increases the demand for construction materials; in parallel many cities and urban agglomerations are pushing the 'energy transition' on urban scale, shifting to renewable energy sources, forcing e-mobility, refurbishment and changing spatial patterns, which also impacts the demand for mineral resources. Hence, spatial development, land-use planning and mineral resources are inextricably linked and depending on each other.

Although land-use and spatial planning are mainly the responsibility of the public authorities of the MS (embedded on different spatial scales) some activities were launched on European Level to promote integrated approaches for spatial development on European Level, such as the European Spatial Development Perspective (ESDP) or the European Landscape Convention (Council of Europe 2002) (see table 2). Both addressing and working towards sustainable, socially inclusive territorial development. Though the ESDP addresses safeguarding and the protection of natural resources, mineral raw materials are mainly considered regarding remediation and the development of creative approaches to deal and mitigate impacts of raw material extraction (p. 34). The European Landscape Convention (Council of Europe 2002) advocates the importance of sustainable development based on a balanced relationship between social needs, economic activities and environmental quality. Landscapes are so called impure public goods (Penker 2008; Gugerell et al. 2018) between public interest (social, cultural, environmental, ecological values) and private and public land-uses that constitute a favourable resource for economic activity and whose thoughtful management, protection and planning might contribute to prosperity and job creation (see table 2). Shortcomings and difficulties regarding the interplay of land-use planning in mineral resources (Wrighton et al. 2014), policy integration (Endl and Berger

EC 2011: Promoting sustainable development in the EU non-energy extractive industry	*"Land use and spatial planning policies directly affect sustainable development strategies for the industry"* (European Commission 2000a)*(p15)*
EC 2011: Tackling the challenges in Commodity Markets and on Raw Materials	*"(…) development is hindered by a heavy regulatory framework and competition with other land uses. Many regulatory issues in this area are the competence of Member States. The Commission therefore acts mainly as a facilitator for the exchange of best practices (…)setting up a land use planning policy for minerals that comprises a digital geological knowledge base, a transparent methodology for identifying mineral resources, long term estimates for regional and local demand and identifying and safeguarding mineral resources (taking into account other land uses) including their protection from the effects of natural disasters; " (European Commission 2011) (p17)*
Strategic Implementation Plan for the European Innovation Partnership on Raw Materials Part I. 2013	*"Minerals policies are not always clear and effective enough (e.g. dispersed among other policies, no public implementation support, uncoordinated between different levels (EU, Member States regional, local) and with other sectorial policies (land use planning policy, environment policy including biodiversity and waste management)). The permitting procedure for mining can be lengthy and sometimes lack transparency. While the overall potential for mining and quarrying in Europe is high, access to land is another key challenge for the extractive industry, where competing land uses may sterilise deposits for future use." (p8)* *"(…) objective is to foster access to known and still undiscovered mineral deposits, improve the conditions for sustainable access and supply of raw materials in the EU and safeguard the mineral wealth for future generations by classifying within a regulatory framework, the importance for society of certain mineral deposits. With regard to the land use planning or marine spatial plans, the aim is to ensure that NEEI are considered on equal terms as all other, often competing sectors such as agriculture, forestry, housing, industrial areas, etc" (p.18)"*
Strategic Implementation Plan for the European Innovation Partnership on Raw Materials, part II Priority areas, Action Areas and Actions	*"Minerals policies are sometimes not clear and effective enough because they are either dispersed among other policies or have no public and implementation support. Coordination and implementation of minerals policies at different levels (EU, MS regional, local) and horizontally with other sectorial policies is often not straightforward and therefore in some cases contradictory and time consuming. Even in the cases where Member States have recently issued a modern minerals policy strategy, adapted to the needs of society and the economy, this could prove to be ineffective if this policy is not strongly linked with other national policies such as an appropriate land use planning policy, environment policy including biodiversity and mine waste management and also with a common understanding and categorization of mineral deposits of local, regional, national and EU importance. (p.8)* *"Mineral policies must be developed integrating instruments and mechanisms for guaranteeing the accessibility of the raw materials for the industries and the society, public acceptance and transparency of EU market." (p24)* *"Land use planning policies at different levels (local, regional, national) should be better co-ordinated and linked with the general rules and guidelines for minerals land use planning issued at national level covering potential, current and past extractive areas. These rules and guidelines should include tools and mechanisms for forecasting long term supply of raw materials which are important at local, regional, national and EU level in view of the foreseen demand. Land use planning procedures are long and NEEI are mostly considered as an environmental degradation, not as an economic activity that is temporarily using land, therefore receiving a relatively low ranking compared to other land uses such as urbanization, nature conservation, agriculture, infrastructure, recreation etc." (p 27f)*
European Spatial Development Perspective	*"Efficient land protection, to preserve natural resources and soil functions is therefore necessary, mineral resources are widely missing"*
European Landscape Convention	*"Concerned to achieve sustainable development based on a balanced and harmonious relationship between social needs, economic activity and the environment;* *Noting that the landscape has an important public interest role in the cultural, ecological, environmental and social fields, and constitutes a resource favourable to economic activity and whose protection, management and planning can contribute to job creation"*
Thematic Strategy on the sustainable use of natural resources	*"Efforts will often need to be made in non-environmental policy areas. The approach advocated will strengthen policymaking at all levels (EU, national, regional and local). A better understanding of the environmental impacts of resources use throughout life cycles will allow policy makers to better prioritise and concentrate on areas where they can really make a difference"*

Table 2: Consideration of ‚land-use' in EU mineral policy and vice versa

2014; Endl 2017) or safeguarding mechanism (Wrighton et al. 2014; Lopes et al. 2018) have been pointed out by prior research.Increased awareness of the European Commission resulted in first responses, launching a number of different projects that are investigating that issue and are developing guidance and policy advise, such as MINGUIDE (mineral policy making, design and implementation), MINATURA (developing a methodology for the definition and subsequent protection of 'mineral deposits of public importance') or MINLEX (investigating the legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU. Those projects have delivered valuable advice on high-scale policy levels and providing general knowledge and mapping of policy. Less attention has been paid yet to the actual linkages between mineral policy and land-use planning and which governance mechanisms are connecting them on which administrative level. The 'Report on National Minerals Policy Indicators' (European Comission, 2014) is adressing the issue of land-use planning issues and mineral resources, but remains on a very generic level and high scale. Thus, there is moderate knowledge how minerals 'are landing' in land-use planning and how the valuation, weighing of different land-use options is taking place.

The MINLAND project is expected to contribute to the knowlege gap concerning competing land-use planning related to different land-use interests. Tasks 4.2 and 4.3 are addressing this gap on different levels. In 4.2 we are mapping and reviewing governance mechanism that are linking minerals and land-use planning with other policy domains (incl. nature protection, Natura 2000) on different administrative levels, to extract different options and opus moderandi and coordination mechanism in European land-use planning, which indeed is very diverse. Those results are presented in the country fact sheets (chapter 3). Secondly, we will be reviewing how land-use options are valued and weighed against each other in the land-use planning process. Thus, this report also links to the MINLAND report 'Policy. A review of policies and practises throughout Europe on mineral resources and land use' (D2.1).

Task 4.3 will be the follow up task based on the same data collection and mapping of the countries. It is investigating the integration of the policy sectors to elaborate on enabling and constraining conditions for policy integration and implementation to develop suggestions for policy performance on the levels of policy design, implementation and evaluation.

2. Data collection and Methods

The research is based and reliant on the data that have been collected and provided by the respective partners in WP2 and WP3 (table 3). Both work packages are following a descriptive, qualitative research approach, combining document/policy mapping/analysis with questionnaires and interviews with stakeholder/actors. WP3 complemented this material with case studies (Flyvbjerg 2006; Yin 2013) from the partner countries to illustrate different nuances, perspectives cases and policy/planning responses to actual land-use and mineral planning problems. The goal was to cover a broad range of different practises; thus, the selection of case studies was based on the following criteria: i) covering past and current extractive sites, mining projects, exploration; ii) cover the entire range of mineral resources from metals, industrial raw materials to construction minerals; iii) identification of competing and conflicting land uses.

WP2 • Mapping and dada collection of land-use and mineral policies throughout Europe,

including the institutional framework and policy content; based on policy and document mapping and analysis as well as questionnaires and interviews with selected authorities and institutions

WP3 • Various case studies
• Stakeholder consultation

For data collection, the project partners received templates including open and closed questions to complete. The templates had a strong descriptive focus and requested the description of policy, planning process and governance mechanism as well as the cases. Data collection was carried out decentralised by the partners within a comprehensive time-frame between end of June and September 2018. The templates were submitted and the data were stored in a secured data repository. Transcribed interviews and consultation material were not included in the submitted data set and thus was not available for analysis and confronting aggregated material from the templates. Due to the broad variety of cases and delivered content, the analysis follows an inductive, exploratory case study approach. The small sample size did not support the utilisation of descriptive statistics.

The collected data from WP2 and WP3 were reviewed in September and prepared for qualitative analysis. The data were clustered along thematic groups forming the basis for the descriptive country fact sheets. Provided data on the land-use planning systems and governance mechanism were cross-checked and validated with the OECD publication: Land Use Planning Systems in the OECD (OECD 2017). Data on mineral policy and mineral legislation that appeared fragmented or incomplete in the review was cross-checked and amended with publicly available data from the MINGUIDE project provided on the website. Since the delivered data varied greatly in scope and depth another data validation loop had to be included: the generated fact sheets (diagrams, text) were sent back to the case owners to re-check and additional skype interviews with case owners were performed to complete missing data and clarification. Additional validation interviews were conducted with case owners from Greece, Finland, Norway, Portugal, Ireland, Italy and Spain (see table 3); due to administrative changes data validation in Hungary was not feasible. Those interviews are documented via summaries.

The following chapter 3 presents data on a country basis, introducing into different land use systems and illustrating how minerals are `landing´ in land-use planning and governance mechanisms that are linking mineral policy with land policy.

Table 3: WP2 and WP3 surveys and interviews feeding into 4.2

Topic Clustering based on the Work Program / Grant Agreement	**Workpackage 2**	**Workpackage 3**
Mineral Policy	National Land-Use Planning Policy Regional/Local Land-Use Planning Policy National Land-Use Legislation Regional/Local Land-Use Legislation Relations Minerals Land-Use Planning	Narration of Case Study Description
Land-Use Planning	National Land-Use Planning Policy Regional/Local Land-Use Planning Policy National Land-Use Legislation Regional/Local Land-Use Legislation Relations Minerals Land-Use Planning	3.1, 3.2, 3.3, Narration of Case Study Description
Governance Mechanism – Horizontal and Vertical Coordination Mechanism, cross-sector coordination	Who is involved in the policy design (governmental bodies or other)? Please describe. Who is in charge of the implementation of policy (minerals) and how is the implementation of the policy monitored? Who is in charge of the implementation of the policy (land-use, KG) (region, county, province, municipality)? Are there interdepartmental working groups (formal or informal) where different work together.	3.27 Table 2: Top-Down or Bottom Approach, Horizontal or vertical processes Narration of Case Study Description
Valuation of land-use options and weighing of different land-uses	Are there any quantitative evaluation criteria/processes attached to different land-uses. Please describe and add reference to relevant documents How are mineral resources addressed (in land-use policy,) (such as being classified or valorised) in land-use planning and reflected in the land-use planning process. Please describe	3.15, 3.18, 3.22, 3.23, 3.31 5.8, 5.9 Narration of Case Study Description
Natura 2000 and competing land-uses		3.31 Table 2: Natura 2000 sectorial planning Narration of Case Study Description

3. Country Fact Sheets

3.1 AUSTRIA

Levels of Government

The federal state of Austria has three levels of government: national, federal states (9 provinces) and municipal level. While the Federal Constitutional Law determines 'Bergwesen' (mineral resources and mining) as a state duty (BVG Art. 10 (1) Z10), the municipalities are responsible for spatial planning on local level (BVG Art. 118 (3) Z9). Due to Austria's federal character and the lack of other aspects of planning mentioned in the Constitutional Law spatial planning is institutionally embedded on the provincial (federal states) level. On national level mineral resources and mining are embedded in the Ministry of Sustainability and Tourism. Though the lack of formal institutions for land-use planning on national level, the national government guides and drives spatial planning on provincial level, due to other policy and planning domains they are responsible for, such as transport and infrastructure (national roads, railways, energy), heritage or mineral resources. The nine federal states are legislating spatial planning laws and ordinances to organise spatial and land-use planning. Although there are far reaching commonalities in the institutional and legislative frameworks the are particular nuances and prioritization in terms of policy (priorities), planning tools (statuary, soft-tools) or securing areas for certain land-use. Another important difference is related to the practise of regional planning and the integration and linkage between spatial planning and regional planning: while in most provinces spatial and regional planning are integrated and jointly legislated, the province of Styria has scraped regional development and legislated a separate Regional Development Act in 2018. Other policy domains with strong impact on spatial planning and institutions are environmental legislation, infrastructure, nature and environmental protection, housing development.

The regional level of planning is organised in various ways: in some provinces (i.e. Tyrol) municipalities form municipal associations to organise regional and inter-communal cooperation, while other provinces the provincial level is translating decentralised regional policy is institutionalised in regional plans by the provincial government. Municipalities are responsible for spatial planning on municipal level (Örtliche Raumplanung) within the municipal territory, including strategic documents, land-use and detailed plans.

Mineral Resources and Planning

Minerals resources and raw materials are institutionally embedded on the national level: the Austrian Minerals Act is the legislative framework for all mining and extractive activities; it distinguishes three types of minerals resources: state owned mineral resources, where the property right of extraction belongs to the state, fee-to-mine mineral resources (land-title and property right of extraction are separated) and land-owner mineral resources (holder of the land-title and property right of extraction are identical). The mineral resources Act shifts land-owner materials to the provinces as responsible level.

The legislation is complemented with policy documents: *Österreichische Rohstoffstrategie* (Austrian Raw Materials Strategy) is based on three pillars: securing the long-term access to domestic deposits through spatial planning, ii) safeguarding a fair and non-discriminatory access to mineral raw materials on global markets and iii) protection and conservation of primary resources by more efficient facilitation and increased resource efficiency and recycling. The Österreichische Rohstoffplan (Austrian Mineral Resource Plan, AMRP) is a

AUSTRIA

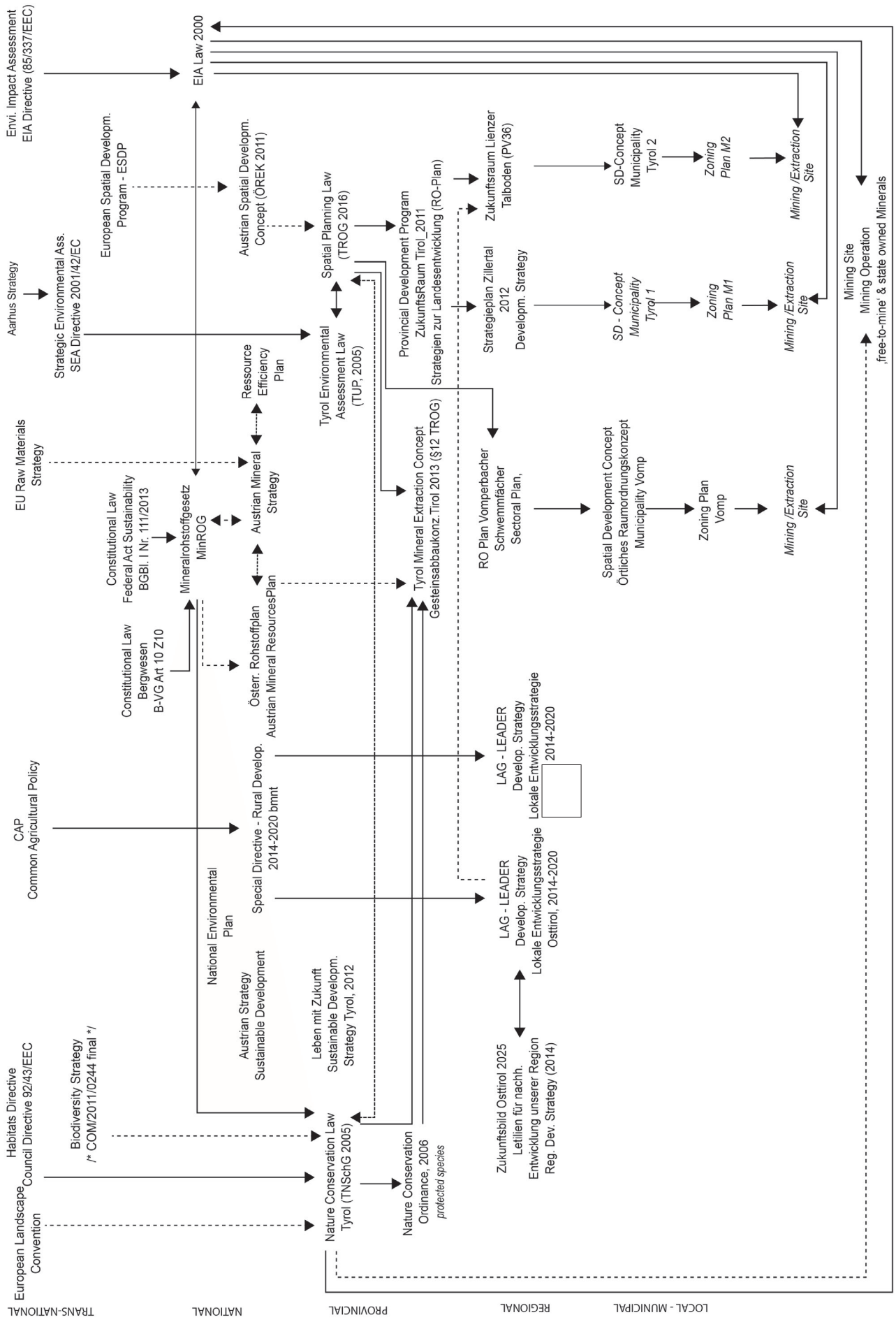


Figure 1: Policy Network Austria - Province (Federal State) Tyrol; Author: Katharina Gugerell

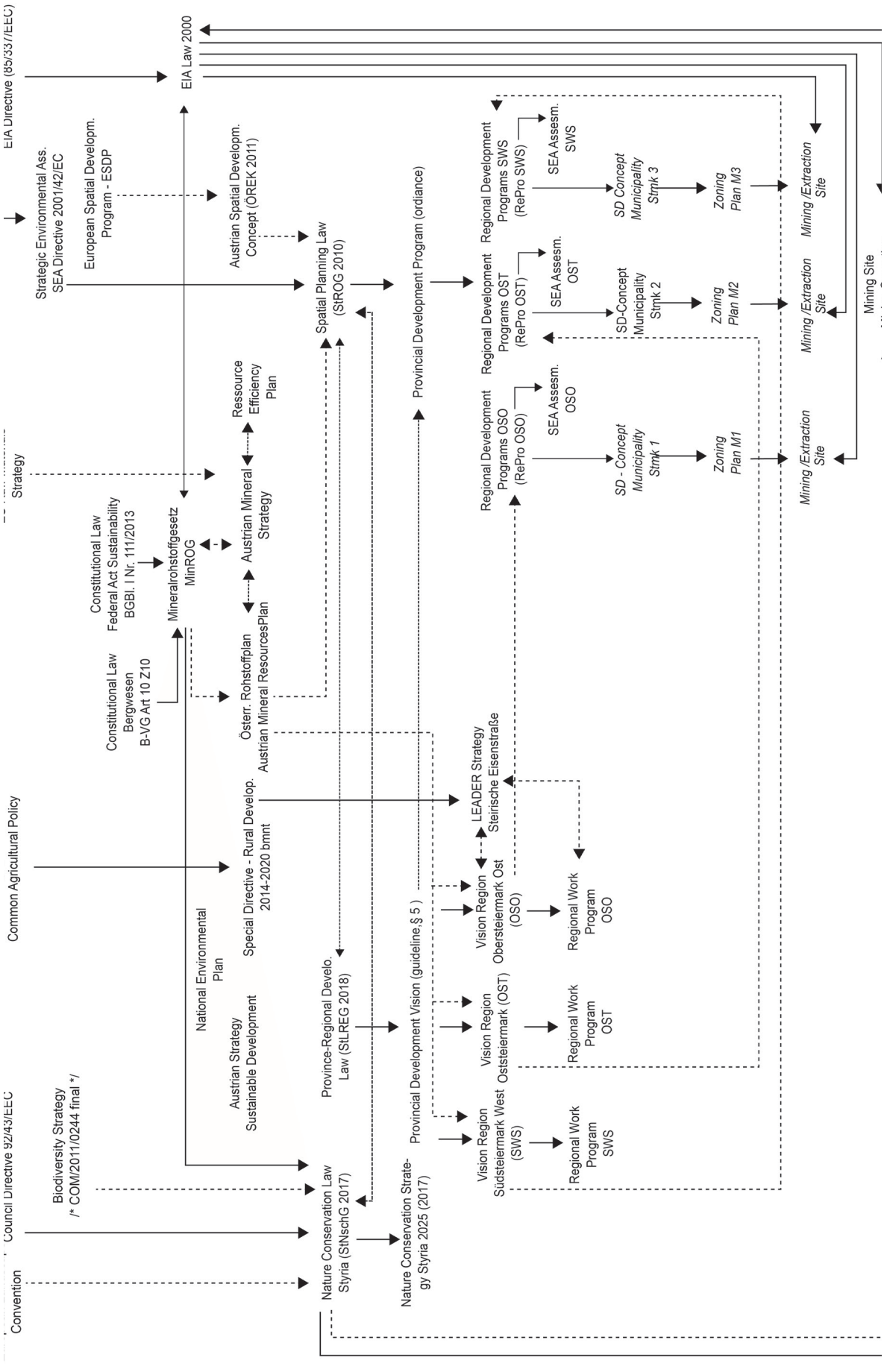


Figure 2: Policy Network Austria - Province (Federal State) Styria; Author: Katharina Gugerell

documentation of conflict-free minable deposits (conflicting land-uses such as future development areas for residential usages, nature protection – Natura 2000, national parks, etc. are already subtracted) of different mineral raw materials. The Austrian Minerals Act legislates a different governance system: while state-owned and free-to-mine minerals are governed and managed by the national level, land-owner raw materials are governed and implemented on provincial level. This distribution is based on the assumption (i.Hst, 2018) that land-owner materials such as construction materials are of provincial/regional importance and thus should be governed on the respective level of government. The AMRP was initially considered as national policy translating the *Österreichische Rohstoffstrategie* aim to secure a long-term access via spatial planning into a operational planning and safeguarding tool. In practise the implementation regarding land-owner materials turned out cumbersome: the AMRP is indicative for provincial spatial planning activities; thus the implementation is voluntary and carried out on provincial levels through different governance and planning formats.

Land-Use Planning and Land Policy

On national level the Austrian Spatial Development Concept set some general strategic goals for land-use planning and development. Since spatial planning is institutionally embedded on provincial and local level, this concept is only indicative and has no binding character for provinces. No Spatial Planning Act on national level exists. Most provinces outline mid- to long-term Provincial Development Plans (Perspectives), describing strategic objectives and core principles of land-use planning providing guidance for different planning procedures, actor and stakeholder involvement or the outlining and integration of sectorial policies. They do not necessarily include land-use plans, but there might be more detailed sectorial policies (e.g. Gesteinsabbaukonzept Tirol, mineral resource concept Tyrol) with either statutory or indicative character. Regional Development and/or Regional Planning concepts exist in most provinces. They might also include land-use plans (e.g. Styria) that are implementing safeguarding for mineral deposits: in Styrian regional plans mineral deposits are safeguarded via priority zones for mining, but are also introducing indirect safeguarding via priority zoning for agricultural land (preventing construction and sterilisation) or forestry.

However, the regional level exhibits significant differences regarding content, governance mechanisms and stakeholder involvement. Local Development Plans (or Concepts) are strategic development visions on municipal level, outlining strategic spatial development objectives. Local Development Objectives are binding for down streamed plans such as zoning/ land-use plans which are adopted by the municipal council and approved on provincial level. Zoning/Land Use Plans are outlining permitted land-uses for each plot, which are imperative for property owners. Zoning plans must align with plans on higher scale and must not conflict i.e. with land-use designations outlined on higher level (e.g. priority zones).

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

Mineral resources enter land-use in two different ways (based on the case studies): a) State-owned (Bundeseigene) and free-for-mining (‘Bergfreie’) raw materials/minerals are entering direct from national scale (MINROG) into land-use, since the state issues the permits, independently from the regional and provincial spatial plans or spatial programs; or b) Landowner Minerals (Grundeigene) are entering via spatial planning legislation and policies into land-use; Land Use Planning legislation is embedded on provincial level (9 provinces) via “Spatial Planning Acts”) Priority Zones on provincial or regional level, b) Exclusion zones, for particular landscape types (i.e. Styria) or delineated in Regional Plans or Sectoral Plans (i.e. Tyrol,

Geisteinsabbaukonzept), c) Zoning of “Mining Areas” based on MInROG § 153 (TROG, Planzeichenverordnung), d) Priority areas on regional/provincial level must be visualised (Ersichtlichmachung, Kenntlichmachung). From a national perspective, the feedback in the interviews was, that the focus of the AMRP is too technical and that the implementation lost momentum due to that fact; in the policy design and the design process technical questions and perspectives were in the driving seat and there was not sufficient consideration and implementation of the political perspective – which exacerbated the implementation on provincial level. Conflicting land-uses with minerals are nature protection, tourism and recreation,

Valuation and Valorisation of Minerals and Land-Use

Valuation and valorisation of mineral state-owned and free-to mine resources is based on geological and economic assessment, carried out by the Geological Survey. The AMRP includes in the valuation of mineral deposits (construction materials, aggregates) also environmental/ nature protection values that are institutionalised as e.g. national parks, Natura2000 and other policy priorities such as housing developments to avoid conflicting land-uses. Valuation and valorisation in land-use planning is an integrated part of the decision-making process. In both case studies Styria and Tyrol setting and balancing different interests regarding land-use is considered as ‘planning competence’ and is negotiated between involved and concerned departments and stakeholder (also from municipal or regional level). Strategic goals and core principles are considered the main guidelines to align design making on land-use questions. Economic valuation of different land-use options and alternatives is not facilitated as it is considered little value for high costs, since it’s too vague (too many assumptions) and consequently a weak decision support tool. The interview response was that economic valuation is not considered helpful for the debate on setting priorities and balancing competing or conflicting interests. For the delineation of agricultural priority zones, the qualitative soil value (Bodenackerzahl) plays an important role.

Governance Mechanisms: Horizontal and Vertical Coordination

Vertical and horizontal coordination are two main principles of Austrian Spatial Planning. Provincial governments act as supervisory authorities monitoring the compliance of downstreamed planning with strategic provincial policy and legislation. In turn they are obliged to administrative support and assistance. The ‘right to be heard’ for subordinate planning authorities should further support vertical coordination. Informal discussions and debates between public servants on provincial and national level (responsible ministry) to discuss and align mineral policy with spatial planning to a certain degree: considering provincial interests a selection of areas outlined in the AMRP got implemented via priority zones (Styria).

Horizontal coordination between various concerned departments in PA is organised in informal, problem-based settings to discuss, evaluate and bargain different land-use interests, needs and evaluate different land-use options in a discursive process. Those coordination meetings between different departments and levels of governments are important to coordinate different interests (e.g. wildlife ecology, agriculture, etc.). the second case study stresses, that informal links with the extractive industry are necessary to support the attainment of strategic policy goals on provincial level. On national level, the Österreichische Raumordnungskonferenz (ÖROK, Austrian Board on Spatial Planning) is a coordinative organisation. Representatives from the national state, provinces and municipalities are formal members and are coordinating policy interests and strategic policy development regarding spatial planning. Their decisions and developed guidelines have indicative character and are considered rather soft-policy tools. However, horizontal coordination remains limited to the policy silos and a pervasion of different policy domains remains on modest informal level.

3.2 FINLAND

Levels of government

Finland is a unitary, centralised country. The national government adopts the legislative framework that provides the structure for the land-use planning system and other legislations such environmental protection act, waste act,…. The government defines the National Land Use Guidelines/ objectives (Valtakunnalliset alueidenkäyttötavoitteet) that form part of the Land Use and Building Act 132/1999. These are in form of text, not of map and are revised during time. They are determined by different policy streams and strategic goals (functioning communities, efficient transport, healthy and safe environments, viable natural and cultural environment, recreational areas, natural resources, energy supply). Mineral resources are not specifically mentioned in the national land-use guidelines, natural resources are. Evaluation of natural resources (luonnonvaara) is required when planning according to the updates of the Land use and building Act approved by the national implementation of SEA directive 2001/42/EC.

The process defined in the Land use and building Act requires compliance of plans on different levels in a top down approach. Still, the Finnish system is configured in such a way the Regions can contribute to achieve the national objectives through own priorities. Regional Plans are prepared by regional councils taking into account different needs for development of the region including those supported by structural funds. Responsibilities of municipalities are set in the Local Government Act 410/2015 and provides a legal framework for land-use planning. Municipalities are responsible for land-use planning on local level

Mineral Resources and Planning

The Land-Extraction Act regulates the withdrawal of Landowner materials (property right of withdrawal belongs to the holder of the land-title) gravel, sand, clay, stone and earth.
The Mining Act (2011) covers state owned minerals as listed in the act itself (metallic and industrial minerals+ marble and soapstone) and the objective is ”to promote mining and organise the use of areas required for it, and exploration, in a socially, economically, and ecologically sustainable manner…. to ensure the municipalities’ opportunities to influence decision-making, and the opportunities of individuals to influence decision-making involving them and their living environment… to promote the safety of mines and to prevent, decrease, and avert any inconvenience and damage incurred in the activities …. to ensure liability for damages for the party causing the inconvenience or damage”. It organises the preconditions for mining activities, legal status of involved parties and pays attention to the impacts of mineral extraction on the environment and lands-use.

Finland recognized the need of national strategies besides EU policy measures rapresented by the Raw Materials Initiative, in order to secure resources and to promote the minerals sector. The Mineral Strategy 2010 is complementing the mining act on policy level, focusing on domestic growth and prosperity, solutions for challenges regarding the global mineral (value) chain and mitigating environmental impacts. Other than the Mining Act, it covers all mineral resources including construction materials. Policy implementation is supported by financial incentives and budget allocations, financial programs and additional support action such as the Green Mining Program (2011 –2016).

Land-Use Planning and Land Policy

The National Land-Use Guidelines/Objectives are setting the strategic framework that is steering policy development despite the lack of a land-use plan map on national level. Finland land-use

planning is organised as a hierarchical, cascading system of plans. Regional Land-use plans (Makuntakaava) are the highest-level land-use plans in the Finnish planning system. They are strategic plans that are outlining the principles for land-use and spatial structures. Mining areas are considered and zoned in regional land use plans as EK areas (mineral exploitation areas). EK areas are implemented in regional plans during revision processes and might be nominated by extractive industry. Regionals plans might attribute a larger area to mineral extraction in the surrounding of a mine area in order not to impair its possible expansion. Also, sub-regional plans, that are only covering an EK areas as preparation for a revision process are possible and are financially covered by the company. Potential Deposit Areas can be designated as specific areas EK1. The areas do not imply that a mining operation will occur. Projects will have to undergo the permitting process.

On municipal level two types of plans are adopted: a) Local Master Plans (Yleiskaava) are describing the spatial structure of municipalities and are outlining general objectives for their development, including zoning and land-use regulations for the municipality's territory. Municipalities are free to include or refuse mining operations and mineral extraction into their land-use plans. A positive permitting process also triggers the start of the land-use planning and zoning process on local level, since mining activities need the corresponding land-use designation on municipal level. Local Detailed Plans (Asemakaava) are detailed plans that are permitting land-use in particular and sensitive areas, and are mainly used in dense built-up areas.

Governance Mechanisms: Horizontal and Vertical coordination
Vertical coordination is organised via authorisation processes as well as statements between the different governmental levels. National objectives are considered on downstreamed governmental scales and plans but at the same time local/regional authorities can create tailored solutions and promote upstream needs and plans.

Valuation and Valorisation of Minerals and Land-Use
Valuation of minerals in the policy process is based on economic, geological, social and environmental values.The values on environmental protection, natural areas to be preserved, ecological diversity are coded into different acts that are also implemented from EU directives through the years. These are also strong values for the population (everyman's right, recreational areas and activities) and the government (visible within the strategies). It is addressed during national planning (SEA), regional planning and it is a key element in permit process.

Social value. Social/cultural aspects related to vulnerable groups (Sami Homeland and Skolt population and land) are regulated by acts that affect both the regional land use planning and the singular projects. Regional land use planning is done through statements and consultation between different authorities and stakeholders including vulnerable groups if are relevant for the county. Mining act is specifically referring to the acts defining the procedure to be followed in case of projects affecting those areas.

Relatively to preservation/protection of cultural heritage areas, these are defined in the cultural heritage act and the areas are considered both during regional land use planning and mineral extractive activities. Relatively to the community, benefits and drawbacks derived by plans and projects are compared and evaluated during decision making at regional and municipal level, at different scales. Society is one key element in the land use planning. Community can give statements on plans and projects and it is involved in the process.

FINLAND

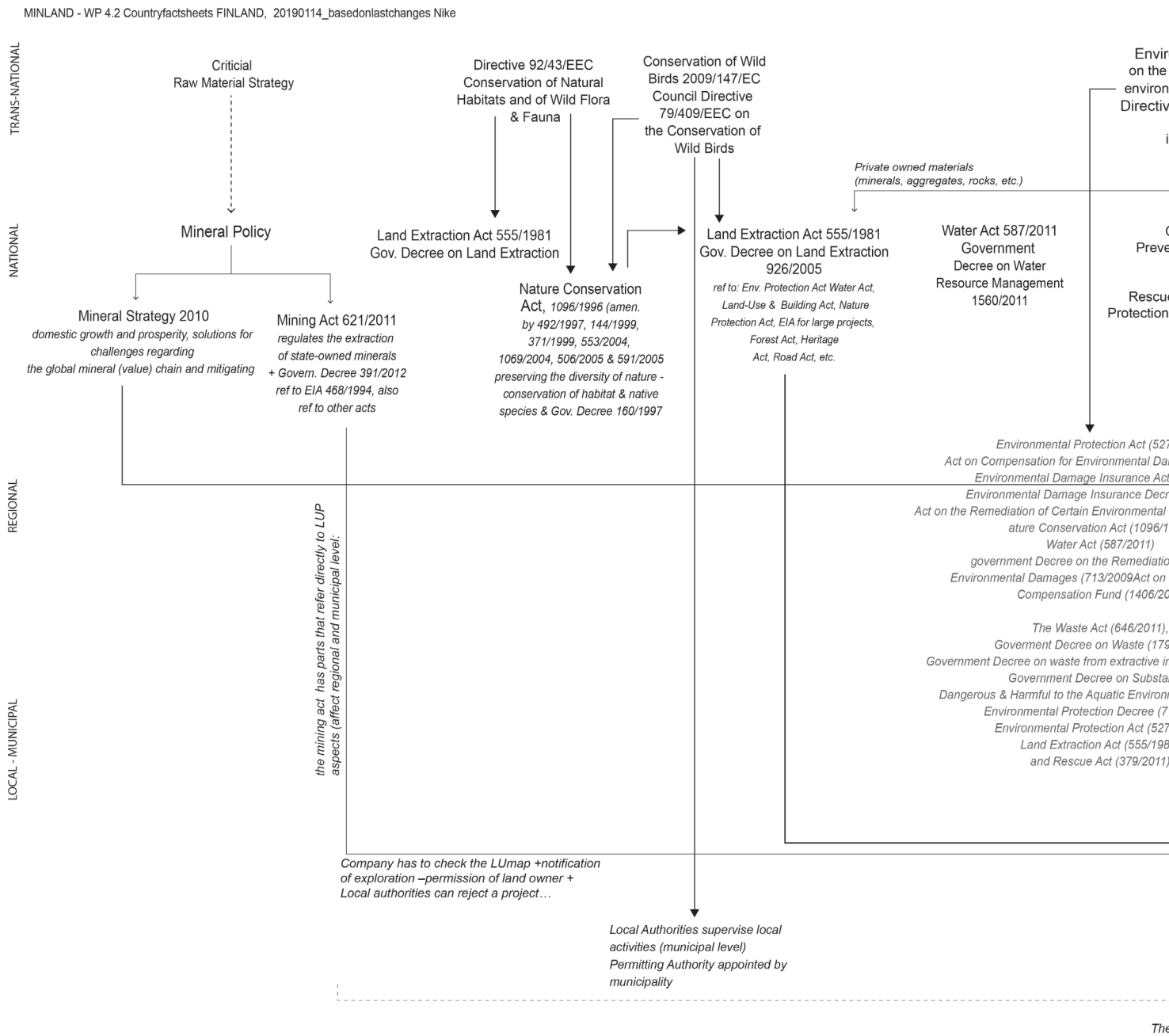
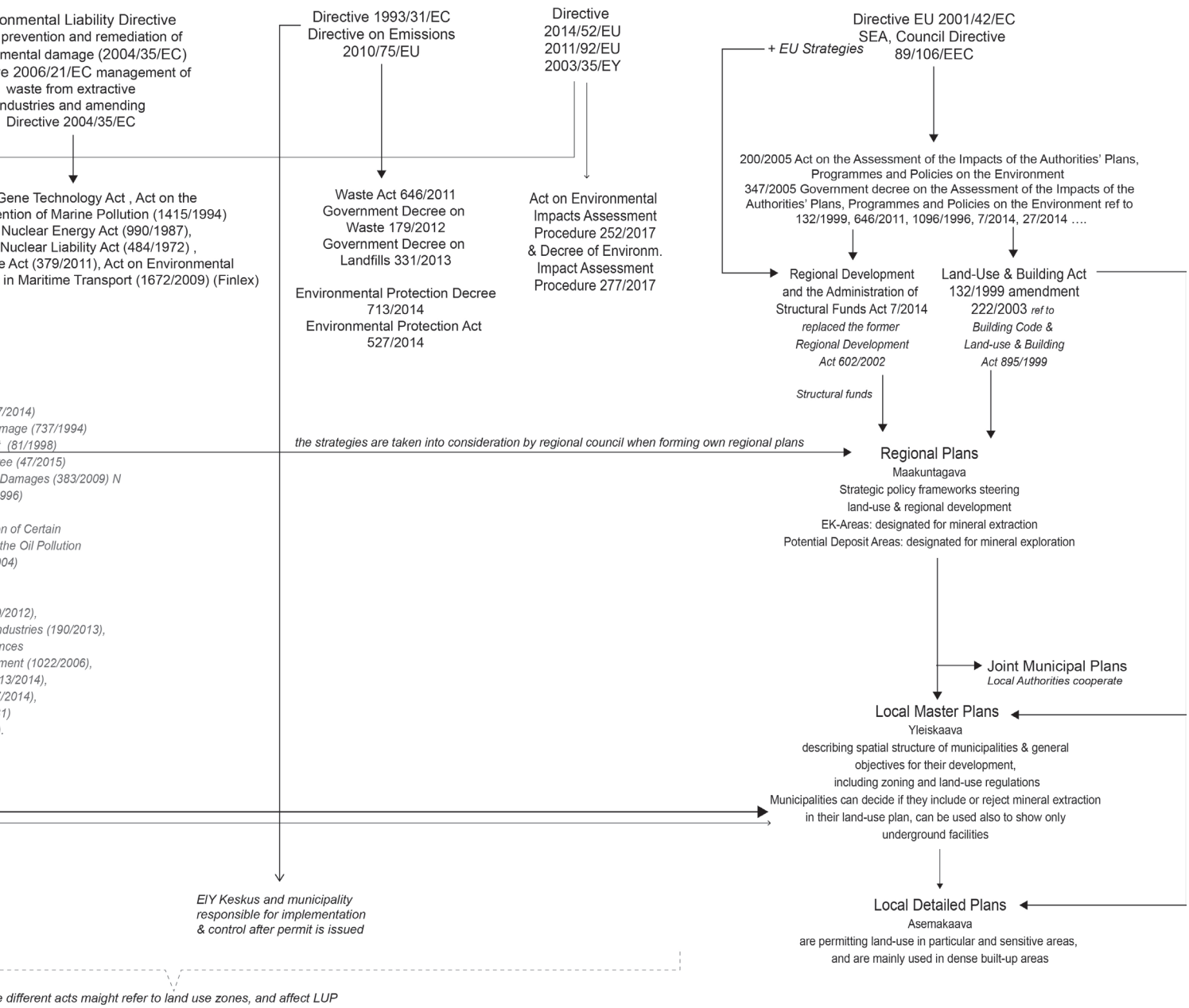


Figure 3 Policy Network Finland; Authors: Nike Luodes, Auri Koivuhuhta, Katharina Gugerell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Regional Plans
Maakuntagava
Strategic policy frameworks steering
land-use & regional development
EK-Areas: designated for mineral extraction
Potential Deposit Areas: designated for mineral exploration
Joint Municipal Plans
Local Authorities cooperate
Local Master Plans
Yleiskaava
describing spatial structure of municipalities & general
objectives for their development,
including zoning and land-use regulations
Municipalities can decide if they include or reject mineral extraction
in their land-use plan, can be used also to show only
underground facilities
Local Detailed Plans
Asemakaava
are permitting land-use in particular and sensitive areas,
and are mainly used in dense built-up areas
EIY Keskus and municipality
responsible for implementation
& control after permit is issued
e different acts maight refer to land use zones, and affect LUP

3.3 GREECE

Levels of Government
Greece has three levels of government: national level and two subnational levels: regions and municipalities. Decentralised organisational units are also considered executive parts of the national government. The Greek constitution embeds spatial planning under the regulatory authority of the national level. Greece has a complex system of formal institutions on spatial planning: in this system the state plays a core role and has far reaching responsibilities and duties: it is providing the legal frameworks for planning (urban/regional) environmental protection and regional development and enacts ordinances produced in the planning process. Compared to the state regions have less responsibilities in land-use planning: they are advising on the development of plans and decentralised administrative units are involved in approving detailed land use plans. Also, municipalities have an advisory role.

Mineral Resources and Planning
The national Mining act is governing mining and mineral extraction on national level. Based on the Mining Code mineral resources are clustered in two main categories: a) Metallic Minerals and Ores and b) Quarry Minerals (aggregates, marble and ornamental rocks, industrial materials) which are landowner minerals (withdrawal right belongs to the property owner). Legislation is complemented by a National Policy (NP) for the Strategic Planning and Exploitation of Mineral Resources (2012), acknowledging minerals value for economic activities and increased prosperity. The NP must be integrated with other national policies to ensure the mitigation of conflicts that might hamper GDP generation. Main policy goals are e.g. sufficient and constant supply of mineral raw materials (MRM), eco-efficient production, increased development benefits and decreased negative effects of mining activities, addressing the needs of local societies with the development potential of mining activities, land-use planning for raw materials processing when it is carried out outside mines or quarries. The link to land-use planning is provided in the 2nd axis of the policy, stressing land-use planning as carrier and tool ensuring access and preventing sterilisation of mineral resource deposits. Land-use planning and changes of land-use are addressed in mineral policy stating that minerals must be integrated in land-use planning policy to balance sustainable supply, economic development, social and natural environment and competitive land-uses. The implementation is mandatory; however, since it is not enacted yet it remains indicative.

Land-Use Planning and Land Policy
Greece has a diverse and complex land-use planning system. In 2014 a reform of the planning system was launched, but was not fully implemented yet (figure illustrates the new system) resulting in an overlapped mesh of old and new system including two sets of planning instruments that are used in practise. Also, plans might be overlapping that might result in competing or conflicting zoning regulations. On national level land-use planning is regulated by the decree on “Spatial Planning – Sustainable Development and Other Provisions” (4447/2016), complemented by the Presidential Decree (FEK 114/A/29-6-2018) Categories and Land-Use Content, establishing 13 Main Land-Use and 47 Special Use Categories, including extractive land-use such as mines/quarries (article 13).

The National Spatial Strategy for Spatial Planning builds the baseline for the coordination of the Strategic Spatial Plans (i.e. Special Spatial Plans & Regional Spatial Plans). The strategy is integrating content of other policies, such as National Development Strategy, Financial Strategy, European & National Environmental Protection Policies, National Public Investment Program. The National Spatial Strategy is prepared by the Ministry of Environment and Energy, involving other relevant policy tiers and ministries; it is approved by the Council of Ministers.

Special Spatial Plans are prepared on national level: they are specific plans that are incorporating and translating specific strategic goals and directions, taking into consideration the goals, aims and guidelines of the National Strategy for Spatial Planning. Special Spatial Plans are developed

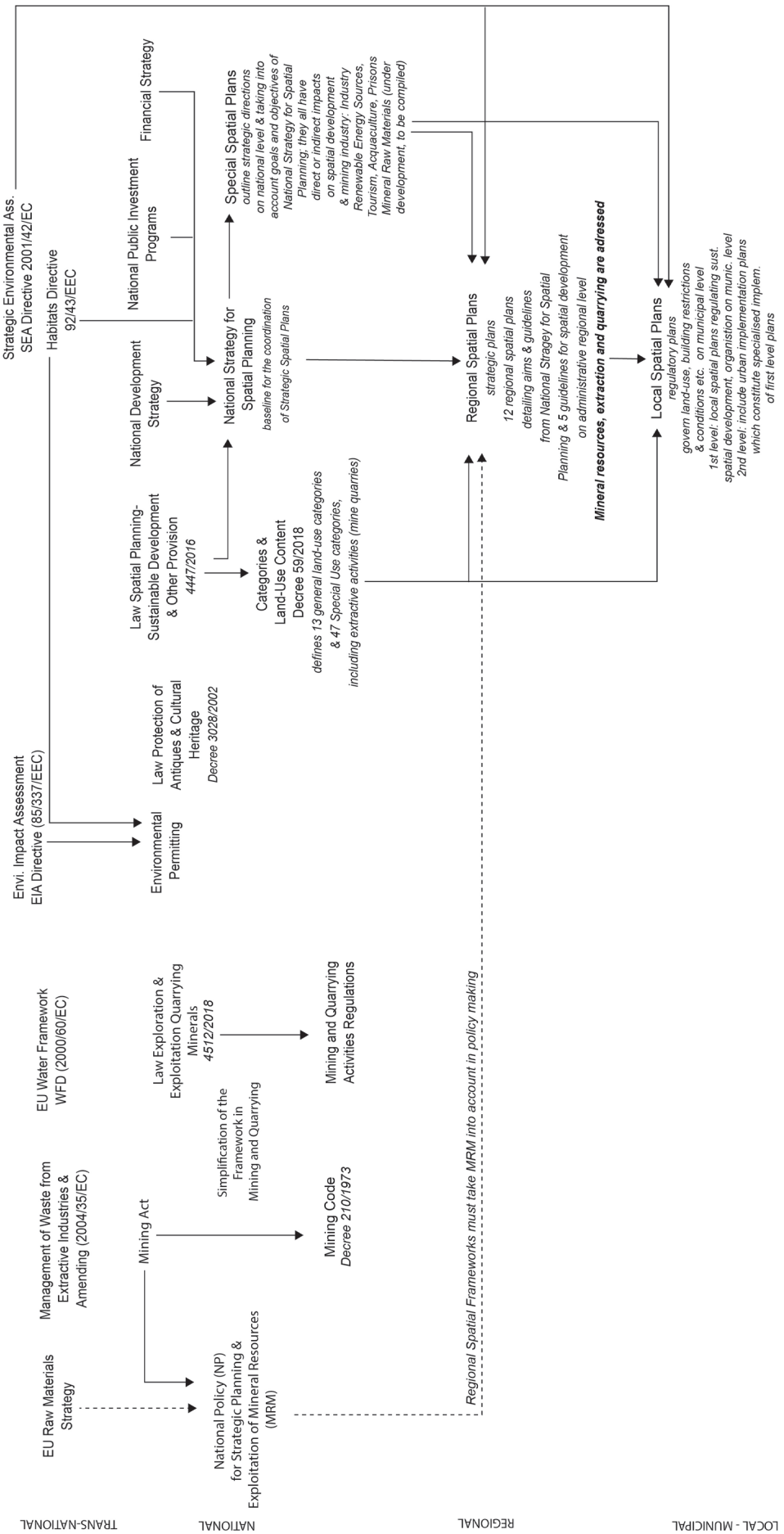


Figure 4 Policy Network Greece; Authors: Katharina Gugerell, Kiki Hatzilazaridou

for industry, renewable energy sources, tourism, aquaculture and prisons; at the time of writing this report a Special Spatial Plan for Mineral Raw Material was in preparation. Those plans have direct or indirect impact on the spatial development and mining industry. Down-streamed plans such as Regional Spatial Plans and Local Spatial Plans must ensure compliance.

On the regional level 12 Regional Spatial Plans are used as strategic planning instruments: they are detailing principles, aims and guidelines of the National Strategy for Spatial Planning and provided more detailed guidelines for spatial development on the regional administrative level, also considering the minerals sector (e.g. extraction, quarrying). They are also detailing and complementing Special Spatial Plans. Spatial Planning on the municipal level is generating regulatory spatial plans, that are setting specific regulation and land-use designations for permitted land-use: Local Spatial Plans are divided in two levels. 1st level of Regulatory Spatial Plans are including local spatial plans that are governing sustainable spatial development and its spatial organisation. Special Spatial Plans must be considered and implemented in those plans. 2nd level Regulatory Spatial Plans include urban implementation plans with steer the implementation 1st level regulatory plans.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

Strategic links between resources and land-use planning are provided in the MRM policy, stressing land-use planning as tool to guarantee access and prevent sterilisation of mineral deposits. (Undetected) deposits shall be protected and competing or conflicting land-uses mitigated. Special attention is paid to domestic demands and the provision for international markets. The role of land-use planning is considered to reduce transport costs and reduce environmental risks and secure national heritage. Horizontal integration into other policy domains is an explicit goal of MRM policy.

MRM is linked to the Regional Spatial Frameworks, that must consider strategic goals of the National MRM Policy. The integration of MRM Strategy is expected to ensure the accessibility of mineral deposits in a long term perspective and to prevent sterilisation. Currently only EXISTING mining operation sites are spatially included and integrated in the Regional Spatial Frameworks. Safeguarding of minable deposits is not taking place yet. Interview data let assume that safeguarding of minable deposits might be a target issue of the Special Spatial Plan for Raw Materials which is currently under development.In the time of writing this report, a Special Spatial Plan for Mineral Raw Materials is under development. It is based on the Law 4447/2016 to push economic development and prosperity and to enhance the economic competitiveness and eased permitting procedures. This policy and plan design is carried out on national level: from national level they might directly impact and override land-use plans on regional and national level, due to “national interest”. Expectations from extractive industry and economy is that permitting will facilitated quicker and less bureaucratic especially in relation to investments of national interest. It is expected that the Special Spatial Plan for Mineral Raw Materials will also include safeguarding mechanism for mineral deposits which are not operated yet: however, at this time it remains unclear if that plan will include a spatial dimension in terms of securing particular areas (outlining polygons) or just indications of possible places of interest (point)

Valuation and Weighing of Different Land-Use Options

Geological valuation is key in evaluating mineral deposits in Greece. The geological valuation is complemented by economic feasibility studies, determining if the extraction of a deposit is economically viable. Land use valuation and weighing of different land-use options is embedded in the decision-making process of land-use planning.

Governance Mechanisms: Horizontal and Vertical coordination

Vertical coordination is provided by mandatory compliance of plans with the plans/strategies of higher administrative levels. Additionally, the national government approves almost all spatial plans of the country.

3.4 HUNGARY

Levels of Government

Hungary is a unitary country with three levels of government: national – regional (county) and municipal level. The national government is responsible for spatial planning: it prepares the institutional framework Act XXI 1996 Regional Development and Spatial Planning, that determines the roles and responsibilities of different governmental units, the spatial-planning system and the core land-use categories for zoning plans on national and county level. National level also enacts the National Spatial Plan, Spatial Plans for Special Regions (Balaton recreational area, Budapest metropolitan region) and Cross Border Spatial Plans; it is also responsible for the approval of lower level plans and strategies but is delegated to the State Chief Architect on the regional level in the Government Office. County governments are preparing and enacting of Spatial Plans on County Level and are providing feedback and opinion for the preparation of national spatial plans and National Plans for Special Regions. Municipal councils enact strategic development concepts, integrated strategies and Settlement Structure Plans including building regulations.

The national level is also responsible for creating and maintaining the institutional framework for mining and mineral raw materials. The XLVIII 1993 Mining Act is the legislative framework on national level; its implementation is governed by the Governmental Decree No 2013/1998 that regulates all mining activities. There are close relations to neighbouring policy streams such as i) National Framework Strategy on Sustainable Development of Hungary to ensure the sustainable long-term supply of natural resources, ii) National Landscape Strategy (2017-2026).

Mineral Resources and Planning

Mineral planning and strategy is embedded on national level: The Mining Act (XLVIII 19993) and a Governmental Decree (2013/1998) are forming the legislative framework for extractive activities. It is complemented by the Resource Management and Utilisation Action Plan (2013) regulating geo-energy resources (e.g. coal, lignite, uranium, ore, nonconventional hydrocarbons and geothermal energy) and rare earth elements resources (such as red mud heaps, manganese ore, siliciclastic sediments); it is linked to the strategic National Energy Strategy 2030, outlining a national strategy for sustainable, long-term supply of mineral and energy resources. The Mining Authority (Mining Department of Government Offices and Mining and Geological Survey of Hungary) is responsible for the implementation of the implementation by approving and checking exploration and extraction activities within the permitting process.

Land-Use Planning and Land Policy

Hungary is following a hierarchical, cascading land-use planning system with spatial plans on three main levels: a) National Spatial Plan (national level, including Spatial Plans for Special Regions), b) Spatial Plans for Counties, c) Settlement Structure Plans and Building Regulations on municipal level. Spatial Plans are complemented by strategic development plans on all levels of government, which are outlining the general development strategies for territorial development, social and economic development and objectives. Thus, they are the strategic guiding frameworks that driving land-use planning and are spatialised via the Spatial Plans on the particular territorial level.

The National Land Use plan outlines the land-use planning conditions for each region (next lower level) and adjoining technical and infrastructure systems and networks or the protection of landscapes, natural, ecological and cultural values, assets and resources. The National Spatial Plan consists of 2 parts: i) National Structure Plan, and ii) National Zones. The National Zones are zoning priority areas of national interests such as such as ecological networks, or priority zoning for agriculture, forestry, landscape management, watershed protection, national defence or risk zones (i.e. flooding). The National Structure

Plan determines the general land-use categories for permitted land-uses such as forestry, agriculture, mixed use, residential, water management.

Spatial Plans on regional level (Spatial Plans for Counties) are the link between strategic planning on national level and the municipal level. The outline and determine areas for development and delineate areas for the protection of natural and cultural heritage. Those plans are based on the national recommendations and objectives regarding the organisation and development of land-use.

On the municipal level Settlement Structural Plans are comprehensive plans determining permitted land-uses via zoning plans; they are complemented with building regulations. Local land-use planning and zoning plays a core role in the implementation and attainment of national land use objectives.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

The Mining and Geological Survey of Hungary (MBFSZ) is recording mineral resources, deposits and reserves of Hungary. The National Registry on Mineral Raw Materials and Geothermal Resources consists areas of minerals resources (including mined deposits and explored, but not mined areas) that are crucial for safeguarding purposes. This information is available for public authorities from the respective areas.

Areas that are registered in the National Mineral Resource Inventory can be designated as ‘mineral resource area’: those areas were researched and can be utilised for mining (active, suspended or closed) or they are safeguarding areas that are not operated yet. Thus, the designation ‘mineral resource area’ is not linked to the permitting process. For exploration activities the correct zoning as such an area is mandatory. Those designations are integral part of regional plans of counties and special regions. Mineral resources should be factored in into land-use planning. On local level, municipalities are required to run assessment in the land-use planning process: the results are audited by the Mining and Geological Survey of Hungary. The authority can object to land-use plans and stop the process, if minerals are not considered sufficiently in the land-use planning process. In that case the local or regional government might change the plan or other options for mitigation.

Governance Mechanisms: Horizontal and Vertical coordination

There are intergovernmental bodies existing that are linking different ministries. In the mineral policy stream, committees are organised along specific topics and are related to particular questions, including representatives from policy streams such as minerals, geology, environment, landscape.

Valuation and Weighing of Different Land-Use Options

Valuation of mineral resources and mineral deposits is based exclusively on geological assessment. Economic evaluation is taking place in feasibility studies of the mining operation as part of the permitting process. For the land-use planning no institutionalised formalised prioritization method is implemented in the land-use planning process.

HUNGARY

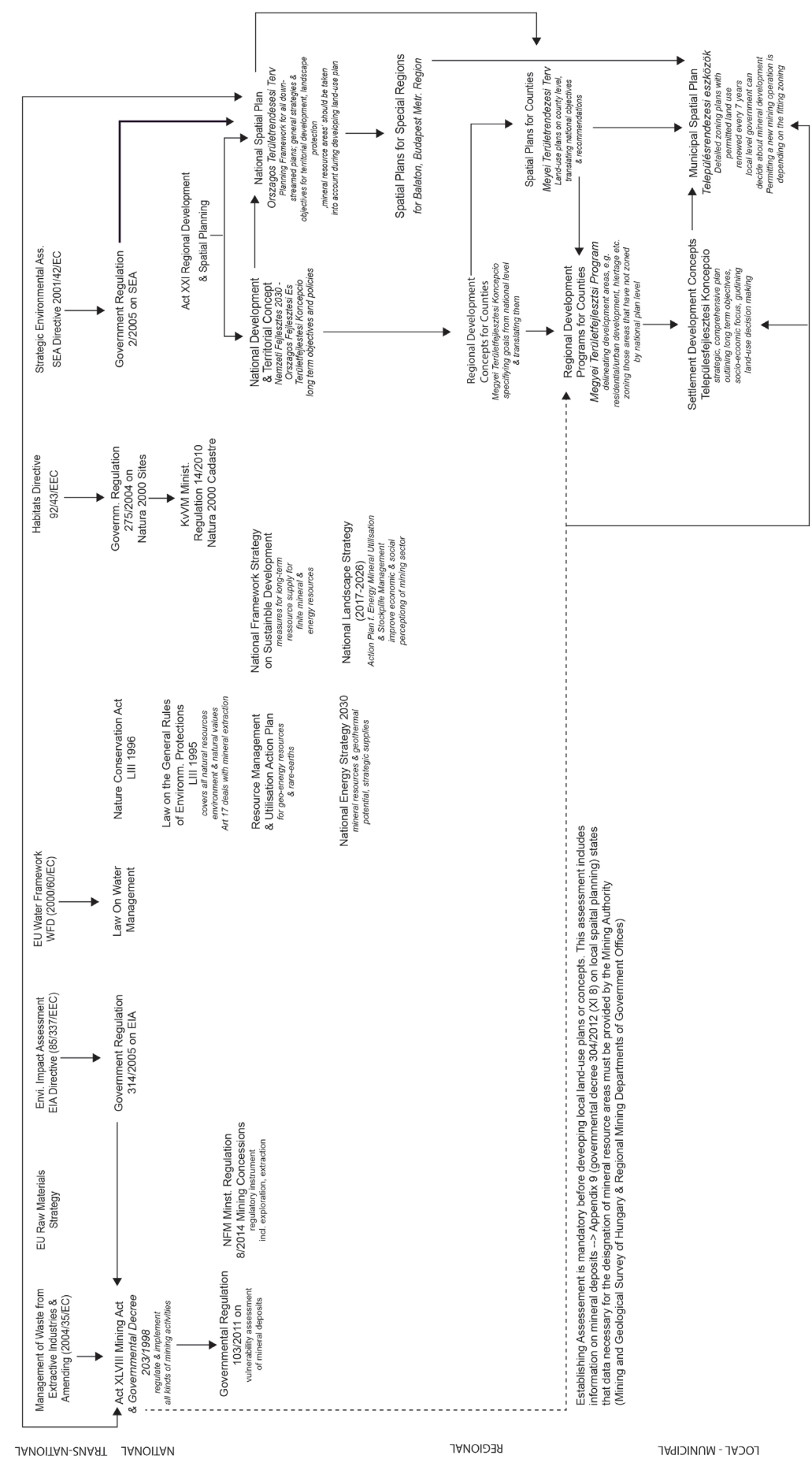


Figure 5: Policy Network Hungary; Author: Katharina Gugerell

3.5 IRELAND

Levels of Government

In Ireland, three levels of government exist: i) the national/central government and ii) local governments (32). These two levels are linked by Regional Assemblies. At the national level, two main organisations are in charge for land-use planning: the Department for Housing, Planning, Community and Local Government (DHPLG) and the Planning Appeals Board (An Bord Pleanála). DHPLG is responsible for the legislative planning framework and the National Planning Framework (NPF). An Bord Pleanála is the forum for arbitration and conflict resolution in which decision-making by planning authorities is reviewed upon applicant's or appellant's request. The Department of Housing, Planning and Local Government is responsible for the implementation of the NPF. The NPF is supported by the National Development Plan 2018-2027, which directs public investment on the ground.

Regional Assemblies coordinate and support strategic planning and sustainable development. They develop Regional Spatial and Economic Strategies (RSES) that are reflective of the objectives of the NPF. However, local authorities and their council play a core role in the land-use planning system: the local councils prepare the local County or City Development Plans (CDPs), Local Area Plans (LAPs). Other strategies or assessments are prepared as part of the CDP, such as Landscape Character Assessments. The Local Councils are complemented by Local Community Development Committees (LCDCs; established in 2014) engaged in the development of Local Economic and Community Plans (LECPs) in collaboration with other stakeholders and actors to ensure a successful implementation. Also, in terms of mining the county council plays a crucial role: local planning authorities make the decision whether a development should get consent.Mining policy is prepared by the Department of Communications, Climate Action and Environment (DCCAE) and adopted by the Government. Legislation is prepared by the DCCAE and the Houses of the Oireachtas (the Irish Parliament and Senate). The Office of the Attorney General provides guidance on legislation and indirectly on policy. The implementation and execution of the legal framework the Department of Communications, Climate Action and Environment is in charge.

Mineral Resources and Planning

The Minerals Development Act 2017 is the legislative framework that governs activities and actions around minerals resources and permitting. The legislation does not cover all minerals. Currently there is no policy on mineral resources adopted or in preparation.Mining and quarrying are part of a generic group 'extractive industries. Policies addressing 'extractive industries' are often embedded in economic development strategies as part of the CDP or are considered parts of rural enterprise or rural industries.

Land-Use Planning and Land Policy

The spatial planning system is organised hierarchically, where each level must regard to higher level policies and plans. The Planning and Development Act 2000, as amended, sets out the legislative framework for land-use planning and it is complemented by the Planning and Development Regulations. The National Planning Framework 2040, NPF (replacing the National Spatial Strategy NSS). The NPF is the guiding strategy for spatial development: one policy objective (N°23) addresses rural development through the sustainable and economically viability facilitated extractive industries, bio-economy and accelerating other sectors and at the same moment protecting the natural landscape and built heritage that are vital for rural tourism. It addresses the safeguarding of Irelands abundant natural and environmental resources through the sustainable management of water, waste and environmental resources. At regional level Regional Spatial and Economic Strategies are prepared, which will replace the Regional Planning Guidelines.

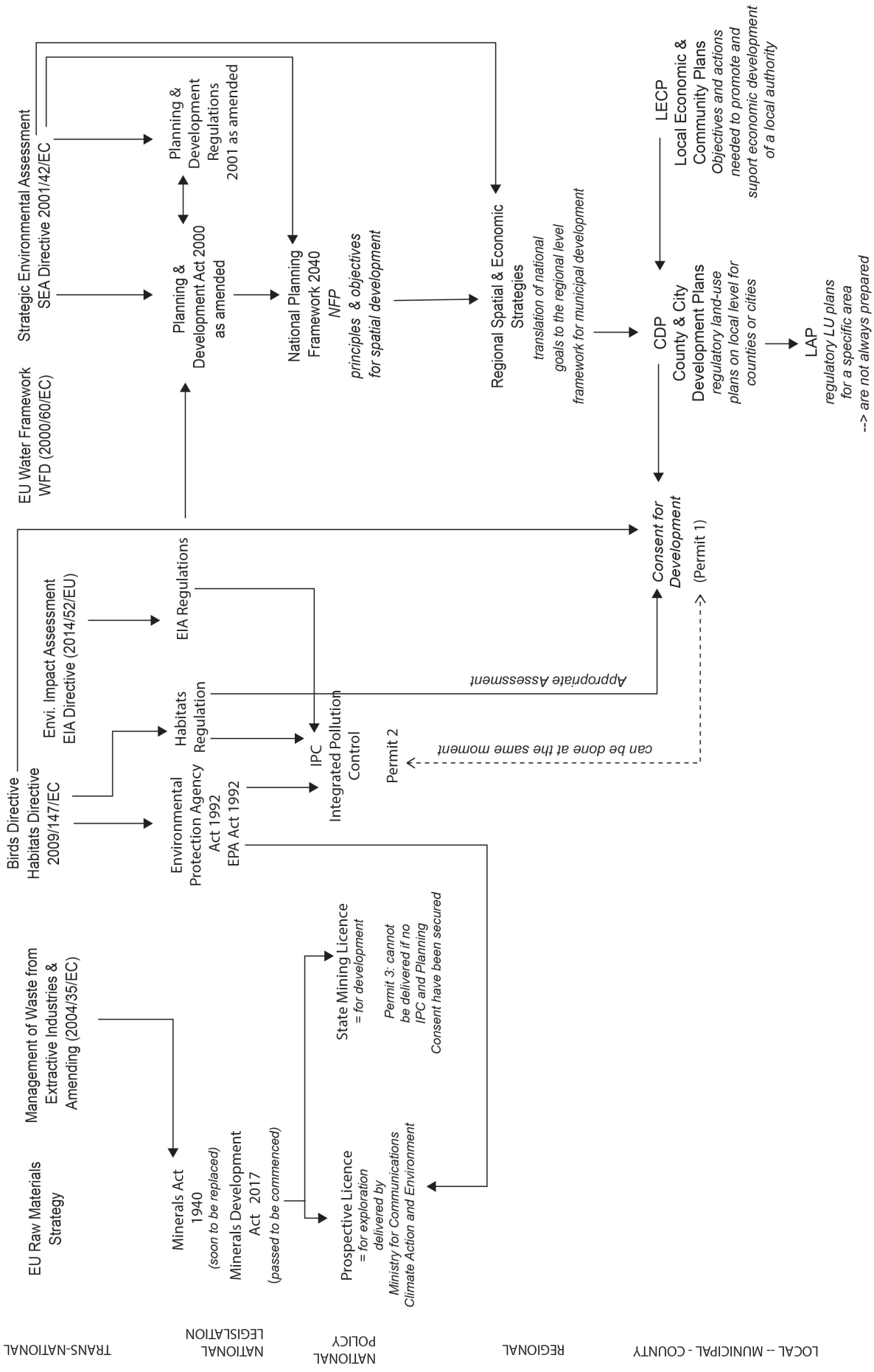


Figure 6: Policy Network Ireland; Authors: Sybil Berne, Gerry Stanley, Katharina Gugerell

They respond to the National Planning Framework and translate the generic objectives from the national to the regional level. They build the framework for planning instruments at County level.At County level, Local Economic and Community Plans (municipalities) and County and City Development Plans are prepared and adopted. The LECPs address social, economic and community development on local level, while the County and City Development Plans are statutory land-use plans for counties or cities. Local Area Plans may be prepared for certain areas. These would have regard to the CDP.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

In general, the sustainable use and management of mineral resources may be addressed in all levels of government and adjoining plans and policies. The NPF encourages the sustainable use and management of mineral resources but there are no zoning types or policies or planning tools in place for safeguarding and protecting mineral resources.

Valuation and Weighing of Different Land-Use Options

The valuation of mineral resources is based on economic evaluation. Economic valuation is also part of the viability studies within the permitting process, already from early stages onward. Companies describe that a) financial viability is assessed against ecological and social costs which can drive the economic development and viability of a project. Furthermore, financial models are developed for economic assessment. PERC and JORC code are used for valuation. Weighing mineral land-use against other land-uses is taking place in the project development process, but it is not through land use designations.

From the planning perspective, mineral resources are integrated as part of the land-use planning process. The use of land for mineral extraction and its adjoining benefits and costs are weighed against other local and/or regional priorities on a case-by-case basis. Next to spatial questions also regional development and stimulating economic development: “From a planning point of view, the County Development Plan is the starting point. It is fairly encouraging of the use of mineral resources. But the assessment is done on a case-by-case basis” (PA2, 3.18) and “Our county is very agricultural, so new economic opportunities would be welcome and therefore weigh heavily in the balance in the assessment. Each application is assessed on a case-by-case basis – so the weighing of the policies will depend on the case” (PA1, 3.18). Confronting the proposed local development with the objectives and higher-level plans are mentioned as the first step in the decision-making procedure within the planning framework.

Core reasons and values mentioned in the interviews that drive decision making and weighing different land use options are nature (PA1, PA3), zoning (PA1), landscape (PA2), environmental impacts (reversibility) (PA3), economic impacts (PA3) and emissions (dust, noise) (PA3).

Governance Mechanisms: Horizontal and vertical coordination

Vertical coordination in Ireland targets the compliance of different levels of plans: the Regional Assemblies is one official body that is taking a central role in ensuring compliance of local plans with the Regional Spatial Economic Strategies. If compliance is not given with higher-level policy, the Minister of Housing, Planning, Community and Local Government can direct planning authorities’ and can act. Horizontal coordination on the micro level is provided by interdisciplinary teams including planners, engineers and other technical staff (geologists are often missing) involved in the planning process and cooperation with other (“more experienced”) planning authorities’, if land-use and planning is confronted with mining questions. Institutionalised horizontal coordination appears very modest to not existing.

3.6 Italy

Levels of Government

Italy is organised in four levels of government: state (national), regional, provincial, and municipal (local). Though the country is based on a unitary model, the land-use planning systems is a decentralised one, resting on the shoulders of the regions. The regional governments are legislating the legal framework governing the planning process. Regional legislation is providing the framework for structuring the planning processes of down-streamed levels of government. In collaboration with the national level (e.g. Ministry of Cultural Heritage and Tourism) the regional governments are preparing land-use plans; in some regions the provincial parliaments prepare provincial plans that are steering and coordinating land-use planning process on municipal scale and across municipalities. The municipalities and municipal councils are the main players regarding decision making in land-use planning.

The national level prepares the legislative framework governing the mining sector. Mineral and raw materials are also embedded on national level: The Ministry of Economic Development (MISE) is responsible for the policy design of mineral policy and it is also responsible for the implementation of the policy. On regional level, legislative framework is set up by the regional governments, which are also preparing regional sectorial policies for mineral resources. Authorisation and concession are issued by the Ministry of Industry for energetic mineral, for others competences are on regional base.

Mineral Resources and Planning

The primary legal basic of mineral extraction activity in Italy was the Mining Law (Royal Decree) No. 1443 of 1927 which divided minerals into two categories (Article 2): ‘first’ and ‘second’ category. ‘First category minerals’ are under public domain; they include energy minerals (except peat), metallic ores, non-metallic ores of significant industrial importance such as salt and potash, barites and fluorspar, gemstones, garnet, corundum, leucite, fluorite, barium and strontium minerals, talc, asbestos, cement marl and lithographic stones. Rights to marine sand and gravel also belong to public domain. ‘Second category minerals’ are extracted in quarries and include peat, materials for building, road and hydraulic constructions (except marl for cement), quartz and silica sand, molars stones, sandstone, igneous rock, limestone, chalk and dolomite, sand and gravel, silica sand, common clay, and other industrial minerals not included in the ‘first category minerals’. They are in the willingness of the private holder of the authorization and with the land availability. With the Legislative Decree no. 616/77 (related to second category material), the Legislative Decree 112/98 and the Constitutional Law 3/2001 (related to first category material) all the competence related to planning and management passed from State to Regions. Other important national laws in Italy are Presidential Decree 128/59 (Police rules for mining and quarrying), Legislative Decree 152/06 (legislative framework applicable to all matters concerning environmental protection including EIA, SEA and IPPC), the Law of 23 December 2000 no. 388, Art. 114 which provides a special plan for remediation and environmental recovery of mines, Legislative Decree no. 624/1996 (health and safety of workers) and Legislative Decree no. 117/08 (transposing Directive 2006/21/EC and important for the management of extractive waste).

Italy has a decentralised regime and each region has its own relevant regional laws (RL) regulating extraction and environmental permitting procedures. The Emilia Romagna Region was one of the first region in Italy to implement a mining law and to develop a wide-ar-

ea mining planning; some important regional laws are RL of 18 July 1991, n. 17: rules on mining activities, RL 3/99 delegating to the Province and Municipalities the authority for mines and quarries, RL 4/2018 for EIA, and RL 24/2017 on Spatial Planning. The situation of mining planning in Lombardia is similar to Emilia-Romagna, but in other Italian regions the rules can be really different: for example, in Veneto, Lazio and Toscana the principal mining planning is made by the Region instead of the Province

Land-Use Planning and Land-Use Policy

At the regional level the Regional Territorial Plan (Piano Territoriale Regionale) establishes the institutional framework outlining regional priorities and objectives that are steering planning activities on lower levels and are steering sectorial policies. Part of the Regional Territorial Plan can be a 'Regional Landscape Plan' (Piano Territoriale Regionale): those plans outline strategies for the landscape and spatial development, including limitations on the type of development or land-use that is permitted in certain areas.One level lower Provincial Territorial Coordination Plans (Piano Territoriale Di Coordinamento Provinciale (PTCP)) are regulating the coordination between municipalities and provinces regarding land-use decision making. They contain a selection of different sectorial policies and strategic plans (for Metropolitan Cities).

At the municipal level two plans are utilised: a) Local Development Plans (Piano Regolatore Generale (PRG) and b) Implementation Plans. The Local Development Plans include local zoning regulations and statutory land-use plans. The Constitutional Reform 2001 diversified the land-use planning system: some regions opted for a single plan (including different plans, such as social housing, settlement plans, etc.), while others have opted for comprehensive plans including strategic guidelines with operative plans.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

In the region Emilia Romagna a mining company can ask a municipal council to change the mining plan interesting a new extraction area. The mining plan is the safeguarding mechanism to secure areas for the exploitation of mineral resources. The province is the institutional level for the decision making in this regard.

In Emilia-Romagna the principal mining planning is delegated to Province, which elaborates the Intra-regional Plan for Extraction Activities (PIAE). PIAE, above all, defines the need for every specific material (clay, sand, gravel, stone, ….) inside the province, this evaluation is based on the statistics concerning building activities and, on the statistics, concerning extraction activities in the past years. When the needs are calculated PIAE also defines the specific areas where all the materials should be recovered, allocating to every area the maximum amount of material that can be extracted. This area is chosen from a list of potential sites mainly by a Strategical Environmental Impact Assessment (VAS), that deeply evaluates all the impacts of the mining activities on the environment (land use planning, geology, underground water, pollution, etc.), in respect of the economic and social needs. PIAE also includes the general rules for the exploitation of the resources.

After PIAE is approved every municipality involved in the planning has to elaborate a local Plan for Extraction Activities (PAE). The PAE, which is part of the instruments of land use planning of the municipality, gives details about the areas and the rules defined by PIAE and can add further areas in a range assigned by PIAE. When PAE is in force every area included requires an authorization to begin its activities. The authorization is granted by the

ITALY

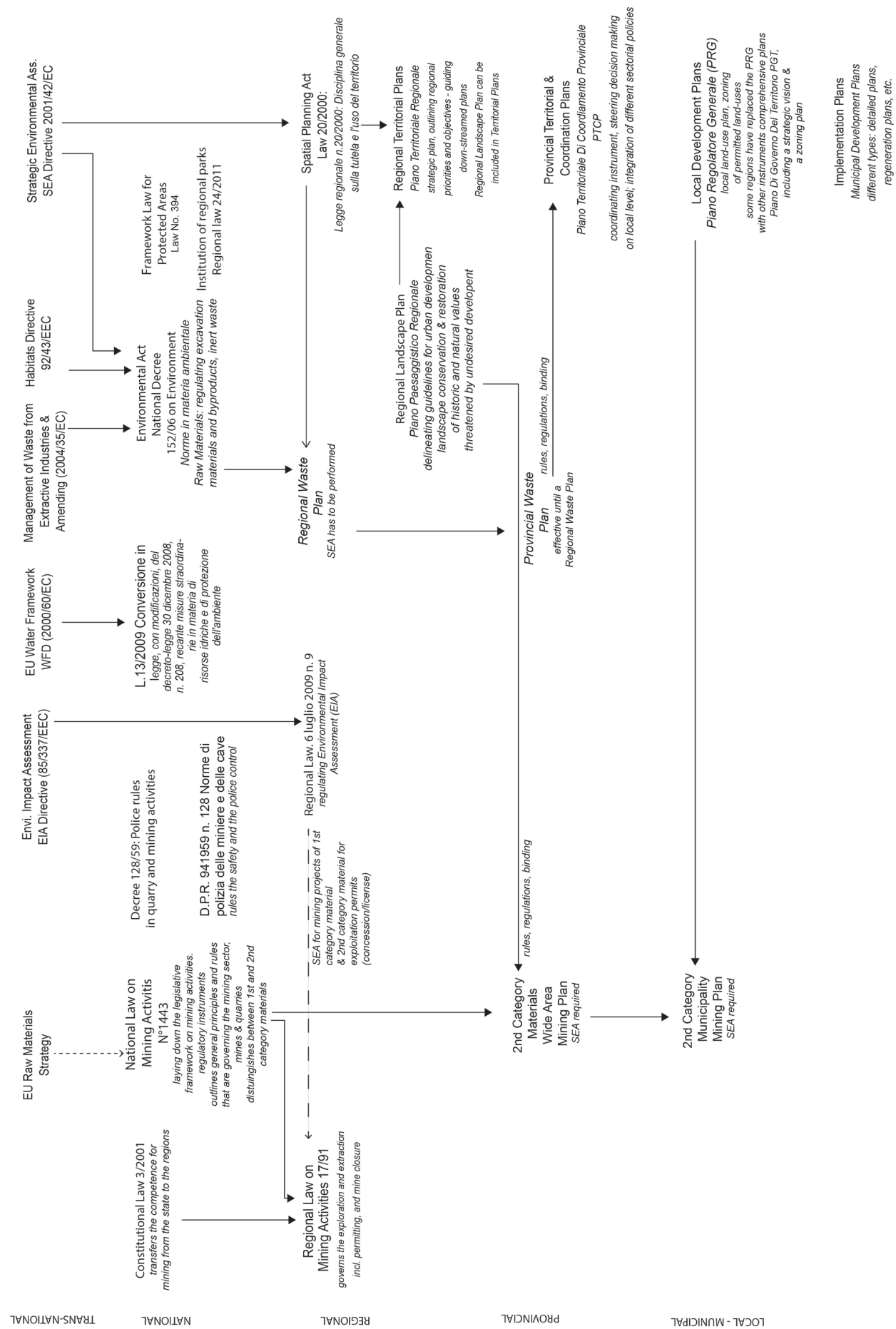


Figure 7: Policy Network Italy; Authors: Katharina Gugerell, Christian Marasmi

municipality, usually for a period of five years. The release of this authorization is subject to the Environmental Impact Assessment (VIA), which is more specific than VAS and evaluates all the aspects of the project of exploitation (technical, financial, environmental, land use planning, etc.). The overall project must also contain the project for the recovery of the area and the financial guarantees in case of failure of the mining company. The controls on the mining activities are operated by different subjects for different aspects of the activity: the controls about health and safety of the workers and the hygiene of places and facilities are made by the sanitary local authority; the controls about police rules for mining and quarrying are made by the Civil Protection Agency (delegated by the Region) and finally the controls about the respect of the projects and the amount of the materials extracted are made by the municipality.

The mining company pays an economic burden on the extracted material depending upon the material. 80% of the burden goes to the municipality, 15% to the Province and 5% to the Region, which uses this money for activities concerning recovery of abandoned quarries, studies and development of instruments for the management of data deriving from the mining activities.

Governance Mechanisms: Horizontal and Vertical Coordination

Different governance mechanism for vertical and horizontal coordination in land-use planning are in place: At the State-Region-Conference national and high-level interests and objectives regarding spatial development and land-use planning, but also on environmental issues, are negotiated and bargained between the national and the regional level. On local level so called Service Conferences are coordinating decision making related to land-use planning and regulatory decision making that demand the approval from different agencies or organisations. There are no particular horizontal coordination mechanisms that are linking the mineral- with the land-use policy stream.

Valuation and Weighing of Different Land-Use Options

The value of mineral resources is described by economic, geological and environmental values. The land-use planning processes do not include an economic valuation of areas with mineral land-use, but is factoring in the actual demand and quantities needed. Economic valuation is considered in the business plan. In the planning process for a new mining plan different land-use options must be weighed against each other, especially the weighing of the existing against ones. “It is necessary to analyse benefits and consists for the communities and environment evaluated when designating areas for minerals;” Nature protection, Natura 2000 and closed mining areas on private land and future public uses are perceived as land-uses that are conflicting with mineral extraction. In policy making natural resources like watersheds, forestry/woodlands and archaeological sites play a pivotal role.

3.7 NETHERLANDS

Levels of Government

The Netherlands is organised as unitary state with three levels of government: national- (state), provincial- and municipal level. The state is providing the legislative framework that also regulates the planning system. Other issues of national importance, in particular water management, but also infrastructure, transport, cultural and natural heritage are embedded on the national system and governed by national or regional state authorities such as the Rijkswaterstaat or the Dutch Water Boards (Waterschappen).

The Provincies (provinces) are preparing rural development for rural areas, coordinate the waterboards and are supervising the municipalities regarding spatial development. Municipalities are the core actors regarding land-use policy making: they prepare municipal land-use plans. Important actors next to the governmental authorities are the 23 Water Boards, managing the water related infrastructure and must be consulted in the preparation of land-use plans. In general, national and provincial governments can override municipal planning decisions if they are contradicting higher level interest.

For the mining sector the Ministry of Economic Affairs and Climate are responsible for the preparation and development of policies. The National Mines Inspectorate is an integrated but independent agency of the Ministry: it is responsible for the excavation of minerals and energy in the Netherlands; while TNO (Toegepast Natuurwetenschappelijk Onderzoek, Dutch Organisation for Applied Scientific Research) is providing technical expertise.

Mineral Resources and Planning

On national level the Mining Decree (Mijnbouwbesluit) is regulating the Dutch mining sector; it is complemented by the Mining Act (Mijnbouwwet) steering the exploration and exploitation of minerals and other resources of organic origin (but not certain gasses, clay and sand) and the storage of the substances deeper than 100m below the surface as well as the production of geothermal deeper than 500 m below the surface. The Excavations Act (Ontgrondingenwet) governs the quarrying and dredging of superficial deposits.

The legislation is complemented by Dutch Raw Materials Strategy. The provinces are in charge of the implementation is monitored by the Ministry of Economic Affairs and Climate and by the National Mines Inspectorate. The goals and objectives of the Raw Materials Initiative are reflected in that strategy. Safeguarding mechanism to protect mineral deposits for the future extraction are not existing.

Land-Use Planning and Land Policy

The Spatial Planning Act (Wet Ruimtelijke Ordening) legislates the regulatory framework and governs all down streamed plans and strategies. Adjacent legal frameworks that are steering land-use are Environmental Management Act, Water Act, Nature Conservation Act and the Flora & Fauna Act, and the Environmental Protection Act. Under discussion is currently the so called Omgevingswet (Environment & Planning Act), which will be a one-stop-shop for planning and environment. The aim is to streamline the entire land-use planning processes, which also includes the mining sector. By developing an integrated tool, Dutch government anticipates eased process for industry, stakeholder and governmental agencies and thus contribute to a more efficient land-use planning process. The Omgevingswet is also a response to a strongly diversified planning system with a great number of

THE NETHERLANDS

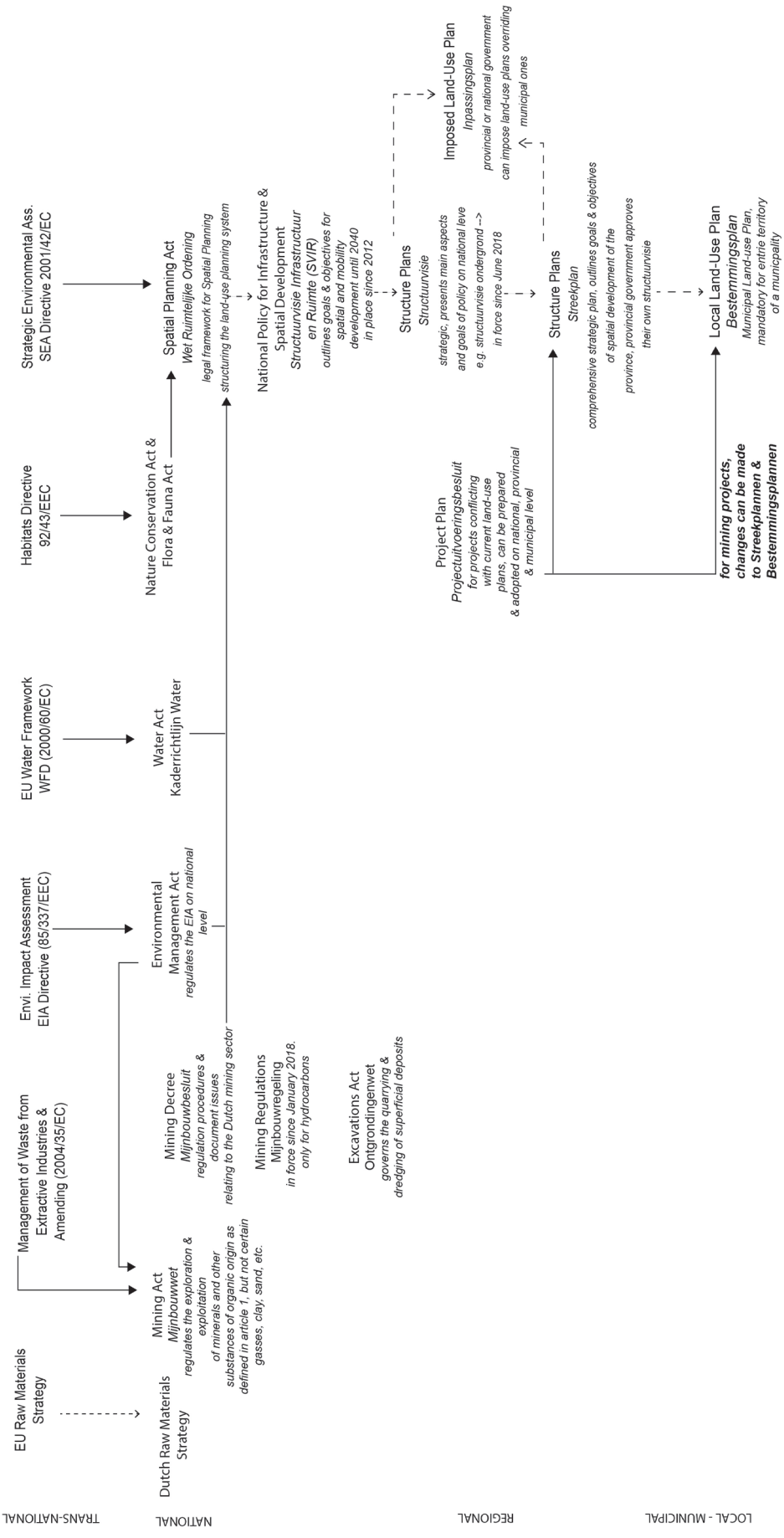


Figure 8: Policy Network The Netherlands; Authors: Katharina Gugerell, Theo van Sluis, Anouk Cormont

regulations and frameworks that are governing exception of regulations.

On all three levels of government strategic and operational land-use plans are prepared: strategic plans (Structuurvisie) are outlining the general objectives, development goals and policies to attain those goals. Special structure plans are developed for particular challenges. The former Nota Ruimte (replaced by SVIR) outlined the spatial development of the Netherlands until 2020.
Land-Use plans are zoning plans identifying the permitted land-use. Land-use plans are binding for land-owner and public authorities, but exceptions are possible and comparatively easy attainable. Project Plans are utilised to steer developments that are initially contradicting land-use plans. Sectorial plans for water management, environmental planning and nature protection are complementing and impacting spatial development.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy
The Structuurvisie Ondergrond (June 2018) addresses the sustainable, safe and efficient use of soil and underground, advocating a balance between utilisation and protection. However, there are no safeguarding mechanism existing for the protection of mineral deposits for utilisation in a later stage. There are no mineral plans, but the extraction and resources are monitored at the national level by TNO. For mining projects, the Streekplan and Bestemmingsplan can be subject to change.

Governance Mechanisms: Horizontal and Vertical Coordination
In Planning provincial planning committees are a multi-level platform for discussion and negotiation. Ordinances on higher level might be issued to ensure compliance of lower level plans and strategies. Additionally, there is a legal requirement for horizontal coordination, to coordinate between the involved authorities and the responsible levels of government

Valuation and Weighing of Different Land-Use Options
Valuation of mineral resources is based on economic, social, environmental and safety factors. Especially in relation to water safety: mining one of the answers to reduce flood risks along rivers.

3.8 NORWAY

Levels of Government

Norway has three levels of government: national level, regional level (counties) and the municipal level. The national government is responsible for the legislative framework related to land-use planning. It creates the institutional framework and framework policies that are building up the institutional design.

The Ministry of Local Affairs and Modernisation is the planning authority on national level, but it is in general not involved in operational actions and daily planning practise. Next to the Ministry of Local Affairs and Modernisation the Ministry of Climate and Environment plays a crucial role, since it is responsible for the designation of protected areas and environmental values. The institutional framework allows it, that the national level submits plans and propositions to the local or regional government to integrate them in the preparation of their plans, proposals and policies. The national level (national government) is also responsible to ensure compliance of lower level plans with national objectives and has the right to object.

Regional level (County Governments) are the planning authorities on regional level, responsible for the adoption of regional plans and strategies that are advocating topics of regional importance. The county governments are also supervising and auditing plans and strategies of the municipal level. The municipal governments are the most important actors and the main planning authority in the Norwegian land-use planning system. In case of objections to local plans and proposals the regional level (County Commissioner) is responsible to coordinate negotiations for a decision making. If no consensus is reached, the decision making goes up to the national level (Ministry of Local Affairs).

For mining and mineral resources, the Ministry of Industry and Trade developed the ‘Strategy for the mineral industry’ in 2013, which was not officially adopted. Subsequent policy documents related to mineral resources are mainly prepared by the ruling parties of the national government. The Mining Directorate on national level plays an important role for checks and balances in land-use planning: they have the right to object if resources of national interest are not considered sufficiently in local land-use planning.

Mineral Resources and Planning

The Mining Act builds the legislative framework that governs mining activities, permitting and the organisation of the institutional design of the policy stream. The mining act covers all mineral resources except secondary resources and hydrocarbons (petroleum and natural gas). No mineral policy is adopted on national level yet. In 2013 the Norwegian Government issued a comprehensive policy, the Strategy for the Mineral Industry, but was never officially adopted by the government. It was designed strategic document aiming to increase the country’s attractiveness for the mineral based industry, manage mineral resources and deposits for national and regional importance including safeguarding, create an accountable framework and thus support possible investments.

On lower territorial scale, some regions and municipalities have implemented strategic, sectorial policies to stimulate activities in the mining sector and facilitate resource management in the particular regions (e.g. Akershus County, Rogaland County – Jaeren Region, Buskerud-Telemark and Vestfold Counties (2017-2019), Finnmark County (2015-2019),

NORWAY

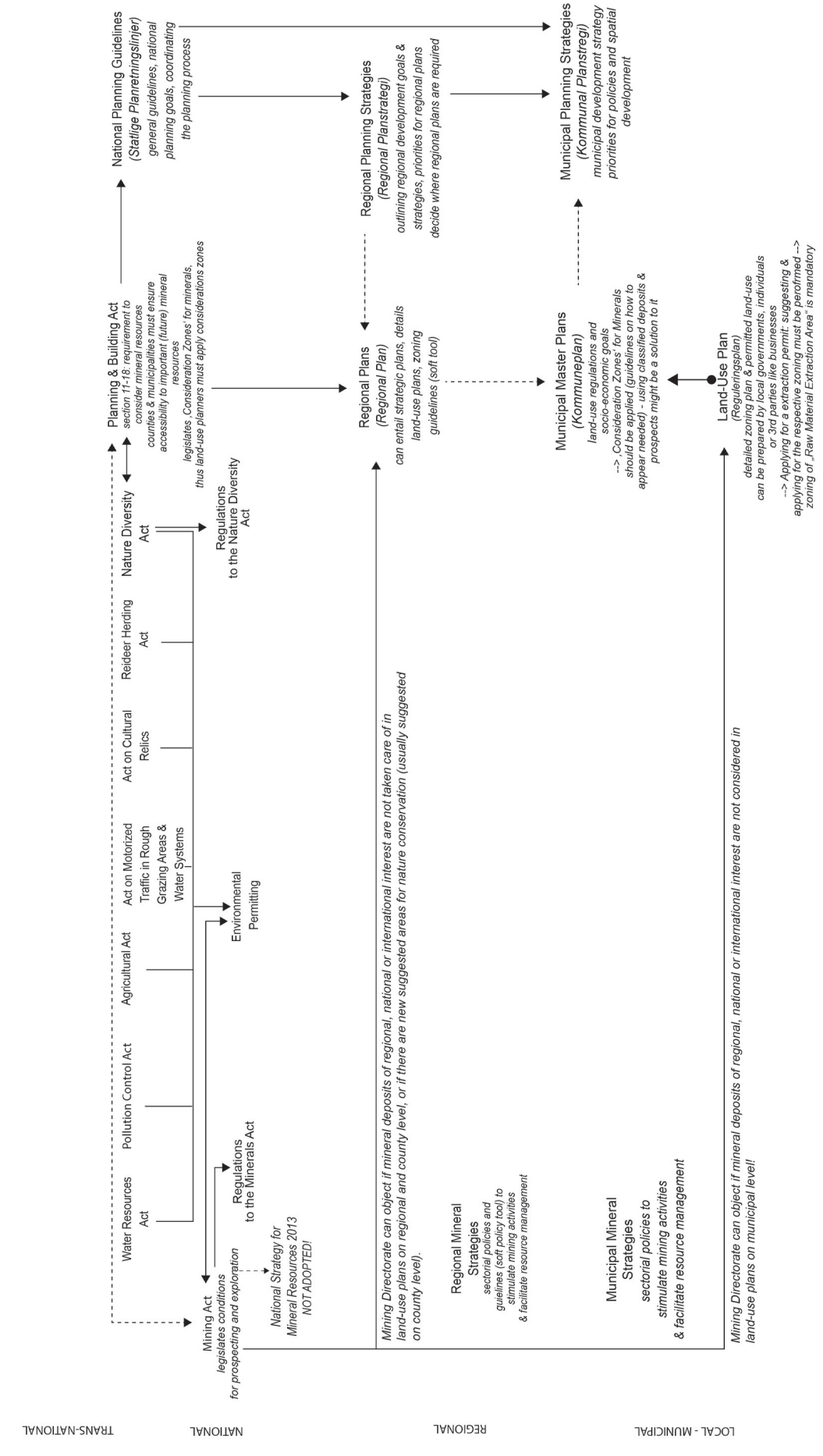


Figure 8: Policy Network Norway; Authors: Katharina Gugerell, Agnes Raaness

Askvoll and Naustdal (2018) Municiaplities, Nordland Coutny, Beiarn, Bodø, Fauske, Gildeskål, Hamarøy, Meløy, Saltdal, Steigen and Sørfold municipalities). Those sectorial policies are strategic guidelines with the character of a guideline.

Land-Use Planning and Land Policy

The Planning and Building Act is the legislative framework that organises and structures the land-use planning system: section 11-18 outline the requirement to consider mineral resources in planning activities on county and municipal level. Furthermore, it establishes the county's and municipalities' responsibility ensuring the (future) accessibility to important mineral resources. Land-use planning practises and plans are impacted by the Act for Biodiversity and Agricultural Act, which are restricting or limiting certain land-uses. Norway does not have a specific national policy on land-use planning. The National Planning Guidelines are general guidelines outlining governance mechanisms and coordinative functions that structure the relations between the different governance levels.

On regional level the land-use planning consists of a strategic and an operational part: Regional Planning Strategies (Regional Planstrategi) are regional development strategies, that are outlining development aims, objectives and priorities based on socio-economic trends and general policy objectives. They remain strategic and are footloose, that means they do have a particular spatial dimension. The Regional Planning Strategies are complemented by Regional Plans (Regional Plan). Those plans are indicative, non-binding plans, describing strategic elements and outline planning provisions and land-use for specific regions. They provide guidance for the local level. Also, land-use categories used for those plans are not legislated or outlined by other institutional frameworks.

On the municipal level three land-use planning tools are in place: i) Municipal Planning Strategies (Kommunal Planstrategi), ii) Municipal Master Plans (Kommuneplan) and iii) Land-use/Zoning Plans (Reguleringsplan). The most powerful planning instrument on local level is the Zoning Plan, since it has the power to override the Municipal Master Plan. Zoning plans are determining permitted land-uses and thus, are also protecting areas from particular developments. Zoning plans can be prepared by local authorities, but also private actors and third parties (e.g. businesses) can prepare and submit zoning plans. Municipal Master Plans are the main planning instrument on local level, integrating different policy streams and interests on municipal level.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

Land-use and minerals meet at different points in the institutional design. The most important convergence appears on local level: to receive a permit for mining operations (extraction) the particular area must be zoned with the permitted land-use in the municipal zoning plan. If that is not the case zoning plans must be prepared and adopted prior to the permitting phase. An approved zoning plan is a prerequisite for the permitting process. Private companies can prepare and submit proposals to the local authority; however – the local planning authority is responsible for the decision making. Consequently, all operated deposits are implemented and protected via the land-use planning system

The designation of 'Consideration Zones' are another mechanism where land-use planning and minerals planning meet: The Planning and Building Act establishes the obligation to

consider mineral resources in land-use planning. The Norwegian Geological Survey provides the necessary data to meet that obligation, by designating so called ‘Consideration Zones’ which must be implemented in the planning instruments on municipal level. Consideration Zones are areas with quantifiable resources that are classified on the levels of national and regional importance. Prospects (areas with un-documented or not sufficiently documented) are currently not embedded in the land-use planning system.

Governance Mechanisms: Horizontal and Vertical coordination

Coordination is provided by the obligation of mutually sharing information on planning processes and policies in the policy stream of planning. Vertical coordination is triggered by meetings between regional and local authorities, as well as checks and balances and authorisation processes aiming to provide coherence between the different levels of governance. Horizontal coordination mechanisms are illustrated by cross- municipality cooperation for land-use planning purposes.

Valuation and Weighing of Different Land-Use Options

Valuation of mineral resources are based on their geological, economic value, their importance for infrastructure and factors such as criticality and value chains. If deposits are important for national, regional or local infrastructure (such as building roads, land use such as residential development) that characteristic is included in the valorisation . Hence, the case shows the link between local land-use options, land-use development and valuation of mineral resources. In the land-use planning process mineral deposits are weighed against other land-use planning options, mainly on municipal level. Respondents in the case study addressed reindeer herding, nature conservation, cultural heritage, tourism and agriculture and indigenous activities as competing or conflicting land-uses.

3.9 POLAND

Levels of Government

Poland runs 4 levels of government: the national level, followed by the regional level (Voivodeship), intermediate level (Powiat) and municipal level (Gmina). Regarding land-use the three core levels are the national, regional and municipal one.

The national government is responsible for the adoption of the national legislative framework, the Spatial Planning and Development Act. It is the main framework that organises and regulates the responsibilities of the different levels, authorities' duties in terms of spatial planning and planning procedures. The regional scale (Voidvodeship) is responsible for the development and preparation of Regional Spatial Plans. The intermediate level only plays a minor role in the Polish spatial planning system: they are issuing indicative guidelines and are responsible for planning permissions. The municipalities are the main actors in spatial planning: they are preparing and adopting Local Spatial Development Plans, which are the only binding zoning regulations that are outlining the permitted land-uses. The Head of the Community, mayor or president of a city is deciding on the adoption of a land-use plan.

Mineral Resources and Planning

The Geological and Mining Law (2011) provides a legal framework for the documentation of mineral deposits, which are one data basis for municipal planning processes. However, the act safeguards exploited deposits, by organising the rational use of primary and accompanying minerals.

Poland does not have a national policy on mineral resources yet. Preparation for the development of policy on mineral resources has started in 2016 and is currently under consultation (approval is expected by the end of 2018), with a particular focus on 'strategic deposits' as one of its core elements. On national level mineral resources are addressed in the National Environmental Policy for 2009-2012 and its 2016 Outlook. The focus on the implementation of principles in sustainable development, the policy outlines strategic goals towards the consumption of raw materials and industrial products and their long-term economic, social and political benefit. It also outlines mid-term objectives, including the i) improvement of legislation on the safeguarding of mineral resources and ii) safeguarding of undeveloped mineral deposits via spatial planning processes.

Land-Use Planning and Land Policy

The Polish land-use planning system is a hierarchical system: lower levels of planning must ensure compliance with higher levels such as the regional and national ones. On national level the National Spatial Development Concept 2030 (NSDC 2030) is the strategic concept outlining the national objectives, among others increased competitiveness and employment, increased efficiency of the state and long-term social, economic and territorial cohesion, preservation of Poland's high-quality natural environment and landscape and safeguarding energy security. The NSCDC imposes the obligation to implement possible requirements and recommendations for the delineation of functional areas, such as future strategic deposits The NSDC 2030 is complemented by the National Spatial Development Policy, which governs the NSDC's implementation. A new spatial development law is under preparation. So, in the future system of national land use policy can change considerably.

POLAND

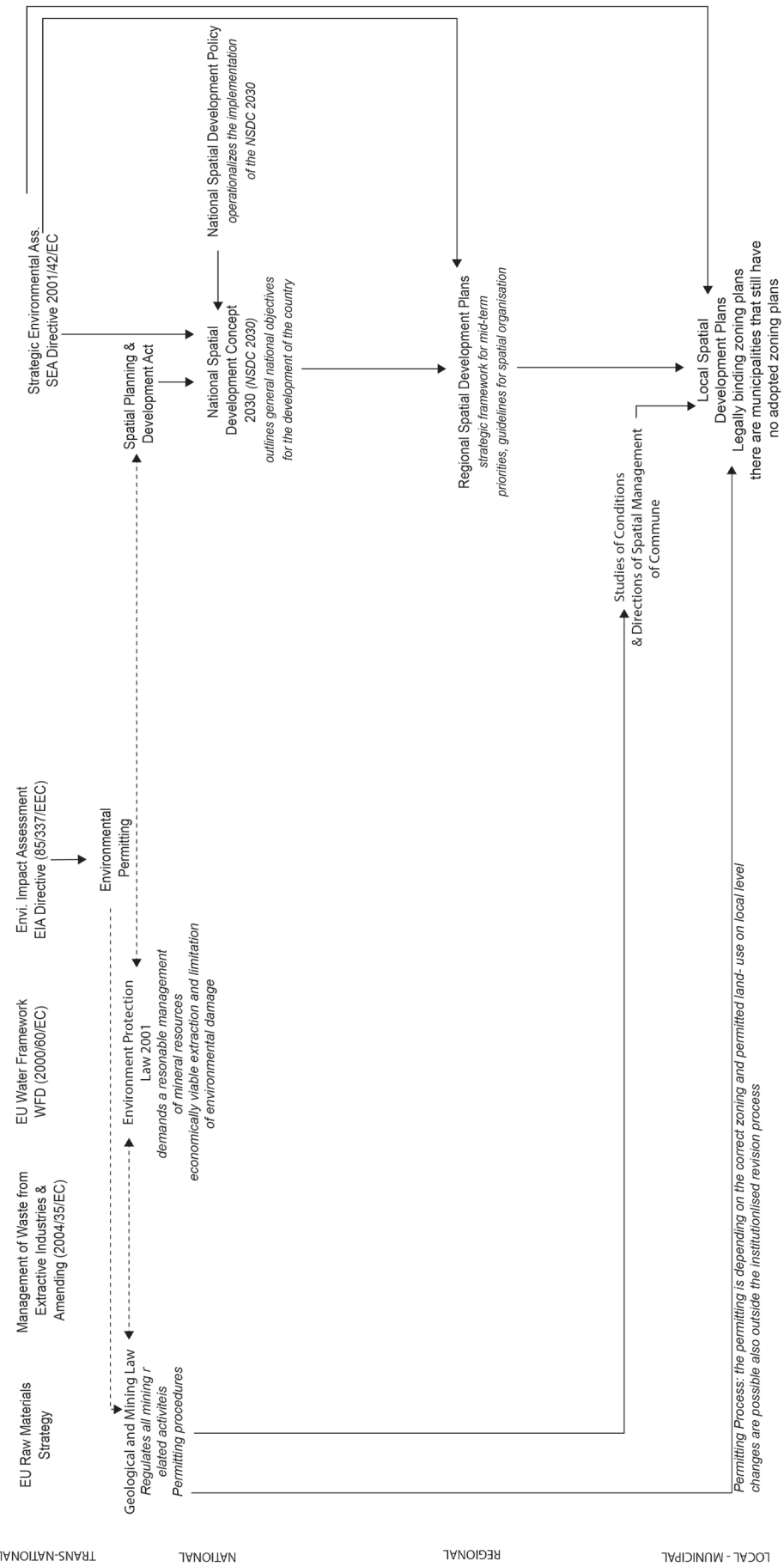


Figure 9: Policy Network Poland; Author: Katharina Gugerell

In Poland the municipal level is the core one for land-use planning: the locally prepared and adopted Local Spatial Development Plans (Miejscowy Plan Zagospodarownia Przestrzennego) are the only binding, regulatory plans. However, up to date not all municipalities have adopted land-use plans and binding zoning plans. Compliance with higher level, indicative guidelines and plans is obligatory but there is no mechanism in place to monitor or check compliance with higher level plans (OECD 2017)

Valuation and Weighing of Different Land-Use Options

Valuation of mineral resources is based on geological, economic, social and environmental value. The societal benefits and costs of mineral extraction are not valorised and conveyed to the stakeholders. It only happens when the entrepreneur plans to start mining activities in a given area. These are activities carried out by the entrepreneur, not by the municipality.

Governance Mechanisms: Horizontal and Vertical Coordination

Vertical co-ordination of spatial planning policies and instruments is institutionalised via a hierarchical relation between the different spatial layers involved. Compliance of lower level plans with higher level plans, policies and strategies is mandatory. Local Spatial Development Plans are authorized by the regional government (Voivodeship). Hence: vertical coordination is implemented in the land-use planning system via a cascading model, obligatory compliance with higher level plans and check and balances.

Institutionalized horizontal links, that are merging the mining and land-use policy stream are embedded on local level during the preparation of the Local Spatial Development Plans (Miejscowy Plan Zagospodarownia Przestrzennego). The preparation and adoption process of the Local Spatial Development Plan demands the involvement of representatives of different departments of public administration. For the development of municipal spatial plans, geologists (or other person with relevant knowledge) might be involved in the process, depending on the willingness of the municipality. However, all planning documents (regional, local level) are reviewed by regional geologists and district geologist to ensure horizontal integration of policy content.

3.10 PORTUGAL

Levels of Government

Portugal is a unitary state with two levels of government, the national government and the municipalities. Besides, two autonomous regions (Islands of Azores, Madeira) exist. The government legislates the legal and institutional framework that governs the land-use planning system; it also adopts one comprehensive and several sectorial policies on national level. Land-use and land-use decision making is impacted by other state agencies and authorities, such as the Institute of Architectural and Archaeology Heritage dealing with heritage protection, designation of Natura 2000 areas that are implementing the Habitat Directive. Municipalities are responsible for local land-use planning, preparing and adopting (Inter-)Municipal Director Plans which is the core instrument for municipal spatial development. On regional level the Regional Coordination and Development Commissions are responsible for the preparation of regional plans and adopted by the national government.

Also, for mineral resources, the state level is responsible for the legislative framework. National policy making is guided by the Direção-Geral de Energia e Geologia (DGEG) complemented by other state authorities such es the National Land-Use Authority (DGT), Environmental Protection Agency (APA) and the Nature and Forestry Conservation Agency (ICNF). The DGEG also plays a core role in the policy implementation on all levels of government; on municipal level the DGEG is complemented by the municipal authority.

Mineral Resources and Planning

The Mining Law (Lei54/2015) covers all mineral resources. It legislates the governance of the mining sector and the condition to access mining rights. It outlines several guiding principles for the management of mineral resources, including safeguarding of mineral deposits, which is fixed as a state duty. The National Strategy for Geological Resources (NSGR-MR) (RCM 78/2012) aims to promote the mining sector to i) sustainable management that is sustainable at economic, social, environmental and territorial level; ii) support GDP growth and support national economy by providing sustainable supply of essential raw materials; iii) support regional development by ensuring economic revenue and local employment as well as local community development.

Land-Use Planning and Land Policy

The major law that governs land-use planning in Portugal is the Law of Public Policy on Soil, Land-Use Planning and Urban Planning. It is the legislative framework that structures the Portuguese planning system. It is closely linked and related to the regulations that are governing Strategic Environmental Assessment, Environmental Impact Assessment, Water Act and the institutions regulating the implementation of the Habitat Directive via the designation of Natura 2000 sites.

The most prominent policy on national level is the National Program of Spatial Planning Polices (Programa Nacional Da Politica De Ordenamento Do Territorio, PNPOT): it is a comprehensive plan on national level (adopted by the National Government) determining strategies for spatial development and the spatial organisation of the country. The policy is obligatory and binding for the local governments and other down streamed agencies that are designing or implementing sectorial policy. On national level the PNOPT is complemented by a set of sectorial policies Special Programs (guidelines, land-use plan) that aim

to protect areas with high environmental or cultural value (e.g. natural parks, archaeological parks).

Regional Programs for Spatial Planning (Programa Regional De Ordenamento Do Territorio, PROT) are comprehensive planning instruments on regional level, outlining social, economic and spatial development. They are linking the national with the local level, by detailing national land-use policies and translating them from generic to specific ones. Established and approved guidelines on the regional level are binding and must be met on the local level. On the municipal level, three plans co-exist: i) the (Inter-)Municipal Director Plans (Planos Diretores Munipais E Intermunicipais, PDM) is the core tool for steering spatial development on local level containing strategic elements and guidelines and land-use plan with permitted land-uses. PDMs can also be prepared in inter-municipal cooperation, which in practise appears more the exemption yet. The planning system allows (small) amendments of the land-use plan within the validity period. If necessary, for smaller part of the municipal territory special land-use plans can be prepared and adopted. Though the PDM should be complemented by two further plans, the Urban Development Plans (Plano De Urbanizacao, PU) and the Local Detailed Plan (Plano de Pormenor, PP) it seems not unusual that the PDM is often the most detailed plan utilised in municipal planning. Pus are providing detailed zoning regulations and not all municipalities have implemented those plans or only fragmentary implemented them. Changes outside the regular LUP periodicity are not possible. PPs (Local Detailed Plans) are urban design plans for particular neighbourhoods: they are of importance since they have the power to override (Inter-)Municipal Director Plans and Urban Development Plans

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

Land-use planning legislation divides land in two type: urban land and rustic (rural) land. Rural land has the carrying capacity for the land use such as agriculture and forestry, exploitation of energetic and mineral/geological resources and industrial usages related to those productive land-uses; natural spaces and spaces with certain cultural or landscape value and land-use for infrastructure or usages like tourism. Land-use planning integrates: i) mining concessions, ii) licenced areas, iii) reserve and captive areas (areas designated by the government for the exploitation of minerals as primary use due to economic interest and national value) and iv) areas that are temporarily designated for mineral exploration.

The local planning authorities have the decision-making power to decide if the exploration and exploitation in rural land that are not classified in the land-use ‘Spaces for the Exploitation of Geological Resources’ or reject projects that go beyond the areas that are delineated by higher legal regulation. There are neither governance nor planning mechanism in place to safeguard unknown mineral resources and such where the economic value was not evaluated yet and thus are not delineated yet. ‘Rural’ zoned areas, even if the designation ‘minerals’ are missing might be available for minerals activities when strategic policy plans either i) indicate that mineral activities are compatible with other land-uses (such as agriculture, forestry, recreation) or ii) do not explicitly exclude mining or quarrying activities from strategic municipal development or land-use plans. Hence, strategic policy visions on municipal or regional development offer an entry point to launch mining activities. If mineral or quarrying activities are not considered in strategic documents, does not mean that they are in general prohibited until the next revision of the land- use plan: smaller amendments

of the valid land-use plans are possible or there is also the possibility existing to prepare special land-use plans for particular areas. That procedures are considered time costly and might need special efforts.

Three different situations can be distinguished: i) Areas, that are primarily assigned for the extraction of resources – linked with other usages that do not compromise; ii) areas primarily signed to renewables or productive land-uses such as forestry or agriculture: those usages do not pose a risk to safeguarding mineral deposits and possible mineral extraction in the future; iii) areas that are institutionalised for environmental protection, nature conservation, recreation or tourism activities, which are weighed less- to incompatible with mineral resource activities and hence institutionally

Governance Mechanisms: Horizontal and Vertical Coordination

The Regional Co-ordination and Development Commissions are a focal point for linking up different policy streams horizontally and also play a role in the vertical coordination of different levels of government. The regional authority also plays a crucial role for the integration of different public interest and the horizontal coordination between different public policy sectors, such as mining/minerals, environment, infrastructure etc; they are also co-ordinating the responsible authorities and are organising the decision making and approval process of land-use planning proposals. In this inter-disciplinary committees, the representatives are meeting, discussing and negotiating municipal land-use planning (strategic, land-use plan). Those inter-disciplinary and interdepartmental committees are considered useful and a success by respondents : joint co-located meetings to discuss the planning issue, long lasting work relationship and trust building among the involved persons were mentioned as important factors that are enabling and supporting horizontal policy integration: “People know each other. We have a good teamwork.” (P. 31.10.2018). Working on spot, discussing the land-use options on spot and weighing different options not ‘at the table’ but ‘in the field’ is considered an important action for weighing different options, negotiating and integrating different policy objectives. In case of special or particular complex problems to be solved, also sub-group meetings are organised to deal with such issues.

Valuation and Weighing of Different Land-Use Options

The valuation of land-use ‘minerals’ is based on geological, economic, social, environmental and cultural factors. This valuation is an integrated part in the land-use planning process, where representatives of different public authorities from various policy tiers are present. The representatives are engaging in a discursive process in which different aspects (e.g. economy, environment, cultural heritage, nature protection) and policy objectives are discussed. In this discussion and negotiation process different land-use options and their particular valuation based on economic, social, environmental and cultural factors are weighted against each other. There are no standardized, quantitative validation methods utilized.

PORTUGAL

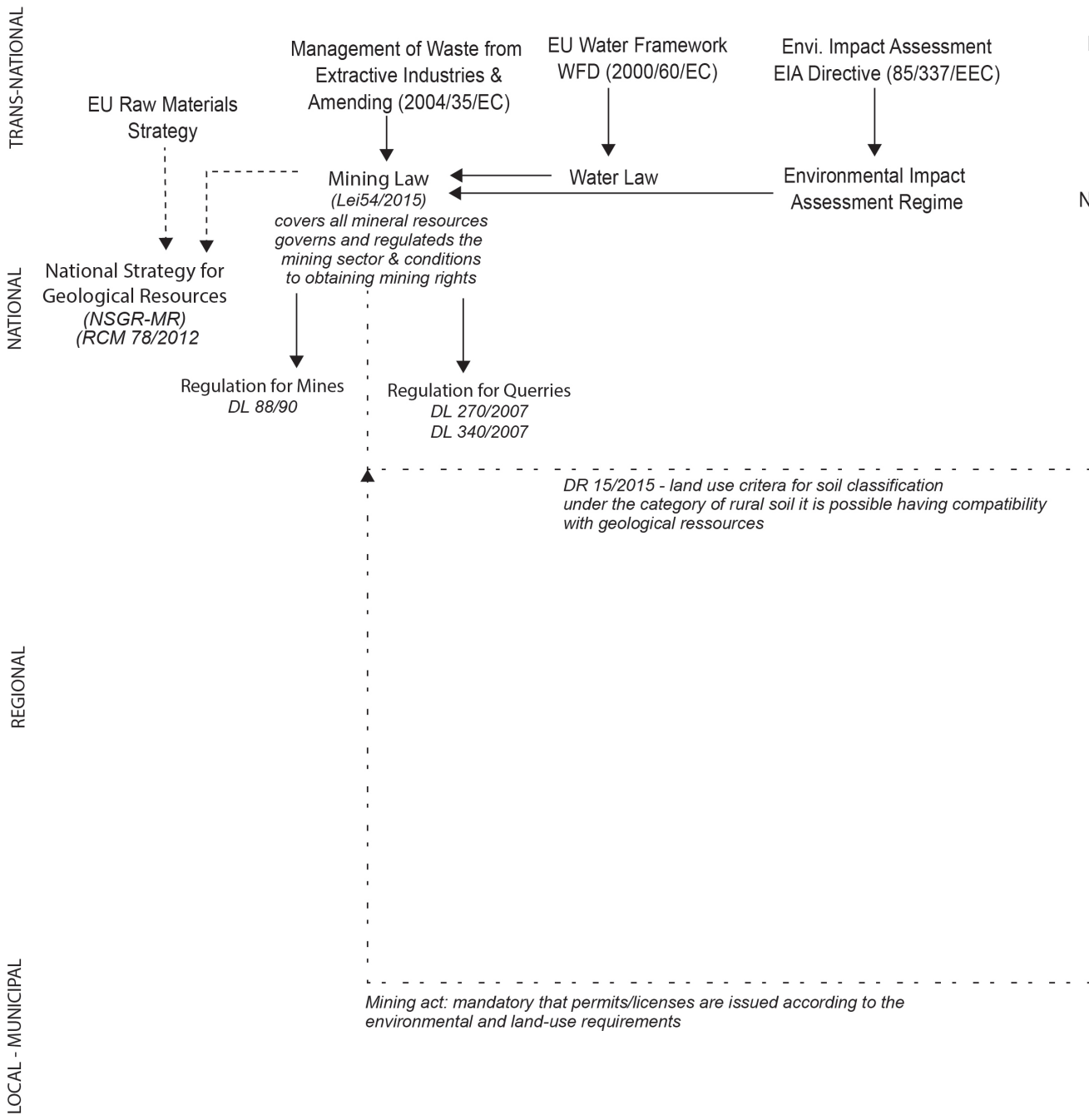
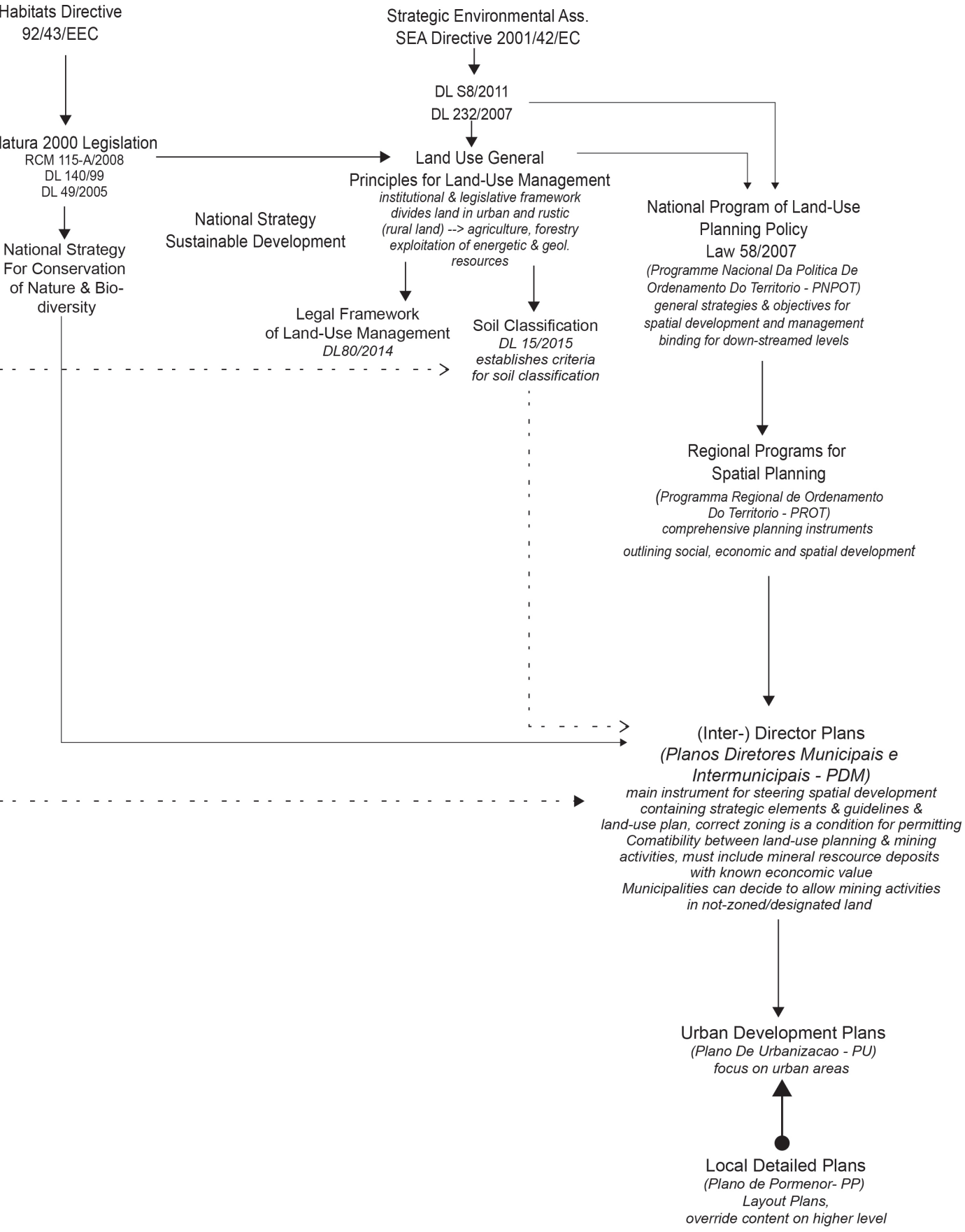


Figure 10: Policy Network Portugal; Authors: Katharina Gugerell, Maria João Figueira, Paula Castanheira Dinis


Habitats Directive
92/43/EEC
Strategic Environmental Ass.
SEA Directive 2001/42/EC
DL S8/2011
DL 232/2007
latura 2000 Legislation
RCM 115-A/2008
DL 140/99
DL 49/2005
Land Use General
Principles for Land-Use Management
institutional & legislative framework
divides land in urban and rustic
(rural land) --> agriculture, forestry
exploitation of energetic & geol.
resources
National Program of Land-Use
Planning Policy
Law 58/2007
(Programme Nacional Da Politica De
Ordenamento Do Territorio - PNPOT)
general strategies & objectives for
spatial development and management
binding for down-streamed levels
National Strategy
Sustainable Development
National Strategy
For Conservation
of Nature & Bio-
diversity
Legal Framework
of Land-Use Management
DL80/2014
Soil Classification
DL 15/2015
establishes criteria
for soil classification
Regional Programs for
Spatial Planning
(Programma Regional de Ordenamento
Do Territorio - PROT)
comprehensive planning instruments
outlining social, economic and spatial development
(Inter-) Director Plans
(Planos Diretores Municipais e
Intermunicipais - PDM)
main instrument for steering spatial development
containing strategic elements & guidelines &
land-use plan, correct zoning is a condition for permitting
Comatibility between land-use planning & mining
activities, must include mineral rescource deposits
with known econcomic value
Municipalities can decide to allow mining activities
in not-zoned/designated land
Urban Development Plans
(Plano De Urbanizacao - PU)
focus on urban areas
Local Detailed Plans
(Plano de Pormenor- PP)
Layout Plans,
override content on higher level

3.11 SPAIN

Levels of Government

Spain has four levels of government that follows a quasi-federal concept: the national government, autonomous communities, provinces and municipalities. On constitutional level the division of power between the different levels of government is regulated and endows the autonomous communities with the right and responsibility for land-use planning. The national government legislates the institutional and regulatory framework organising spatial planning activities and steers regional legislation. National legislation that impacts land-use institutions are environmental legislation and sectorial spatial plans from policy streams such as infrastructure. Based on the constitution shifting spatial planning power and responsibility to the regional level, the state government does not issue a national spatial or land-use plan.

Autonomous communities legislate land-use planning laws and land-use planning tools, complementing the national framework and establishing a land-use planning system for their territories. These include the implementation of restrictions and requirements on the municipal level (e.g. for implementation of protected areas). Most regions have established hierarchical, cascading planning systems based on compliance with up-streamed planning content. Due to the constitutional law municipalities are the main actors and stakeholder in the Spanish land-use planning system. They are responsible for the preparation and adoption of local plans and strategies (with varying content and level of detail in different regions). Depending on the size, the municipalities adopt basic Master Plans that include land-use plans; it can happen that very small municipalities do not adopt Master Plans; hence their spatial development is governed by plans made on regional/provincial level (Subsidiary Regulations). Thus, decision making on land-use is mainly located on local and regional level.

Mining competences are transferred to the Autonomous Communities. The national government is responsible for enacting the legislative framework that is governing the mining sector. The Spanish Mining Law (22/1973) establishes the basic principles regarding the mining activity. It is directly applicable to mining projects located in two or more Autonomous Communities or in the case of “Reserves in favour of the state”, that means, the use of one or more mineral deposits and other geological resources that may be of special interest for economic and social development or for national defence. On regional level, the Autonomous Communities have competence in the development of legislation and enforcement of the mining regime. Several Autonomous Communities have legislated separated mining acts on regional level. Within this framework, each Autonomous Community establishes the specific requirements for the mining authorisations in their territory but they are consistent with the Spanish mining law.

Mineral Resources and Planning

The national government is responsible for enacting the legislative framework that is governing the mining sector. The Spanish mining legislation was enacted in 1973 (22/1973) referring to the Spanish Constitution and the autonomy statutes. The mining legislation regulates mining activities and is applicable to mining projects located in two or more Autonomous Communities or in the case of “Reserves in favour of the state”. “Reserves in favour of the state” is a legal form included in the mining law and concern the use of one or more mineral deposits and other geological resources that may be of special interest

for economic and social development or for national defence. On regional level several Autonomous Communities have legislated separate mining acts, which are establishing specific requirements regarding the authorisation process for mines. Those regulations must comply with the national regulations such as the national mining law.

The Mining Promotion Act (Law 6/1977), as facilitating policy tool, was expected to promote and develop the exploration, research and exploitation; its aim was to procure the supply of mineral raw materials to the Spanish industry. The Mining Promotion Act established and managed public investment programmes and subsidies for the mining research and exploitation. This Act urged the Ministry of Industry to Elaborate the National Plan about the supply of mineral raw materials. Amendments of the Mining Promotion Act included the periodical accretion of Priority Raw Materials lists. The listed raw materials became eligible for the Mining Promotion Act. The last Priority Raw Materials list date form 1994, predate to the first European Raw Materials Strategy. Thus, this European Strategy has not been incorporated at the national level.

On regional level, regional governments are in charge of developing, implementing, monitoring and evaluating (progress reports) mineral policy. These are the base for the revisions of the Strategies. Though several regions have enacted a mining legislation, only three autonomous regions have adopted a mining strategy yet: The Mining Strategy of Andalusia 2020, the Mineral Resources Strategy of Castile-Leon 2016-2020 and the Strategic Plan of Non-Energy Mineral Resources of Castile-La Mancha. Horizon 2020. The strategies goals are (among others): promote the existing mineral resources potential, generate employment and wealth, ensure sufficient response to the actual needs. The mining strategies are expected to unfold as strategic planning instruments, that anticipate and promote research and exploitation of mineral resources aligned with social and economic needs and integrated with environmental, territorial and economic development and policy sectors (Economy, Employment, RDI, Energy, Industry, Tourism, Environment and Conservation, etc.).

Land-Use Planning and Land Policy

No spatial plan is established and enacted on national level. However, sectorial plans such as Environmental Plan, Hydrological Plan or Infrastructure are impacting spatial development and are steering land-use on regional and local level. At the national level the Law on Land and Urban Development sets the regulatory framework for spatial planning and land-use. The legal framework differentiates three general categories of land-use: a) Urban Land, b) Land for Urban Development and c) Land Protected from Urban Development.
On the regional level Regional Plans and Guidelines (Planes/Directrices de Ordenación Territorial) are developed and implemented. Those plans are mostly strategic policies and guidelines that are coordinating the spatial development and land-use system on regional scale. Land-use plans might be developed (for parts of the territory) that are also establishing land-use categories. To illustrate: in the Autonomous Region of Navarra regional planning includes: a) Territorial Strategy, b) Regional Land-use Plans (POT), Territorial Action Master Plans that are steering the implementation, c) the figure of the sectorial plans and projects on intermunicipal level. Also, other sectorial policies and plans, such as the Regulations of Natural Resources Plan, Road Master Plan (Infrastructure) must be considered and implemented in the comprehensive plans on regional level.

The Regional Plans (POTs) are more detailed land-use plans on inter-municipal level;

SPAIN

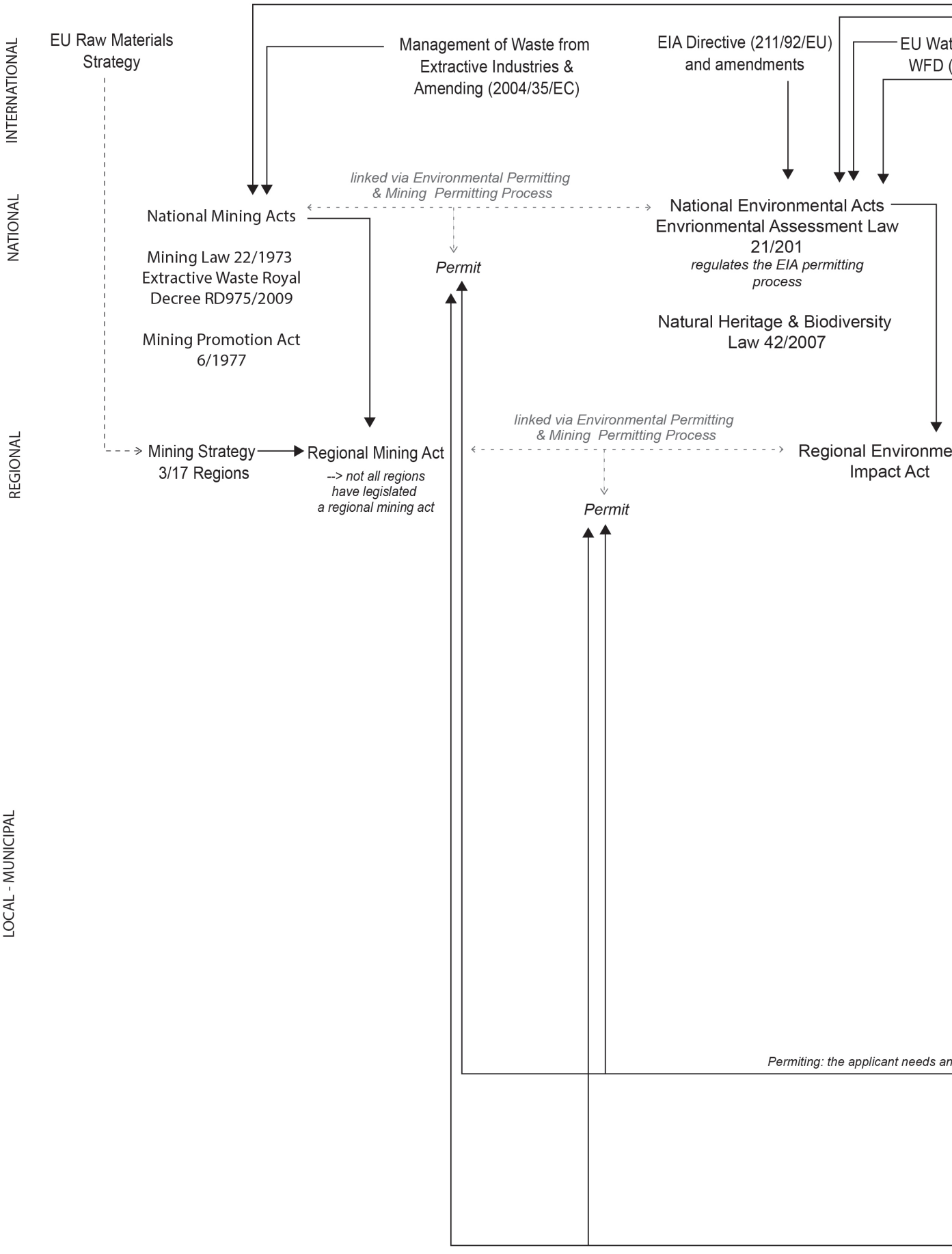
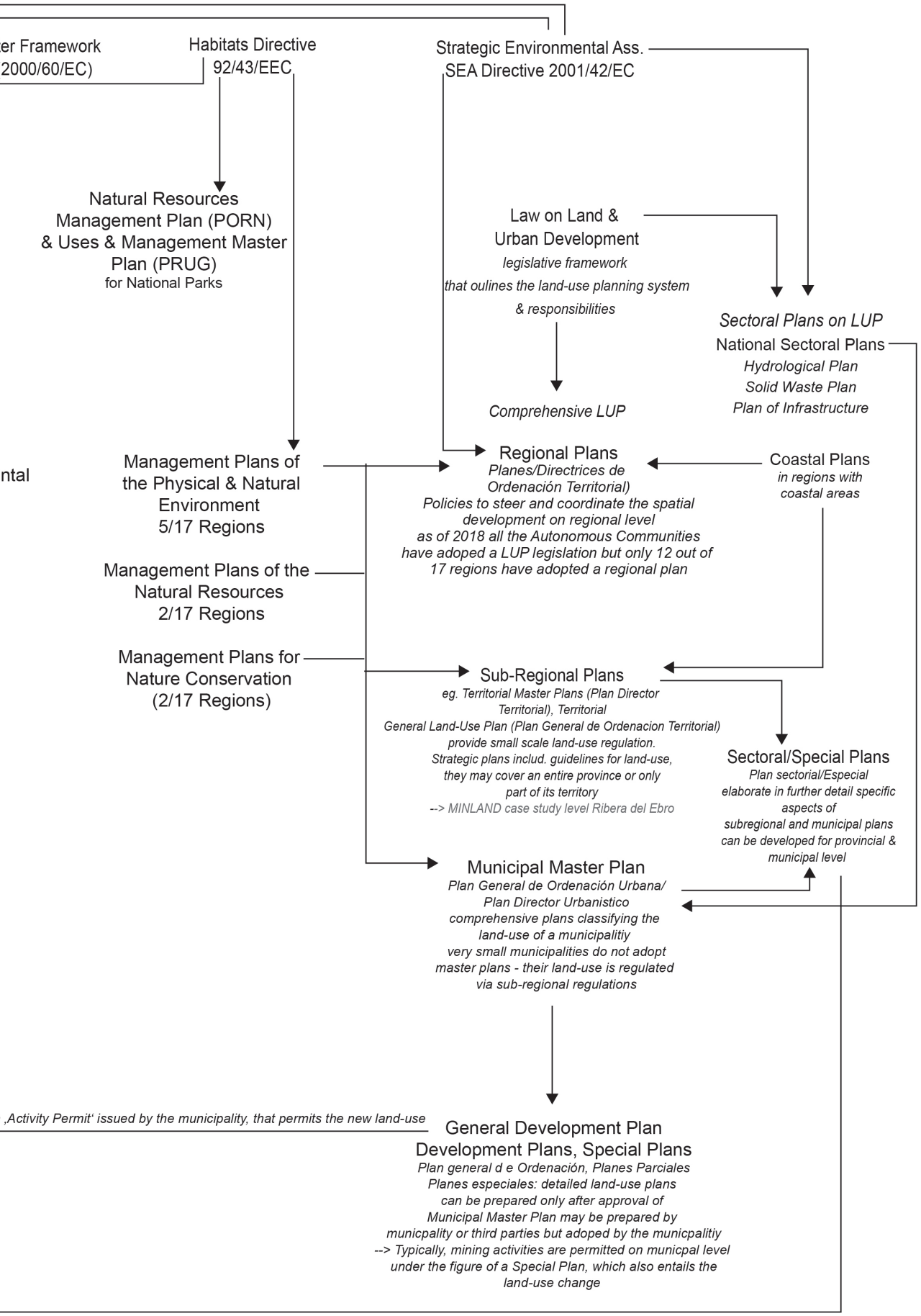


Figure 11: Policy Network Spain; Authors: Virginia Rodríguez Gómez, Katharina Gugerell


er Framework
2000/60/EC)
Habitats Directive
92/43/EEC
Strategic Environmental Ass.
SEA Directive 2001/42/EC
Natural Resources
Management Plan (PORN)
& Uses & Management Master
Plan (PRUG)
for National Parks
Law on Land &
Urban Development
legislative framework
that oulines the land-use planning system
& responsibilities
Sectoral Plans on LUP
National Sectoral Plans
Hydrological Plan
Solid Waste Plan
Plan of Infrastructure
Comprehensive LUP
ntal
Management Plans of
the Physical & Natural
Environment
5/17 Regions
Regional Plans
Planes/Directrices de
Ordenación Territorial)
Policies to steer and coordinate the spatial
development on regional level
as of 2018 all the Autonomous Communities
have adoped a LUP legislation but only 12 out of
17 regions have adopted a regional plan
Coastal Plans
in regions with
coastal areas
Management Plans of the
Natural Resources
2/17 Regions
Management Plans for
Nature Conservation
(2/17 Regions)
Sub-Regional Plans
eg. Territorial Master Plans (Plan Director
Territorial), Territorial
General Land-Use Plan (Plan General de Ordenacion Territorial)
provide small scale land-use regulation.
Strategic plans includ. guidelines for land-use,
they may cover an entire province or only
part of its territory
--> MINLAND case study level Ribera del Ebro
Sectoral/Special Plans
Plan sectorial/Especial
elaborate in further detail specific
aspects of
subregional and municipal plans
can be developed for provincial &
municipal level
Municipal Master Plan
Plan General de Ordenación Urbana/
Plan Director Urbanistico
comprehensive plans classifying the
land-use of a municipalitiy
very small municipalities do not adopt
master plans - their land-use is regulated
via sub-regional regulations
‚Activity Permit' issued by the municipality, that permits the new land-use
General Development Plan
Development Plans, Special Plans
Plan general d e Ordenación, Planes Parciales
Planes especiales: detailed land-use plans
can be prepared only after approval of
Municipal Master Plan may be prepared by
municpality or third parties but adoped by the municpalitiy
--> Typically, mining activities are permitted on municpal level
under the figure of a Special Plan, which also entails the
land-use change

hence – the autonomous community of Navarra is divided into regions for which the POTs are prepared and adopted. Those plans are binding and mandatory unless they are explicitly referring to indicative regulations as exception. These plans include restrictions and particular requirements for planning actions and planning content on municipal level, e.g. outlining of areas that are protected according to their natural, environmental or cultural value and are considered in particular land-use categories: on the provincial level of Navarra the land-use categories for 'Protection' and 'Preservation' are established as subcategories of the national classification type: (i) "Land Protect from Urban Development, including land-uses that are subject to particular protection regimes, based on their landscape, natural, environmental, agricultural or historic values. In such areas mineral extraction is prohibited; (ii) 'Preservation' refers to protection at the municipal level (planning) including also the protection of public services and facilities. Hence, the extraction of aggregates would need authorisation in areas that are zoned as such areas. On municipal level Municipal Urban Master Plans (Plan General de Ordenación urbana/Plan Director Urbanístico) are guiding the spatial development. They are comprehensive plans that are regulating the land-use and setting the permitted land -use for the municipal territory that are legally binding for land-owners. Development Plans (Plan Parcial) are detailed land-use plans containing also building regulations. They can only be prepared after the approval of the Municipal Urban Master Plan.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

There are no safeguarding mechanisms for the protection of mineral deposits for future use and extraction existing. The only protection legal figure that exits in Spain is related to the medicinal mineral and thermal waters (included on the Spanish Mining Law). Once declared us such a perimeter of protection (safeguarding zone) is defined. Within these safeguarding zones, activities or facilities that can contaminate groundwater or affect the water flow, are restricted or prohibited.

The only link between the policy streams of mineral resources and land-use planning, that is described in the data, is the obligatory Activity Permit that is necessary to obtain a mining license. Activity Permits are issued on the municipal level: to obtain an activity permit the correct zoning is required; if changes of the land-use plan are required the LUP process must be completed before granting the actual license. Only few municipalities in Spain contemplate the mining use in their land-use planning. The Activity Permit is the final stage of the permit procedure, after having obtained the mining and environmental permit. Mineral extraction is legislated, as a framework, on the national level. Mining projects located in two or more Autonomous Communities are regulated under the Spanish mining law. In these cases, the environmental procedures must comply the national requirements. The regional government is competent on mining projects entirely located in their territories. Autonomous Communities can regulate the mining activity at the regional level or implement the national legislation. Several Autonomous Communities have their own mining regulation, but not others. The regional government can establish specific permit requirements. In the cases in which the regional authorities are competent, the environmental procedures to which mining applications are subject to, must meet the environmental requirements of the Autonomous Communities. The regional environmental legislations are developed in conformity with the national environmental legislation. On the national level, the state (via the mining law) can delineate areas of national interest called "reserve in favour

of the state" including geological resources with particular importance for economic and social development; however – those delineated areas are not connected to the land-use planning system and remain solely in the mineral policy stream. The designation as "reserve in favour of the estate does not entail safeguarding. Safeguarding mechanisms for the protection of mineral deposits for the future are not existing.

Governance Mechanisms: Horizontal and vertical coordination

Spanish land-use planning is following a cascading, hierarchical model: lower levels of policies and plans must ensure compliance with higher level of plans/policies while compliance is mandatory, higher level of plans often remain strategic to provide sufficient flexibility for area-based policy and plan making on municipal level. Vertical coordination is based on the hierarchical system and ensured by consultation mechanisms between different levels of government. Inter-administrative coordination (inter-administrative committees, creation of ad hoc working groups, to urge the National Government to approve a new Mining Law, integration of the different authorisations in a single procedure, inclusion of the mining activity together with mining rights and protection perimeters in land-use planning), etc.

Horizontal coordination mechanism appears rather modest: the case of the "reserve in favour of the state" (see below) illustrates the detachment of the policy streams and limited integration and horizontal coordination between the policy streams. The existence of horizontal coordination mechanisms depends on the particular Autonomous Community. The implementation of mineral policies is carried out by regional governments: interdepartmental working groups or exchanges are inexistent. However, to achieve the inter-administrative coordination is a specific objective of the existing Regional Mining Strategies.

Valuation and Weighing of Different Land-Use Options

The valuation of mineral resources is based on a geological and economic valuation, and is taking place within the permit process. Mining companies applying for a permit must justify that the project is technically and economically viable: Geological value is assessed via: (i) quality or parameters of the material (size, degree of dementing and content of fines); (ii) thickness, together with the extension define the form and volume of the resource; (iii) water level position: the environmental imperative to exploit up to one meter above the water table conditions that where the position of this is higher, the exploitable thickness decreases in practice.

Economic valuation of the resource is performed by the companies during the permitting process, proofing that the technical and financial viability of the project. Economic valuation of land or land-use options, apart from trading expropriation process, is not facilitated. Thus, economic valuation of different land-use options is not used in the case study regions. There are no institutionalised formats of valuation and weighing of different land-use options in place. For decision making in land-use planning urban development plays an important role. The Spanish Land and Urban Rehabilitation Law establishes general criteria for land valuation for the purposes of trading and expropriation. The criteria are different for buildings, urban soil and rural soil valuation. But, in practice, the valuation process is performed on a case-by-case base, often at the municipal level. The weighing of different land-use options radically differs from one region to another. Furthermore, it can be substantially different at the sub regional level, depending on the importance of the economic sectors.

3.12 SWEDEN

Levels of Government

Sweden has three levels of government: national, regional (counties) and municipal level. The national government legislates the institutional framework and defines the land-use and planning system. It also provides guiding strategies that are obligatory on municipal level for local planning processes, building code and the delineation of areas that are safeguarded and protected for nature protection or heritage conservation. Other state agencies that are impacting land-use through policy making and implementation are the Swedish Environmental Protection Agency, Swedish Energy Agency. The national government is also responsible for the legal framework for mining. Different governmental bodies, industry actors and NGOs are collaborating for the preparation and development of the National Mining Policy.

County Administrative Boards are representing the states interest in their function as planning authorities. Their particular focus is on compliance with the Planning and National Building Act. County Administrative Boards are decentralised units of public administration, while County Councils are elected political bodies that are among others responsible for regional development. Regional development strategies must be adopted for all counties, that are impacting land-use and spatial development.
Municipalities are responsible for local land-use planning: Comprehensive Plans and Detailed Plans. Intermunicipal co-operations to jointly perform their responsibilities are common. In Sweden municipalities are also land-owners that are holding substantial land-titles; hence, they are significant stakeholders for spatial and regional development.

Mineral Resources and Planning

The national minerals legislation, Minerals Act, is covering concession materials, their exploration, permitting and exploitation. Other mineral resources are landowner materials, which are governed and regulated by the Swedish Environmental Code. The Environmental Code i) regulates EIA to gain the environmental permit which is a precondition for operating a mine, but ii) also outlines measures for safeguarding of mineral deposits as ‘Areas of National Interest’ ; that are determined by the NGU/ Mining Inspector. The National Mining Policy aims to increase the competitiveness of Sweden’s mineral raw material industry, which is linked to the EIT Raw Materials Policy. Regional mining policies exist (e.g. Northenmos region) for other regions policies are under development and in preparation (e.g. Norrbotten and Västerbotten).

Land-Use Planning and Land Policy

No spatial plan on national level is existing The Planning and Building Act is the main legislation that governs the land-use planning system in Sweden. It is complemented by the Environmental Code, which regulates the permitted land-use types. The Environmental Code defines eleven types, among others mineral resources, water resources or Natura 2000 areas. The Environmental Code also establishes the ‘National Interest’: those are geographic areas of national importance for different socio-ecological interests such as ecology, heritage, recreation – or for particular industries such as mineral resource industry, agriculture, forestry, fishery or reindeer husbandry. National interest is delineated and described by the different national authorities depending on the field and policy area. The core rule is that proposed land-

use changes must ensure compliance with the National Interest and cannot be approved or permitted if it would substantially impact or injure the national interest. The definite delineation of the nation interest must be defined by the municipalities in their comprehensive planning system, while the CAB is obliged to audit and check if compliance is provided.

Regional Plans (Regionplan) are developed by the elected County Councils: they are strategic plans that outline possible policy goals. Though a Regionplan was only developed and adopted for the Stockholm Greater Region, regional development is mandatory for regions. Furthermore, they contain guidelines for the details plans, but they are not mandatory for the municipalities. Physical planning is controlled by the strong authorities of the by the municipalities, which is also called the 'municipal planning monopoly'. Municipalities prepare and adopt Comprehensive Plans (Översiktsplan) and Detailed Plans (Detaljplan). Comprehensive plans form the strategic part, outlining strategic goals and strategies how to develop the municipality; thus, they must also report on how municipal governments plan to consider and implement national interest and regional planning/development objectives in municipal planning. Detailed Plans (Detaljplan) are the statutory planning tools that are regulating permitted land-uses. Those plans are obligatory for the public authority and for the land-owners. Permitting processes for the mineral extraction is also triggering processes in land-use planning: the permitting processes triggers the start for the adaptation of the zoning in Detailed Plans. There are only some reasons that allows the state to intervene in municipal planning practises: a) national interest is not considered and implemented in municipal planning, b) inter-municipal planning issues have not been coordinated sufficiently; c) environmental standards are not met, d) plans are insufficient and not state of the art regarding health, disaster, flooding, erosion.

Governance and Planning Mechanisms linking Land Policy, Land-Use Planning with Mineral Policy

On National Level the Environmental Code is the institutional element that links the policy streams of mineral resources and spatial planning, by establishing land-use categories and establishes "Areas of National Interest" (ANI) that must be considered and implemented on local level. 2 types of ANIs exist: in chapter 3 so called claims are established. Different Governmental agencies are outlining different ANIs, such as reindeer husbandry (Sami Parliament), fishery (Swedish Agency for Marine and Water Management), nature preservation and outdoor recreation (Swedish Environmental Protection Agency), facilities for industrial production (Swedish Agency for Economic and Regional Growth). SGU is responsible for outlining mineral deposits as ANIs. Chapter 4 ANIs are adopted by the national government: those are specified geographic areas under direct protection; those areas (chapter 4(7)) are outlined along the coasts, certain rivers, streams and mountain resgions. Also Natura 2000 areas are ANIs on basis of chapter 4.

However, even though under different chapters in the legislation, when several Nis exist, precedence is to be given to the one that best makes use of the land regarding ecological, social and economical sustainability. All ANIs can be considered safeguarded with the provision that their status may be tested if conflict/competition will occur. They must be considered in municipal land-use planning. Those areas of national interest are high level governance mechanisms that are weighed, negotiated and implemented on local level! Interestingly, this list can also de-grow: areas of national interest are also removed from the list in case a deposit cannot longer be considered an area of national interest.

SWEDEN

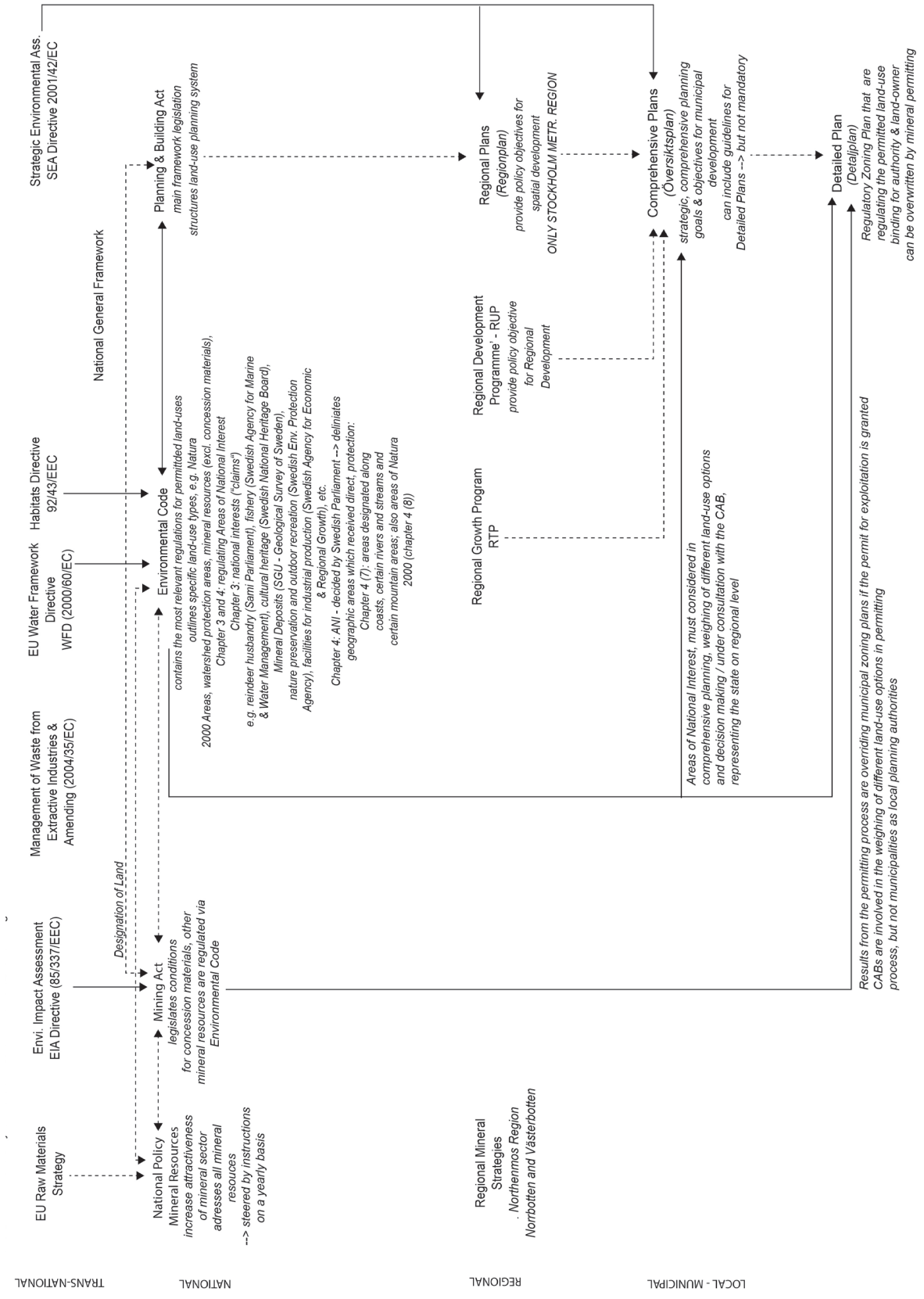


Figure 12: Policy Network Sweden; Authors: Katharina Gugerell, Ronald Arvidsson, Magnus Langendoen

Governance Mechanisms: Horizontal and Vertical Coordination

Vertical coordination is provided by an interplay of support of lower-level PA-units (e.g. CABs are supposed to support municipalities with data and advise them). Regarding the consideration of national and regional interest in municipal planning, the municipal planning authority must consult with the CAB, which represents the state, regarding the values and delineation of areas of national interest to ensure that those values are safeguarded. Hence, the CABs play an important role in the coordination of planning activities; that also includes linking the mineral policy stream (national interest) with the planning stream. Horizontal coordination in the planning process is provided by obligatory consultation of neighbouring municipalities or organisations that are affected by plans and residents of the community. How those consultations are performed is not regulated in detail. Swedish land-use planning is an example for decentralised land-use planning, to ensure place-based policy making suggesting that municipalities take the responsibility to adapt the scope and process to the specific local conditions. The parallel system of "National Interest": those are state controlled policy 'islands' that are also governed by other legal regulations – which means the municipality cannot actually "plan" for that. However, national area of interest is not necessarily congruent with local needs or local interests, potentially leading to conflicts between local and governmental level (Bjärstig et al. 2018)

Valuation and Weighing of Different Land-Use Options

Valuation of mineral resources for being considered a national interest is based on i) the deposits significance for Sweden's supply capacity, ii) the quality of documentation, iii) the particular material properties, iv) if the deposit resembles a unique natural asset. In general, the valuation of mineral deposits is based on economic, geological, social and environmental characteristics. Valuation and valorisation of different land-uses is part of comprehensive planning system and is embedded on municipal level. The process of weighing is institutionalised in the Environmental Code. In land-use planning decision making the areas of national interest (chapter 3 and 4 Environmental code) have to be taken into account on a case by case basis and surrounding projects and developments are to be considered in this decision making (cumulative effects). Hence the case studies (e.g. Västerbotten) show, that over time periods decision making basis can change, because e.g. certain projects come to an end, which changes the planning arena. The areas of national interest illustrate the 'pre-load' of an area and gives an indication which other national interests are existing and might have impact on a project.

For mineral resources, the weighing of different land-use options seems to be part of the permitting process. In this weighing process the CABs, representing the state, are involved but the municipalities as local planning authorities in which the operation will take place are not involved. If the permit is granted, local comprehensive planning will be overwritten.

Nature protection (especially Natura2000) and watershed protection (directive) were perceived as policy streams that are conflicting with activities or proposals that are related to mineral resources. Especially nature protection is considered having a "strong status" (3.15) against other land uses. Representatives of mining industry (SH1, SH2) were addressing that mining and mineral resources have a strong policy priority on local level (job creation, economic effect). Drivers that are impacting land-use planning and decision making were perceived as community economic effects, social and ecological sustainability.

4. DISCUSSION AND CONCLUSION

Land-use is a policy area and a part of planning which's outcomes have significant impact on human wellbeing and is giving direction to development and spatial patterns in the future. The investigated cases illustrate, that land-use planning has an integrative function: it integrates different policy streams such as economic development, protection of natural (eg. Habitat, Bird Directive) or environmental (EIA Directive), watershed protection (water framework directive), mineral resources or infrastructure. The number of different policies results in a competition on space and a broad variety of goals and objectives to be achieved at the same area. While isolated decisions and its outcomes might be acceptable, a set of decisions might result in cumulated, complex, non-linear effects. Consequences of each land-use decision are complex and strongly context specific; hence, land-use planning is an area-based activity: compared to other policy fields, its subject, scope and extent is conditioned by its location. Thus, the local level plays a crucial role in all examined examples for land-use policy, -planning and integrating different objectives by outlining land-use plans and allocation space for different land-uses. But the importance of land-use planning goes beyond the local level: different tools and strategies to guide and steer spatial development are utilised on regional level. Both levels have in common, that inconsiderate planning action or planning approaches might result in high costs for the municipality (e.g. infrastructure maintenance), regressive distributional effects, or hinder or prohibit particular land-uses in the future (e.g. mineral extraction) because they require certain conditions and are subjects to a broad set of regulations.

4.1 Legal and Institutional Frameworks

Planning actions are conditioned by a country's legal and institutional and governance frameworks; international policies and legislation (EU), norms and agreements on particular policy interests. The project shows, that in the field of mineral resources and land use planning EU directives, such as Habitat and Bird Directive, Water Framework, EIA and SEA

Examples of EU competencies, legislation and policies impacting and driving land-use planning and land-use practises			**Intergovernmental cooperation on spatial, land-use and landscape issues**
Legislation	**Incentives**	**Reports**	**Spatial Planning and Landscape Policies**
Environment	**Cohesion Policy**		
SEA Directive	ESI Funds (EFRE, ESF)	Reporting on Urban Europe	European Spatial Development Perspective
EIA Directive	CLLD	State of Cities	European Landscape Convention
Birds Directive	ITI	Cohesion Report	Territorial Agenda of the EU 2007
		European Environment State	
Habitat Directive		and Outlook	Territorial Agenda of the EU 2020
Water Framework Directive	**Rural Development Policy**		
SEVESO III Directive	EAFRD		
Waste Framework Directive	LEADER (CAP)		
Landfill Directive			
	Transport		
Energy	TEN networks		
Renewable Energy Directive			
Energy Efficiency Directive			
Competition			
Directive on Public Procurement and Directive on Procurement by Entities operationg in the water, energy, transport and postal services sector			
Maritime			
Marine Spatial Plannind Directive			
Marine Strategy Framework Directive			

Table 4: Overview of EU policies that are impacting land-use and spatial planning

Directive play a crucial role. Based on the Lisbon Treaty Mineral Resources are embedded at the national scale.

4.2 Links between Sectorial Mining Policy, Land Policy and Land-Use Planning

Policy documents on the European level are stressing the importance of horizontal links and the integration of different policy streams. The investigated cases reveal three main pathways of the interplay of sectorial mining policies and land policy: a) Sectorial Mining Policies either as standalone or used as back-up for land- use planning; b) Mining Policies that are including aspects of land-use planning, c) Land-use and land policy instruments that are integrating sectorial plans for mineral raw materials.

a) Policy Silos in Mineral Policies

Various countries are issuing sectorial mining policies mainly on national or regional level of government. Mining policies on national level (e.g are often linking to the EIT Raw Materials Strategy and are detailing the European Framework Strategy to the national scale and national objectives such as i) promoting national economy, GDP growth and prosperity; ii) supporting the competitiveness of the sector, iii) securing the access and (long-term) supply with mineral resources; iv) efficient use, increasing efficiency and recycling; iv) demand and consumption of raw materials; v) environmental impacts. Recognising the role of land-use planning for mineral activities or safeguarding of mineral deposits (e.g. Greece, Austria, Norway), the importance of integrating mineral policy with other public policies (Greece) or the importance of accountable institutional frameworks for securing investments (Norway) still tend to be the exception. Disjoint minerals policy making is not limited to national level but also appear on regional and local level (e.g. Norway), where mineral policies remain isolated lacking vertical coordination, coordination between policy streams. Thus, the research suggests, that policy making in the minerals sector on the national level is still following a silo approach. Hence, the criticism of weak cross sectorial consideration of policy goals and missing links between mineral policy and other policy streams might still be prevalent.

b) Mining Policies including Aspects of Land-use in a Structured Way on Different Levels of Government are the Austrian Mineral Resource Plan (AMRP) and the Spanish pilot project Mining Environmental Planning. In both cases different aspects of land-use planning and land-policy were integrated in the development of the policy. In both cases the development of a general policy was complemented by area-based designation of land and areas that should be protected for future extraction. The objective to designate so called ‘conflict free’ areas was achieved by crosscutting areas with minable mineral deposits with ‘exclusion areas’ (e.g. zoned areas for residential development), conflict areas (e.g. institutionalised areas for environmental or nature protection such as Natura2000 or National Parks, areas with cultural and/or environmental elements). The result, in the Austrian case, were so called ‘conflict-free-mineral’ zones. For the case of land-owner raw materials the results were somehow ‘communicated’ to the provincial governments and adjoining public administration, expecting the implementation of so called ‘mineral protection zones’ via land-use planning instruments. Though those plans might be technically correct, in both cases the implementation/utilisation of the plans failed or remained fragmented due to shortcomings in the policy design process, lack of communication and multi-level governance (see also Deliverable 4.3).

c) Integrated Policy making of Minerals and Land-Use Planning on Regional and Local Level

The Italian case illustrates an example of integrated policy making on regional level for 2nd category minerals (aggregates, construction material). Sectorial plans for 2nd category minerals (Wide Area Mining Plans), in Emilia Romagna so called Intra-Regional-Plan for Extraction Activities (PIAE), are integrative parts of Regional Landscape Plans. PIAEs are designed on demand based (similar like the Austrian AMRP for land-owner materials) perspective. The calculated demand is translated into specific areas/land, endowed with extraction quota. The quota is pooled on regional level: municipalities can apply for quota by developing local mining plans, which are again integrated part of the local municipal land-use planning instruments. Decision making and authorisation are embedded on municipal level. Tough the AMRP, Spanish Pilot Project and the Italian case show similar characteristics, the Italian case shows stronger characteristics of integration. Other than in the first two cases, the Italian case facilitates the integration of land-use and minerals on the local and regional level. Thus, the design of the policy is taking place on local and regional level and also the implementation is embedded is embedded on those levels. Hence, it is expected that the policy design can respond stronger to area-based needs and strengths and shows a stronger interlinkage with general development objectives and guidelines on local and regional level. Referring to literature in environmental governance it can be expected that area-based policy making results in better policy performance and local support (Zuidema 2016).

The role of Strategic policy tools on Regional/Provincial Level for Mineral Activities

The material shows that the importance of regional development policies for mineral and mining action on regional/provincial level. The research illustrates two different formats how they are corresponding: a) sectorial mineral policies as a tool for weighing land-use options in regional development (e.g. Austria), or b) regional development and land-policies as carrier policies for mineral action to stimulate development on regional level. One example that is illustrating strategy a) is the sectorial policy “Gesteinsabbaukonzept” Tyrol in Austria: the sectorial policy is an indicative policy guideline without direct enforcement power. The lack of enforcement power characterises the tool as an institutional soft policy tool with limited power. However, the interviews with representative of the planning department illustrated the role and importance of the soft policy tool in land policy and decision making: the tool is used as a core document and back up that is used as a basis for decision making on land development on provincial and regional level. It is also used as a framework for reviewing of municipal land-use plans and development strategies to evaluate if the municipal development could lead to the sterilisation of mineral deposits or might cumbersome future extraction. The second strategy illustrates the strategic interlinkages between the different policy sectors: the Italian and Portuguese cases demonstrate the importance of mineral activities for regional development: in both cases regional development strategies are addressing job creation and securing livelihoods in declining regions that are also exposed to demographic change. The interviews with the case owners illustrated the importance of the regional development policies as strategic tools to support mineral development and the establishment of mining activities as contribution to job creation in declining areas which are confronted with consequences of demographic change and abandonment.

Hence, the research illustrates that strategic policy tools on regional and provincial level, can act as carrier for promoting and launching mining activities and integrate them in land

policy and land-use planning. Despite their soft policy character from an institutional perspective, they play a crucial role in the weighing of different land-use options and in the actual practises in land policy and land-use planning on regional and provincial level. In hierarchical and cascading land-use planning systems, where higher level plans/strategies give direction to down-streamed plans active engagement of the mining sector in regional development processes might be of importance.

4.3 Zoning tools and land-use designations as mechanism to include mineral land-uses in land-use planning

Table 6 illustrates different specific land-use designations for the consideration of mineral activities in land-use planning on different spatial scales. The zoning tools are used to protect mineral deposits of regional, national or international interest. Those land-use designations are utilised to reserve areas with minable deposits for future extraction. The delineation of protected areas can follow different pathways: In Norway and Hungary possible areas are outlined by the Geological Survey. There are different options for the integration in land-use planning: a) via legislative frameworks (Norway) and integration municipal plans, or b) via National Inventories (Hungary) and implementation on regional level. Both cases illustrate the interplay of different levels of government: while the national level sets the framework and provides the information on possible areas, the actual implementation is embedded in land-use planning either on regional or local level.

The Austrian case differs insofar as spatial planning is legislated on provincial level (federal states); consequently, different institutional designs apply for the nine federal states. Several provinces (e.g. Tyrol, Styria) foresee so call ‘priority zones’ for regional and provincial spatial planning (strategic, land-use) to secure areas for land-use of regional, provincial or national interest. Such land-use of higher-level interest is, among others, agriculture, focal points for residential development, ecology, also mineral resources. Thus, priority zones are a tool to secure areas, outlined in the AMRP (for land-owner materials) if they are also meting provincial interest. For the case of Styria, mineral deposits outlined in the AMRP were partly taken over into the regional plans, where they also met regional and provincial interest. The division of competences between state (mining) and federal states (provinces, spatial planning) provides the provinces the opportunity to merge and amend national interest with provincial and regional objectives that go beyond sectorial mining interests. This is remarkable, since the AMRP claims, that the AMRP already delineates conflict free zones, cut out conflicting and competing land-uses that have been finetuned with public administration on provincial level (Holnsteiner et al. 2015). The fact that provinces were not implementing the AMRP areas or only parts of it, might indicate that either the coordination process between the national level and provincial level in the policy design did not work well; the provincial level might not have been sufficiently involved in the design, or the communication process between the levels did not work out well. Also, the Spanish case reports on implementation deficiencies: “Nevertheless, unfortunately, this did not occur, while it is true that the identified categories in the Land-Use Planning were consistent with those determined in the case study. This probably occurred due to a lack of coordination between the institution that commissioned the case study to the IGME and the Land-Use Planning Authority.” (SP, p.3)

Country	Land-use/Zoning Types	Spatial Scale	Land-Use Planning Tool
Hungary	*Mineral Resource Areas* : should be taken into account during the development of land-use plans	National Regional	National Land-Use Plan
Austria	*Priority Zones (Vorrangzone) Mineral Resources* : can be utilised on provincial/regional level to secure areas with mineral deposits of regional or national interest (AMRP), depending on the provincial legislation	Province Federal State	Regional Plans
Finland	*EK Areas* – "made visible" for mineral extraction	Regional	Regional Land-Use Plans (Maakuntagava)
	Potential Deposit Areas		
Norway	*Consideration Zones* : for Minerals should be applied in Municipal Master Plans	Municipal	Municipal Master Plans

Table 5: Land-use and zoning tools making minerals tanglible in land-use planning

4.4 The role of coordination and communication for policy implementation in multi-governance and cross-sectorial settings

Both, the Spanish and the Austrian, cases illustrate that policy implementation goes beyond the production of 'technically correct' plans. Though 'technically' correct the implementation or utilisation of the developed plans and strategies is modest to lacking. The requirement that land-use planning integrates different policy tiers: the cases show that high level sectorial policies tend to be generic, outlining specific goals and objectives for single policy sectors. Hence, policy goals and objectives from different policy silos might be competing or even conflicting; thus – they are so called 'mixed goals' (de Roo and Porter 2007; de Roo 2010) .

Competing and conflicting policy priorities and goals become prevalent the moment they must be integrated into comprehensive policies, such as land policies or land-use plan on regional and/or local level – including the spatial distribution and organisation as well as the allocation of space for certain land-uses. This integration demands weighing and negotiation different priorities, evaluation the spatial conditions for those priorities and their possible impacts and the appropriation of space to accommodate development or certain land-uses. Such planning and policy problems are coined so called 'wicked' problems (Rittel and Webber 1973; Crowley and Head 2017; Peters 2017). They are categorised by several characteristics (see figure x), among others interdependent, multi-causal issues, social complexity, no central authority, urgency, 'solutions may cause new issues, multiple stakeholders with multiple perspectives and a 'missing' stop button. Additionally, measures and actions to achieve objectives, goals and 'solutions' are inconclusive by nature (e.g. Thorndike 1931). Dealing with such policy and planning problems, require planning approaches that go beyond 'technical' planning approaches to support the implementation at another point.

Both case studies notably exhibit characteristics of 'wicked problems' that merge to 'mixed goals' the moment they enter land-use planning processes. Hence, to support their implementation the creation of 'technical' correct plans within a 'technical planning rational' might have not been the most suitable approach in policy design. Policies with high degrees of complexity, that require other levels of government and other policy tiers to be implemented

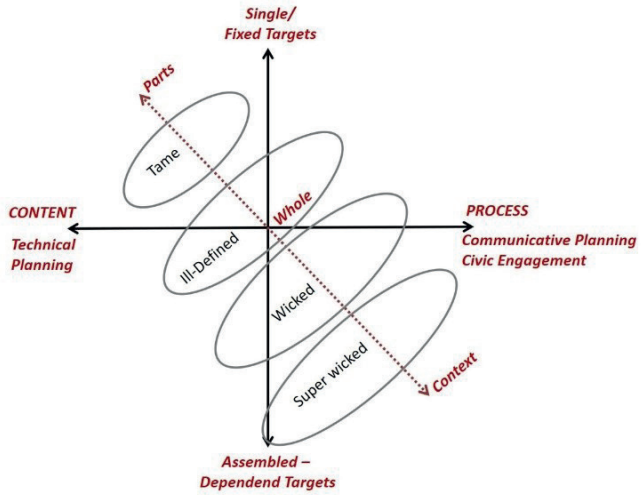


Figure 13: Wicked Problems and Planning Approaches, Katharina Gugerell based on De Roo 2016

(multi-level, multi-sectorial) and that are additionally politically sensitive might be better served with multi-level governance and communicative planning approaches: “We missed the political dimension, involving the provincial representatives and public administration – getting them aboard. We need to talk more” (RH, 2018).

4.5 Changes and flexibility of land-use plans

In general, municipal land-use plans are binding and are permitting land-use; hence – following a conformance-based policy regime (one must conform to the plan, objectives, targets). Municipal development strategies with adjoining land-use plans are traditional instruments of land-use planning. They are revised in certain time periods; the data shows that most of the countries allow changes of land-use plans also outside the regular revision moments. However, revisions (or setting up, in case municipal spatial plans have not been elaborated) might take a certain amount of time, in thus might not be corresponding well with perturbations of the system (e.g economic crisis) or changing conditions that would need immediate responses.

During the consortium meeting in Athens (2018), local workshop in Umea (Nov 2018, Norway, Finland, Sweden) and at the Stakeholder Meeting in Brussels (Dec. 2018) different representatives of the mining sector emphasized, that from the practise and business perspective flexible land-use planning systems are important for the exploration phase. Two perspectives were reoccurring in those debates: (i) ‘investment – security’ for companies: the question of timely decision making if zoning or land-use designations will or even can be amended or adapted to start a mining operation; mining stakeholder indicated the importance of accountable and transparent decision making processes to assess possible risks and factor in possible costs; (ii) safeguarding public interest: planning stakeholder and representatives of public administration advocate the importance of safeguarding public interest such as environmental or nature values. Safeguarding of natural and environmental values through institutionalised areas (e.g. Natura 2000, national parks) was coined as conflicting land-use and value to mining activities in the case studies but also during consortium meeting by mining stakeholder, stressing that land-use planning and nature protection exacerbate or even prohibit mineral activities. “Removing barriers” such as land-use planning to get operations easier started was reasoned that land-use planning

	Difficult to Define	Solutions may cause New Issues	Solutions tested at implementation	No Stop Button	Issues interdependent & Multi-Causal	Multiple Stakeholder and Perspectives	Socially Complex	Data contradictory or incomplete	No Central Authority	Urgency	Solving the 'Issue' is also Causing it	Policies Discount Future Inappropriately
AMRP	x	x	x	x	x	x	x	(x)	x	(x)	x	x
MEP		x	**Not implemented, pilot**		x	x	x	(x)	x	(x)	x	x

Table 6: Public policy as ‚wicked problem': characteristics of wicked problems in the AMRP and MEP

and environmental values are often part of the EIA.

Land-use planning and EIA, though facilitating similar topics, differ significantly in scope and purpose: EIA procedures are project-oriented authorisation procedures that are evaluating the impact of an operation on environmental values in a wider sense; land-use planning on the other hand are comprehensive planning procedures that are developing and outlining development perspectives on different spatial scales. Though the cases show that changes of land-use plans are in general possible it appears that more flexibility is requested to respond sufficiently i.e. to mining companies interested in starting an operation. More flexible approaches to land-use planning can meet this need. Such flexibility might entail areas which are less restrictive and more open for experimentation where new development and land-uses can be tested, monitored and used for policy learning; temporary uses. Greater flexibility and openness are resulting in less rules and regulations how land is used and each project would need to be judged on a case by case basis and on its own merit. Such decision-making systems are often governed by overarching guidelines and clear objectives about community objectives and guidelines (OECD 2017) .
Thus, flexible systems demand legitimate collaborative planning approaches (see figure 13), that are meeting fundamental conditions of participatory planning processes, such as policy and process legitimacy (Ozawa and Seltzer 1999; Innes 2004; Ozawa 2012; Quick and Bryson 2016) inclusion of all stakeholder, authentic dialogue (Booher and Innes 2002) where all are heard and equally able to participate, self-organising process that are unconstrained, information that is accessible and shared with all participants and a shared understanding that 'consensus' is only reached when all interests have been explored and every effort has been made to satisfy these concerns (Arnstein 1969; Flyvbjerg 2003; Edelenbos and Klijn 2004; Agranoff 2006). However, flexibility should not be exercised everywhere: areas where flexibility is possible and such that need special attention or protection (historic, environmental/natural values), could be delineated in such processes. Also, decision making processes must be accountable and trusted by the community and public, to ensure that also those that would have preferred other solutions would be accepting the outcome (Booher and Innes 2002; Innes and Booher 2003)

A second condition for flexible planning systems is a high degree of willingness and ability (capacity) (Zuidema 2016; Wu et al. 2017, 2018) of the involved persons and organisations on municipal level but also on regional level. The MINLAND cases studies identified an overall a rather modest knowledge on mineral raw materials, geological and mining knowledge. However, there might be some deviations in the perception: it appears that mining related people are responding more critical regarding knowledge and skills of land-use planning than the respective representatives and authorities perceive themselves.

4.6 Valuation of land-use options and their relation to mineral raw materials

Land-uses and policy sectors that are perceived as competing or conflicting with mining activities. In the case studies the respondents mentioned a broad variety of competing and conflicting land-uses they perceive in their daily practises or which are explicitly mentioned in policy guidelines (e.g. Tyrol Gesteinsabbauonzept) (see figure 14): covering a spectrum from nature protection (incl. landscape, environmental values), heritage, indigenous land-uses such as reindeer herding to more technical aspects such as pollution or densely populated areas (see also (Hilson 2002).

Nature protection and conservation

One of the most strongly perceived competing land-uses are nature conservation, landscape protection and environmental protection. Institutionalised conservation areas such as designated Natura 2000 sites or national parks are perceived as strong impediments and conflicting with mineral exploration and exploitation. Especially Natura 2000 appears to be a controversial and difficult land-use for mining stakeholder but also for representatives of Geological Surveys. By its nature, mineral extraction has an impact on the land it is operating in: many mines and/or quarries demand removing the surface during the extraction process and will need space for storage, infrastructures, access roads etc. (European Union 2011). EU Habitats and Birds directive are the cornerstones of EU nature and biodiversity policy. At their heart lies the creation of a network of designated sites with the purpose to safeguard Europe's rare and endangered habitat types and species, occurring in the Natura 2000 network. Together they cover about 18% of the EU 28 land area including some important marine sites (Sundseth and Roth 2014). The MS are required to establish conservation measures and take appropriate steps to avoid disturbance and/or deterioration of natural habitats and the habitats of species for which the areas have been outlined (European Commission 2000b; Sundseth and Roth 2014).

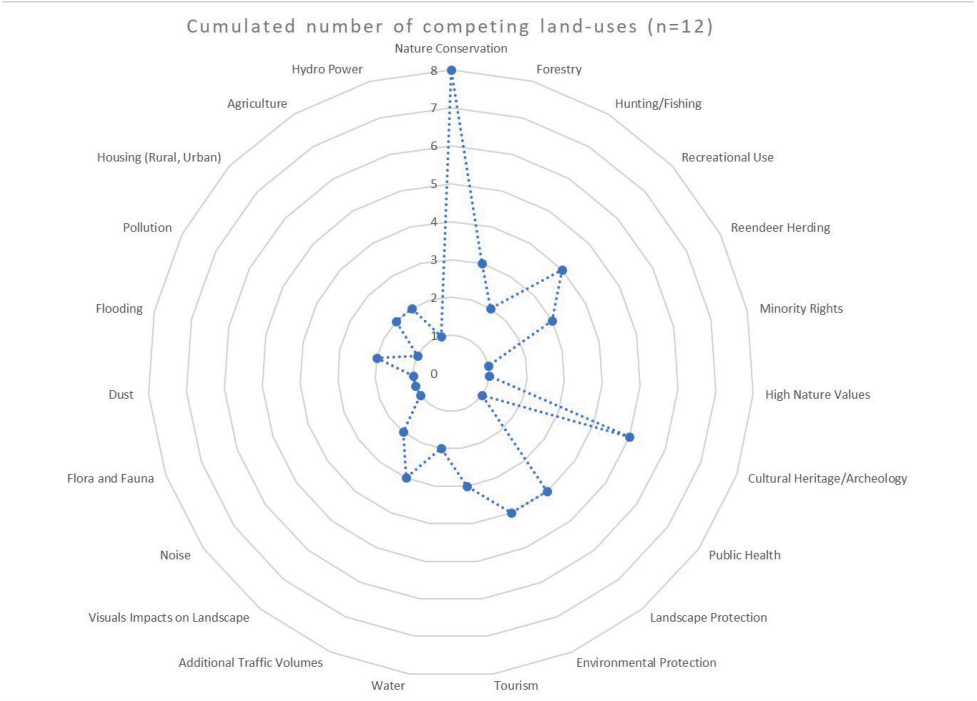


Figure 14: Cumulated numbers of competing land-uses in 12 sampled countries

Though there is a strong perception on the conflicting potential of the two land-uses (nature protection and mineral extraction) there is no automatism that would exclude mineral activities (NEEI) in and around Natura 2000 area. Nevertheless, a reoccurring argument in the data and workshops is, that the 'extensive' designation of Natura 2000 sites and 'nature protection' is perceived as a limitation for explorative and/or extractive activities and for safeguarding of potential raw materials. However, other cases in the study illustrate that Natura 2000 and mineral activities must not be fully antagonistic and can co-exist under certain conditions, such as the Portuguese case (Somincor Neves Corvo polymetallic underground mine). The mine is located in a Natura 2000 area with a Special Protected Areas (SPA= of Castro verde and the Site of Community Interest (SCI) Guadiana. There are several habits according to the Habitats Directive 92/43/CCE and protection area for wild birds. The mining project was subject to the EIA process and got approved with constraints due to the Nature Conservation area. Next to Portugal there are also cases that are experimenting with the co-existence of conservation areas and subsurface mineral extraction.

Reindeer herding as traditional land-use was addressed as competing land-use in the case studies; the issue was particularly addressed in the Scandinavian countries (Norway, Sweden, Finland). The land-use conflict and negotiation processes around infrastructure, property rights and adjoining conflicts are subject to research and practise. The case studies illustrate the overlapping land-use and struggles regarding access and use of land of different stakeholder and actor groups and the question how to engage and interact with that groups.

Recreation and tourism

Another group of competing land-use is recreation (recreation activities, berry picking, etc.) and tourism: to illustrate, for one of the Austrian cases (Tyrol) especially quarries are considered problematic, due to the strong visual impact are considered lowering the landscape value. Landscape value which is considered a core value for (landscape-based) tourism that plays an important economic role, which is also considered as important function in the provincial land-use planning act: "Als Tourismusdestination ist Tirol vom Erhalt und von der Pflege seiner natürlichen Ressourcen abhängig (…) zu den natürlichen Ressourcen zählen z. B. Luft, Trinkwasser, (Fließ-)Gewässer, Wald und Holz, mineralische Rohstoffe, Landflächen, fruchtbare Böden oder das Landschaftsbild. Tirols Natur- und Kulturlandschaft mit ihren vielfältigen Lebensräumen ist nicht nur die Grundlage für einen hohen Erholungswert, sondern auch für eine flächendeckende Landwirtschaft und den Tourismus" (Tyrol Sustainability Strategy). ("As a tourism destination, Tyrol is depending on the maintenance and care of its natural resources (…) natural resources are air, drinking water, watershed, woodlands, mineral resources, fertile soils and the landscape scenery. Tyrol's natural and cultural landscape with its diverse habitats is the basis for a high recreational value, extensive agriculture and tourism."). Consequently, tourism and agriculture have a strong stance in policy making and decision making is oriented towards those economic sectors. The case shows, that land-use options are embedded in regional development and broader policy objectives, in which mining activities might play a role to a varying extent, depending on the adjoining economic sectors and regional preferences on favoured development pathways for regions or provinces.

Cultural heritage and archaeological land-uses

the cases illustrate that land-uses related to heritage (cultural heritage, UNESCO World Heritage Sites) are/or archaeological uses can limit, restrict or close mineral action in their

vicinity. One illustrative example for the competing land-use and policies is the UNESCO World Heritage Site: Tokaj Wine Region Historic Cultural Landscape.
The Tokaj Cultural Landscape is located in north-eastern Hungary and south-eastern Slovakia at the confluence of the Bodrog and Tisza rivers. The cultural landscape demonstrates a long tradition of wine and grape production and has produced a small-scale landscape pattern of vineyards, farms and villages. It was inscribed in the UNESCO World Heritage List in 2002 based on the distinct viticultural tradition (criterion III) and the distinct landscape that is occurring from this traditional land-use (UNESCO and Republic of Hungary 2000). Also, mining is a land-use with rich regional history: gold and silver were produced in medieval times, which turned to national importance in the 15th century; from 1400 onwards, quartzite was extracted for manufacturing millstones and in the early 1900s extraction of kaolin, bentonite, rhyolite, tuff and andesite started. Licensed mining areas were excluded from the outlined areas for inscription, considering that mining has an important role for the region. However, since some of the mining areas are located in sensitive landscape areas, the document also indicates possible sources of conflict related to mining activities, such as landscape deterioration and "landscape wounds" (courts, lakes, hump yards, waste deposits, etc.), abandoned pits with lacking re-cultivation, development pressures (e.g. mining) encroachment, etc. (Szepesi et al. 2017). However, the maps produced by the government facilitating the inscription lacked delineated areas for quarrying and mining to be excluded from the World Heritage. Consequently, the W-H committee stated in their conservation report in 2013 that "the maps of the property adopted at the time of inscription do not show exclusion areas for mining and quarrying sites within the property, and therefore considers that all proposed and existing mining and quarrying sites within the Tokaj Wine Region Historic Cultural Landscape's boundaries lie within the boundaries of property" and that mining activities in the buffer zone have the capacity to impact the Outstanding Universal Value of the site (UNESCO 2013). Hence, the W-H committee request an extended review determining and evaluating verified or possible positive (!) and negative effects of mining activities on the Outstanding Universal value of the site and assessing the role of mining and mines in their historic dimension and importance for the region (UNESCO 2013).

The Greek case study illustrates possible tensions and competition for land between mineral extraction and protection of archaeological and cultural heritage, which plays a focal role in Greek economy. The decree on 'Protection of Antiques and Cultural Heritage in general' (3028/2002) regulates mining activities and cultural heritage. Its aim is the preservation and protection of antiques and tangible & intangible cultural heritage from ancient times, consisting of all cultural goods/assets located in the terrestrial Greek, coast and territorial water (including sea zones under Greek jurisdiction). The legal framework regulates: i) the exploitation of quarries and mines, ii) carrying out mineral exploration and iii) delineating Quarrying Areas (for the production of aggregates) are prohibited without the prior approval of the Ministry of Culture. This approval is given in a timeframe of three months from the date of the submission of the application, which must be accompanied by all the necessary documents and diagrams that are foreseen in the relevant mining and quarrying legislation. The approval is not given if, due to i) the distance from the monument in question, ii) the visual contact with it, iii) the morphological relief and iv) the type of action requested, adverse effects may be caused to the monument or the archaeological site in question. Thus, stakeholder representing the public interest 'cultural heritage" play an important role in the licensing/permitting process. For example, in the case that an open–pit bauxite mine is designed to start operation in the Parnassus area close to Delphi (which is an important archaeological site), the competent archaeological authorities might be the most important

authorities in permitting, due to the importance of cultural aspects to the Greek economy. The Ephorate of Underwater Antiquities articulates its opinion when the project and/or activity is in marine areas. The Ephorate of Palaeoanthropology-Speleology play an important role when proposed mining projects are in close proximity to caves.

4.7 How mineral resources are valuated in public policy and planning

The data collection shows that economic (15), geological (12) environmental (11) factors are mentioned as the most common factors for the valuation of mineral resources (Figure 15). It is important to note a limitation of the explanatory power of the data: data were sampled in WP2 asking for the factors that are considered when valuing mineral resources. The data validation illustrated that the question was not specific and detailed enough: hence the answers varied strongly regarding the valuation context but also the case study: e.g. the Austrian case reflected on the AMRP (economic and geological valuation) while other countries referred to permitting/licensing processes or even broader land-use planning or the valuation of different land-use options.

Economic valuation

Economic valuation of mineral resources was referring to two narratives: (i) economic valuation of the mining operation in the permitting/licensing procedure, when companies must proof the financial viability of a potential mining project; (ii) economic valuation in terms of regional development: that interpretation is referring to possible increase of regional added value or the contribution to value chains. For example, the Portuguese case owners reported from the importance of mineral activities in the Portuguese hinterland, away from the touristic coastal areas. From their perspective those areas are challenged with migration away from the region, limited number of jobs and services. Here the economic valuation of minerals is related to their economic capacity to feed into regional development of shrinking regions; (iii) economic valuation of mineral deposits as input data for policy design: the Austrian and Spanish case illustrate the economic valuation of mineral deposits as part of a policy design process in which ‘conflict-free’ deposits shall be outlined.

Environmental valuation

Environmental valuation is mainly referring to EIA processes and the evaluation of possible (cumulative) environmental impacts of mining operations. Environmental values are

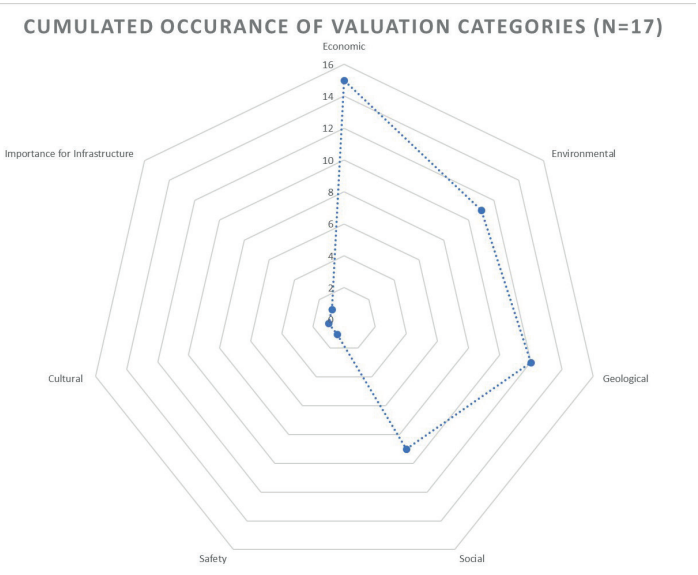


Figure 15: Cumulated occurances of valuation categories, in 17 sampled case studies

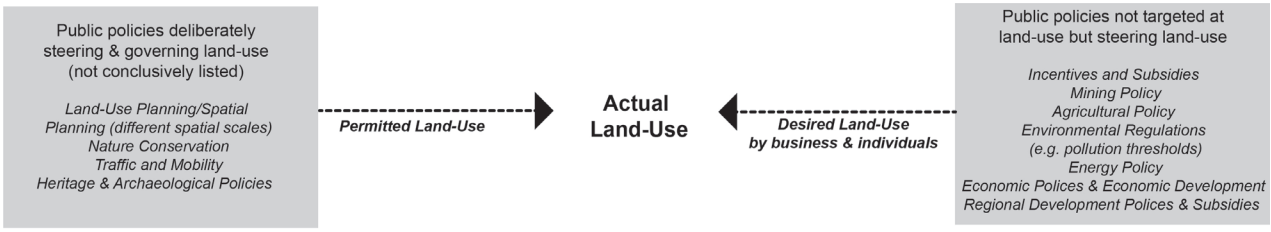


Figure 16: Policies that are driving and impacting actual land-use

described as thresholds (e.g. pollution), as habitats and vegetation types (e.g. Austria, Styria regional development plans, Natura 2000, Sweden: Boliden case on environmental compensation) or (rare) plant or animal species (e.g. red list species). The occurrence of (accumulated) environmental values might limit mineral activities in order to safeguard public interest of regional, national or international importance. However, the data also illustrate that the occurrence of environmental values must not inhibit mineral activities in general: the Greek case illustrates that mining in natural parks is possible, if there is a specific contribution to the economic development of local communities and the mining activity does not cause a degradation of the environment. Also, the Finnish case illustrates that exploitation in Natura 2000 areas is in general possible but demand an additional permit from the Ministry of Environment. Also, the Portuguese case shows that environmental values in the format of Natura 2000 areas and mineral activities can be combined under certain conditions (e.g. depending on the habitat).

Social valuation

In the collected data, social valuation, is the most intangible term used by the respondents. The data validation illustrated that social valuation might refer to (i) Social Impact Assessment, as of analysing, monitoring and managing (un-)intended positive and/or negative social impacts of projects (or plans, programs) and the social change that might be triggered by that project; another reading of ‚social' valuation is related to the so called 'Social License to Operate' (SLO) addressing a(n) (in-)formal social contract or contribution of the mining operation to the social and community development.

4.8 More than 'just' Land-Use Planning

The case studies vividly illustrate that actual land-use is the outcome of a broad variety of planning and governance processes that reach beyond land policy and land-use planning instruments: the fact sheets show a diverse set of public policies that are affecting and driving land-use and are impacting and conditioning the public and private sector. The most important instrument for land-use planners is permitting, regulation and prohibiting certain land-uses and by imposing requirements that must be met to (a) organise a coherent, efficient spatial pattern in the particular territory that considers the full array of demands from public policy, and (b) condition a spatial organisation that provides options for regional and local development, (c) consider the overall short-mid-and long term local and regional development pathways and the needs, wishes and demands of the local communities.

The cases show, that land-use planning often uses restrictions to private land-owners or developers as policy and planning instruments because legislative frameworks and policy do not bestow LUP with a broad set of policy instruments. To illustrate: Land-Use planning agencies or departments do not have budgets to accommodate financial incentives to nudge actors and particular spatial behaviour. In other words, land-use planning has

limited power (apart from restrictions/permissions) to steer and govern land-use. Due to the lack of instruments to affect and nudge how people and businesses would like to use land planners must take the motivations from people and businesses as 'given' and fairly outside of the control of the land-use planners. Many countries deploy policies and incentives (e.g. businesses, housing, economic development, business incentives, agriculture, etc.) impacting businesses and individuals and their actual land-use and particularly the demand for land. Thus, the case-research illustrates the importance of horizontal coordination mechanisms and horizontal policy integration: i.e to avoid misalignment of incentives from different policy streams that might cause tensions and spatial contradictions 'on the ground' on local level.

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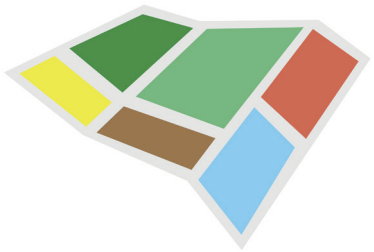

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