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MISSION-ORIENTED INNOVATION POLICY IMPLEMENTATION DIFFICULTIES IN A SMALL STATE CONTEXT: THE CASE OF ESTONIA

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ABSTRACT

For more than a decade Estonia has tried to establish a more strategic science, technology and innovation (STI) policy, however, the implementation has been less generous in impacts and logics. As the European Union (EU) is turning a new page with mission-oriented innovation policies (MIP), this case study is focusing on the difficulties of implementing such an approach in Estonia, based on the previous similar attempts and their barriers. Although being a single case study, it does offer some extrapolated insight into those difficulties, especially in a small state context. As a second output, this paper offers an analysis of institutional change and especially its resistances in a form of layering on a case of STI policy in a small state. Setting out a sort of differential diagnosis to consider what is hindering innovation policy, while in the process the lens has focused most on capacities, culture or ideologies and the policy arena. As such, the theoretical framework remains mostly in a neo-institutional approach combining it with some form of ideological and evolutionary cultural theory and a strategic policy process approach. It also contributes to the debate of technocratic optimism and policy-pessimism within MIP.

Keywords: Mission-oriented innovation policy; implementation; small state; institutional change; ideology

LIST OF ABBREVIATIONS

CEE - Central and Eastern European (post-Soviet nations)

EAS - Enterprise Estonia

ETAg - Estonian Research Council

EU - European Union

FA - Focus Areas

GDP - Gross domestic product

ICT - Information and communications technology

KBE-1 - Knowledge Based Estonia 1 (strategy 2002-2006)

KBE-2 - Knowledge Based Estonia 2 (strategy 2007-2013)

KBE-3 - Knowledge Based Estonia 3 (strategy 2014-2020)

MEAC - Ministry of Economic Affairs and Communications (Republic of Estonia)

MER - Ministry of Education and Research (Republic of Estonia)

MIP - Mission-oriented innovation policy

NPM - New Public Management

OECD - Organisation for Economic Co-operation and Development

PA - Public Administration

PD - Path dependency / path dependent

R&D - Research and Development

RDI - Research, development and innovation

RDIE - Research, Development, Innovation and Entrepreneurship (Estonian strategy 2021-2035)

S3 - Smart specialisation strategy / smart specialisation

SA - Scientific advisor

SDG - Sustainable Development Goals

STI - science, technology and innovation

UN - United Nations

INTRODUCTION

Fukuyama theorised that the end of history was not supposed to be glorious, but rather boring, as the victory of capitalism and democracy stands upon the notion that other alternatives are not feasible (Mueller, 2014). Although even Fukuyama (2021) challenges his theory with two conceptions, the difficulty of achieving the real modern state and the existence of political decay. There are strong indicators that the capitalistic free market is not able to balance and self regulate as much as *Fukuyamaesquely* hoped for, it does come with its own dark side (Foster, 2019). Predominantly, something that is difficult to ignore, the global detrimental effects on the climate of high economical human activity, so far, mirroring Schumpeter's prediction that capitalism may fail under the weight of its success (Fagerberg et al. 2015; Foster 2019). This, among other societal and wicked issues that stubbornly persist even when GDP rises and administrative resources are focused upon them, have revealed a gasping gap in the capabilities of modern political structures. This a signal that without structural change humanity will remain to be plagued by many intensifying societal problems. And while liberal democracies are constantly changing, for us the real hope at the bottom of *Pandora's box* is technology, that which can save us from all of the curses released upon humanity (Oelschlaeger 1979; Moreira 2021). As Weber (1946, 139-140) describes the modern human subject as the one that is marching in infinite progress. Since the successful progress of capitalistic societies depends upon innovation (Schumpeter 1939, 16; Kregel 2011), governing innovation to try to fill that gap has arisen as a logical conclusion to offer the necessary adjustments for the system (Edler & Fagerberg 2017; Kattel & Mazzucato 2018). A policy that is pushing for solutions to problems and directing enterprises, is compatibly conceptualised as a *Schumpeterian* innovation policy (Cantner & Vannuccini 2018). Furthermore, Mazzucato (2013) argues that the success of the USA is not of a small state, but of public-funded investment into innovation. Most notably inspired by successful Apollo missions, a new generation of mission-oriented innovation policy (MIP) has taken up this challenge to solve societal problems (Kattel & Mazzucato, 2018). Appearing as a substance in motion, for example, and relevant here, by sustainable development goals (SDG) of OECD and EU Horizon 2020 missions. Overall, traditionally linear and simple *science, technology and innovation* (STI) policies are being challenged, also by e.g. Smart Specialisation Strategy (S3). If before it seemed it was best to keep away from rationally making decisions as much as possible and let the *forces of nature* make the choices, then now the public is thrown to make decisions, that is if we want to solve wicked problems and follow SDG.

However, as shall be argued, when the technocratic wave from the supranational level moves to implementation, the societal challenges approach has come as a challenge itself. The case of Estonia is especially at odds, as the bitter taste of the brutal soviet state machine and the happenstance of regaining independence when New Public Management (NPM) was at the height of its popularity have dialectically thrown Estonian ideology mostly in favour of minimal state intervention. Yet, for more than a decade the ideas of social challenges within STI policy have floated around in Estonian strategic planning, mostly flowing in from the EU, yet implementation has been very limited and cynical. This paper sets out to answer why non-linear STI policies, focusing on the recent MIP framing, face challenges in Estonia and create a blurring and obscuration of concepts and institutional patterns. As a case study of STI policy in a small state, this paper's purpose is to contribute: first, to the institutional change debate, how layering and institutional change take place; and second, to the MIP debate, on how the implementation takes shape.

There is an exploratory element, however, the most testable hypothesis is that a small state has limited capacity, capabilities are lacking, and/or there is a lack of real political will which also stands upon the incompatibility of local culture and ideology.

1.THEORETICAL FRAMEWORK

1.1. META POSITION

1.1.1. Methodological Individualism

Social sciences by definition revolve around human behaviour, thus a model of human behaviour and rationality is a necessary core of every approach. Methodological individualism is a Weberian concept (coined by Schumpeter) of social phenomena resulting from the agency of individuals (Weber 1922/1968, 13; Health 2020). Yet this paper moves away from the strictly rational agency, although accepting that social reality is created and found within human beings.

1.1.2. The Rationality That Serves Economics

It is a fundamental debate about human nature, for example appearing between structuralists and existentialists, on the extent to of a human being is affected by the environment and how free a human being really is (Levin 1968). Since innovation policy mostly is an economical category, the interaction with an ideology of that realm is unavoidable. Neoclassical economics has solved the issue of *the human* by invoking an idea of a purely rational utility maximising beings (Sent 2018). As economics presents itself as a science like physics although it is more similar to philosophy formulated in different schools of thoughts (Reinert, et al. 2021; Varoufakis 2020). Even more so, Reinert, et al. (2021) argue that economics as a craft is an exercise of power and a tool of vested interests which is maintaining its own ideology, while Varoufakis (2017) argues it is infested with base assumptions that are kept up by strange societal mechanisms. Martin (1990) also talks of the strong ideological element of economics.

1.1.3. The Model of Rationality

Weber (1922/1968, 6) models the *ideal type* human as rational for the convenience of the sociological method, although even Weber sees non-rational forces still affecting the modern disenchantment process (Weisz 2020). Arguments can be made that it is a kind of myopia, a fallacy of ignoring what can not be conveniently researched, creating a scientific proxy reality (Peters 2017). As Hume (1978/1888, 331) famously argues, “Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.”

Pinker (2021) points out that, rationality must always be in service of goals, no one gets rationality credit for thinking true thoughts. And since there are cognitive reasons why nudging works (Gigerenzer 2015), after all, bombarding advertisements is a rich industry. As well as, the theory of rational ignorance of decision costs and energy conservation of an evolutionary brain (Taylor 2019). Sent (2018) explains that rationality as a model has taken different forms - and that bounded rationality and rationality as concepts depend upon each other to exist. As such, non-rational forces are clearly strong mechanisms in the social realm and likely have been systematically underrepresented.

1.1.4. Modernity or the Automatic Progress Credo

Hicks (2004, 7-13) explains modernity arising from the enlightenment project as starting from reason, naturalism moving on to science onwards to practical engineering, and medicine. On the other side, reason leads to individualism onwards to liberalism and capitalism. All of this producing wealth and health, material goods and freedom - with an end goal of happiness and progress (Ibid.). Relevant in our context, Neoclassical economics is based on the assumption that free markets would produce optimality for the society to which the market-failure approach in terms of large public investment was rationalised (Edler & Fagerberg 2017, 6), which is a mirroring of such a worldview. As every concept is being haunted by a repressed term - using a method to look for what is there, but not fully there can be applied (Derrida 2006/1993).

Martin (1990) dissects how Adam Smith has been ideologically based on reinterpretation - the actual notion of the invisible hand was based on omniscient casual force. The invisible hand and spontaneous self-organising social order are not so spontaneous or optimal but shaped by powerful agents (Castelfranchi 2014, 4). An ideological position or phenomenon, what can be named as *modernity credo* or automatic progress, is a view that economic growth, technological progress and perhaps slight/normal government regulation eventually will solve societal problems, such as climate change. As presented within the paper, it seems to appear as a kind of incrementalism, not to interrupt the power structure, a kind of anti-technocratic directionality (something not often stated, however arguably it is tacitly shining through the logics). It manifests in a way that missions and problem focusing are not needed since solutions to problems will follow automatically from the market, economic and technological progress. The sum of administration should be what to fund. Through this perspective, MIP has elements in it that move beyond modernism (not to invoke any wrath by using a term like postmodernism).

1.1.5. Ideology

Nelson & Winter (1982, 372) argue with Keynes that human analysis is influenced by theoretical perspectives through which the problem is viewed, also through (Lindblom 1972) that even very thoughtful behaviour has major elements of muddling through due to cognitive limitations. Every rationality has base assumptions, pure reason can not be found, not at least in practical life - thus every rationality is filtered through ideology. As "…there is a variety of 'rationales' for doing strategy; deliberate design can be done 'rationally' in distinctly different ways" (Mintzberg, 1994 through Steen & Twist 2018). Žižek (2008/1989, 15-16) argues that ideology is not 'false consciousness', rather it is the very fabric of social reality, ideology is inescapable. In a way, one can be rational and ideological, in fact, by this account one always is boundedly (also ideologically) rational. Another perspective on that unnatural relation is that the world is reasonable, that is, everything has a reason, a cause, but whether that reason makes sense within a certain system of thought, framework, a game of logic, cultural reality etc., is another question. Weber's definition of social reality is essentially symbolic (Greenfield 1992, 17-18). Simply, as even Weber already noted, materialist analysis to explain capitalism was not enough - ideology and culture play an important role (Cuneo 1990). The concept of ideology is a great analytical tool that is often implied and noted in public administration (PA) literature, but rarely gets the spotlight it perhaps deserves.

1.1.6. The Role of Human Psychology

It is psychology and biology which limit logic and much of the psychological literature suggests that rational decision-making is not the dominant mechanism, furthermore as a general principle policy-makers attempt to change as little of their attitude structure to avoid cognitive dissonance (Stein 1977, 432-436). Perhaps the shroud of strict modernism is falling as approaches like human-centred design are taking hold. Although, it is unlikely that no one really denies that humans are psychological beings, still as Žižek (2008/1989, 24-25) explains the ideology today as, 'they know very well what they are doing, but still, they are doing it.' The agency within an individual human is not coherent either, there are different forces within the psyche.

Pollitt (2008) demonstrates that there is value in analysing cognitive factors for PA. Furthermore, there is data with at least robust value, that change management can be successful when getting vanguards who are discontent with the *status quo* on board, while rolling, change can feed on itself, having positive feedback mechanisms due to psychological effects on 'as time goes by'

reinforcement such as cognitive dissonance, mere exposure, foot in the door etc. (Kelman 2005 through Pollitt 116-117). Also, Pollitt (2008) talks of many ways how fashionable ideas cycle within policy-making based on psychological and ideological effects. One of such is the duality of error and oscillation (Pollitt 2008, 23-24), basically a process of Hegelian dialectics of its historical use. If we take methodological individualism a step further, what PA really manages or administers is human psychology. In part, this element appears clearly in a way MIP tries to bring together different people out of their narrow specialised positions to work together for a bold and inspirational goal.

1.2. INSTITUTIONS

1.2.1. Routines

Routines are a part of the evolutionary analysis, as they have gene-like stability and the capacity to mutate (Nelson and Winter 1982). The role of the routines is manifold, naming a few: coordinate and control; represent political 'truce'; cognitive economising; etc. - routines embody knowledge, including tacit knowledge. Routines are mostly (characteristics): repetitive; patterns of interaction and collective; without conscious deliberation; processual; context-dependent; shaped by history and PD(path dependency) (Becker 2004). Policies are implemented as a matter of routines and changes within routines are usually local, adding a comparatively constant selective environment - thus policy change is evolutionary PD (Nelson & Winter, 1982, 376).

Staff turnover and some other operations cause the loss of organisational memory resulting in an inability to learn and causing making the same mistakes again (Pollitt 2008). Ultimately routines lie within the knowledge of the individuals - which is also activated by context such as interaction with other individuals, possessing a network quality (Nelson & Winter 1982). Routines, as well as, norms as predictive processes between humans, agreements about what to expect, what will happen and what feedback is given - rules in the fabric of social reality. Homogeneous information mutates within heterogeneous individuals because it is interpreted by the information system already present within the receiver (Rehder & Kim 2006, 659).

1.2.2. Flow of Ideas

Dawkins (1976, 192) explains the process of cultural transmission as memes that carry on from person to person in competitive differential replication of cultural items - using evolutionary theory as a basis. Memes seem to have low copying fidelity, meaning that through transmission the ideas change somewhat (Ibid., 196). Similarly on low-fidelity Pollitt (2001) argues that convergence is more to do with replication of rhetorics and propagation of norms, fashions etc. than with the functional necessity. From an evolutionary perspective, memes and routines are closely related, in some sense, they really are the same process, but from different perspectives.

1.2.3. Humans and Context

Fields of PA and public policy have been victims of decontextualisation - ignoring the influence of time and space/location (Pollitt, 2008). Even humans themselves have a tendency to cognitively ignore situational factors that shape others' decision-making (Hanson & Yosifon 2003 through Shapiro 2012). Pettigrew's (2012) findings that strategic change is dependent on context go together with this paper's argument that context is ultimately within humans. Humans in a sense, are the agents or carriers of ideologies or as Dawkins (1976, 179) puts it, cultured as meme machines, yet with the ability to rebel against our maker. Institutions both are products of human actions and also form much of situational context for humans (Jackson 2005). We are born into culture and routines, we grow in them - this is the *passion* our reason is a slave to. Reason can still, of course, debate and choose the ideology or framework through which to understand (social) reality.

The main issue of social sciences is the micro-macro link between individual cognition and institutions (Castelfranchi 2014, 3), this is an attempt at the link. This theoretical output does construct a system that sees a human as an ideology carrying meme machine constructing social reality in the forms of expected routines in communication with other humans (all of which we see as institutions - they are, as long as we believe in them).

1.2.4. The Path

PD is an organising concept in which since a certain path was chosen there are strong incentives to stay within it and thus change is further limited. The field of mechanisms that can produce PD are wide-ranging from economical sunk costs to cultural norms to cognitive factors. (Pollitt

2008, 43-44) The path is a sort of predictable logic and routines of a given institution system (Deeg 2005). Here a concept of ideology and cultural memes can be summoned - especially because in this case, the research object is designing a new policy for more than a decade. As few, if any mechanisms are unendingly self-reinforcing (Pollitt 2008, 147). Economic factors are less important in our case, for innovation policy is the one *designing* the economy - meaning it is more a matter of choices. So are institutional, because of the duration, if there be a will, those could have been altered - the question rather is, why were they not altered.

1.2.5. Change

There is nothing automatic about institutional stability, as such, there are mechanisms of reproduction which also help to predict change (Streeck & Thelen 2005; Hacker 2005). By Deleuzian metaphysics we live in a reality of flows, no two grains of dust are the same, every repetition offers mutation, reality is becoming, not being (Deleuze 1994). A similar view is found in institutionalism Jackson (2005) "…dialectical manner in which institutional reproduction and change condition one another (Seo and Creed 2002) in a continuously changing world where actors are creative and situations often ambiguous."

If the world is run by those routines, as an evolutionary process some die out, and others survive, depending on the environment. *Hard* institutions are generally more adapted to the current social environment. But it is not necessarily so, there might be strictly cultural memes that persist through different political structures such as the handshake - it depends on the nature of the feedback. Classic example by Streeck & Thelen (2005, 3): in the 70s, institutions of democratic capitalism were used without being restrained by cultural inhibitions and historical traumas, leading to cause problems. The uncodified institutions/ideologies or memes/routines (in an abstract form they all equate) did not survive, while codified ones did and a new combination of social reality was born. Institutions are in a way scripts that individuals enact almost unconsciously (Meyer and Rowan 1991 through Thelen 2009). From this sort of cultural anthropology view, a lot of the administration is done by *natural forces* of cultural norms, ideologies etc. - and this is the context with which conscious strategic PA is always interacting. Thus, administrative capacities of a certain context are found too in the forms of cultural routines, ideologies, etc.

1.2.6. Incrementalism

Incrementalism can come from three sources: politics that take small successive steps; analysis where decision-making limitations fail to consider everything; and partisan mutual adjustment due to fragmented decision-makers (Pollitt 2008, 49-50). Incrementalism is different from PD because it can end up in radical change (Pollitt 2008 46-47; Streeck & Thelen 2005). Streeck & Thelen (2005) analyse 5 ways in which that can happen: displacement as a defection; layering as a differential growth; drift as deliberate neglect; conversion as redirection or reinterpretation; and exhaustion as depletion (see overview Streeck & Thelen 2005, 31). For our case, we deal mostly with layering and a strange revert way with drift, but also displacement potential and conversion.

Changes can happen not because of radical ideological change or political choice, but through a change in policy instruments (Palier 2005). New implementation recipes depend on a shared diagnosis of past policy failure and depend upon how things were done before, not so much on programmatic reorientation - implementation often is incremental and new forms of thinking grow in layers (Palier 2005). Also, paths can change via the formation of a subregime on certain conditionality: the old path is defended by the powerful, yet some of the powerful are unsatisfied with it and this splitting is minimally compatible. At first, increasing returns may not be automatic, but must be cultivated - institutions are only beneficial if there is further change (Deeg 2005).

1.2.7. Role of the Agency

Pollitt (2008, 49) through Thelen (2003) explains that institutional layering occurs when innovators adapt to the current system by working around the elements they can not change - when new elements are added while the original institution is left in place (Thelen 2009). Institutions include gaps, such as cognitive limits of rule makers that limit the control they have over their creations; designed as a political compromise; losers of the powergame still find ways to affect the institutions (Thelen 2009). A contradictory institutional framework is not unusual, as complex social arrangements can tolerate internal tension due to insolations mechanisms, division of labour, etc. (Crouch & Keune 2005).

By focusing on political coalitions and ongoing manoeuvring among *rule takers* and *rule makers*, we note the importance of strategy, conflict and agency continuously (Thelen 2009). Some sociologists may call it a ‘closet rationalism’ (Pollitt, 2008, 44), but as argued here it is

contextual as in cultural, ideological, and bounded. Historical institutionalist research gives an increased role to the agency, a sort of rebellious creativity to exert its will on the world. The theoretical model in this paper adds a sort of impressionistic explanation of why the agency itself changes. From Pollitt (2008, 44) this model falls more under sociological institutionalism. Actors try to reinterpret the rules to fit their goals (Thelen 2009), and within the policy game, actors use conflictual or avoidance strategies (Klijn & Koppenjan 2015, 80), we can conceptualise them as tools of resistance.

1.2.8. Tools of Resistance

Some processes simply take a long time such as cultural and generational change (Pollitt, 2008). Crouch & Keune (2005) consider two mechanisms for ridginess: power relations, as actors become more expert at actions that favour powerful interests, creating a reinforcing effect; and the socio-psychological concept of the learning curve. There is also a case where major shock results in a change, however, the institution reverts back to its old state (Pollitt 2008, 47).

In some sense barriers and tools are the same, the only difference is the existence of agency in their effect, but as this model of agency is not some kind of pure *machiavellian* rationalist, the borders blur. The creativity of the agency to influence and shape the social and political reality can take all kinds of strange forms, which all can not be accounted for here. But to give some analytical shape naming a few. Methods such as sophisticated sabotage of burdening the administrative process in name of fairness and accountability, or rule-makers ossification by hobbling procedural hurdles or budget cuts to agencies (Shapiro 2012). Or the fact that business interests tend to dominate lobbying compared to other groups, which is important as psychologically the amount of information bombardment has an effect (Ibid.). Also NIMBY(not in my backyard) protests as a game type (Klijn & Koppenjan 2015, 85), here it can be extrapolated to policy arena actors too, whereas some societal challenges are considered noble and important, however not enough to make sacrifices (prioritise in a world of limited resources). As fashionable labels are frequently borrowed for legitimacy but can remain symbolic (Pollitt 2001, 944). In general, if the agency is creative to work around the institutions to force change it is also able to do the opposite, to resist change, so it is a political dance to reinterpret the world.

1.2.9. Process of Policy Design

Steen & Twist (2018) separate the front-stage of presented rationality, and strategic planning and the back-stage of actual more practical policy design that focuses more on collective sensemaking, political powergame, and also somewhat of emerging issues and insights. (Steen & Twist 2018) Content of strategic change is a product of the legitimation process of political and cultural considerations expressed in rational terms (Pettigrew 2012). A policy window opens when the policy as in solutions, politics and problem streams all intersect (Jann & Wegrich, 2017, 47). To even further make usage of this concept also ideologies (opening up the politics stream) need to align somewhat to overcome tools of resistances. A policy frame is used to interpret complex policy issues which also shapes them, and is often formulated through a political battle (Shapiro 2012). "Public administrations are not purely rational entities and different stakeholders are not only likely to reach different conclusions … but also use these conclusions in different ways depending on broader strategic concerns and individual agendas" (Vydra & Klievink 2019).

1.2.10. Political Arena

Habermas (1991/1962) argues that the institutions of reason and rational debate were once more prominent, but through structural change, the public sphere also does change. Or the moralist perspective of Pinker's (2021) argument for a tragedy of the rationality commons, as each of us has a motive to prefer our truth, but together we are better off with *the truth*. The obvious *hauntology* that appears here, is that institutions of reason are in danger even in western liberalism - rationality is not a given, not in life nor in politics.

Interactions take place in multiple arenas where many actors do not overlap, resulting in a fragmented and mostly unsteerable essence (Klijn & Koppenjan 2015, 90). Although there are some commonly shared cultural memes, individuals have a unique cognitive *fingerprint*, they all exert their will. Common wills align to produce flows (humans have all kinds of mechanisms and routines for cooperation, many of biological origin), gathering enough power there can be a clash or domination. Significant changes in institutions reflect changes in coalitional bases that they rest upon (Thelen 2009), even strategy is a highly politicised process and reforms are often of ambiguous agreement (Steen & Twist 2018; Palier 2005).

1.2.11. Policy-Pessimism

Vydra & Klievink (2019) on big data literature abstract two archetypal narratives into two extremes, techno-optimism (e.g. more data will translate into better policy) and policy-pessimism (e.g. bending the data to agenda), adding that both also pay lip-service to each other. In MIP an analogue approach is called for, with the difference of perhaps changing techno-optimism to technocratic-optimism. Implementation is not rational or technocratic, it is political, everyone may be rational, but everyone has their own strange rationality which competes with other rationalities (Klijn & Koppenjan, 2015). Implying difficulties for the reflectivity of MIP because it demands a rational decision-making process that has data as input and efficiency as an output, but in implementation, this process is filtered through wills, having agendas as input and powergame as an output.

1.2.12. Chaotic Nature of Policy

There are two sides to problem-solving through policymaking: an intelligent design and a strategic game - in which actors bring a mix of strategies (game types), causing an environment that is unpredictable and uncertain resulting in a strategic complexity (Klijn & Koppenjan 2015). Additionally, civil servants live from day to day trying to make sense of each urgent issue as it arises (Noordegraaf 2000 through Pollitt 2001). Furthermore, political kudos comes from launching reforms, and the latter evaluation is non-influential. For designers, it is understood as *implementation* is someone else's responsibility. (Pollitt 2001) Policy changes are achieved by bargaining and persuasion, thus the end result is not of rationality (Klijn & Koppenjan 2015, 71). The clear sign here is, that for policy, there is no good system of reflexivity and holism, as such policy mix is difficult to control. Since every good-willed rational input will have to morph into (often) hideous compatibility that may not even resemble its original purpose - unless the goals align.

1.3. MISSION-ORIENTED INNOVATION POLICY SIDE

'[T]o find coherent policy mixes (instruments and funding) and capabilities of coordination seem fundamental to the success of today's mission-oriented policies' (Kattel & Mazzucato 2018). Realistically this transition management needs to create a separate area with clear visions, led by a small number of motivated and capable frontrunners and continuous policy learning, yet this technocratic approach in a democracy needs broader polity support, also bringing along the danger of capture (Fagerberg 2018, 7).

Grand challenges need tentative governance of dynamic processes of learning, creating open spaces etc. (Kuhlmann & Rip 2014) 'Successful innovation depends on the ability to mobilise and combine a number of different factors, such as knowledge, skills, finance, institutions and demand.' (Fagerberg 2018, 25) The inverse relationship between clear strategic vision and increased collaboration causes a difficult predicament because both are crucial for MIP. The key premise for solving grand challenges is the dynamic private-public partnership (Kattel & Mazzucato 2018) MIP also seems to need strategic policy mix designing capabilities.

1.3.1. Capabilities Needed for MIP

One of the main shortcomings in the MIP academic debate is on the implementation level (Janssen et al. 2021, 439), which is the one that can be a coffin nail in PA. Manifold ways through which missions can be implemented obscures it (Janssen et al. 2021, 440), as such MIP can be mis- and re-interpreted when it comes to practice. As ideally, all public policies are mission-oriented (Kattel & Mazzucato 2018). There is a danger in MIP, as in any policy theme, that policymakers will relabel their old institutional ways (Janssen et al. 2021, 439). A worst-case scenario, where goals are incoherent and policy mixes are inconsistent amounting to a purely rhetorical policy and layering (Howlett & Rayner 2007).

The academic debate as yet to address which are the capabilities needed when it comes to deploying missions (Janssen et al. 2021; Kattel & Mazzucato 2018). The problem is not just specific to MIP itself, but also while Mayne et al. (2020) present a framework of capabilities for problem-oriented governance they start from a position that they have been insufficiently conceptualised. Since MIP brings together problem-based governance and innovation governance (Janssen et al. 2021), it is clear that if its *better half* is rather fresh in the capability

department, then MIP too is prone to deficiency of substance on that part. The process of implementation is messy, filled with contradiction, compromises, human and organisational error, limits of human cognition, etc. (Howlett & Rayner 2007). This is an approach where problems, rather than institutions, are set as the starting point (Mayne et al. 2020), not thinking about what is, but thinking about what could be. In sense, there is a protest toward evolutionary policy-making to a more rational one. MIP is likely to require a much stronger role of the nation-state, and more advanced policy capabilities compared to other innovation systems (Hekkert et al. 2020).

Mayne et al. (2020) separate the main capabilities for problem-oriented governance into reflective-improvement capability, collaborative capability and analytic capability. For the purpose of this work, collaborative capability can also be divided into two cross-silo and state-society relationships (both aspects appearing within Ibid.). Based on some of Mazzucato (2021; 2018b; 2018a) work and of the OECD approach (Larrue 2021) the concept of MIP is sorted into main functional aspects when it comes to guides for implementation. The purpose of this sorting is to try to find needed capabilities that match all the main values of MIP and capabilities that are novel to traditional state capacities.

1.3.2. Narrative Creation and Inspirational Leadership

Missions should be bold and inspirational, engaging the public (Mazzucato 2018a, 812) The narrative adoption and inspiration depends also upon the recipient not only upon the leader or inspirer, as *the Ministry of Propaganda* stays in the past. Humans are definitely perceptible and affected by information, however, today's world is described by information overflow and multipolarity in agenda settings. As stated by the World Economic Forum, that personal data is the new oil (Couldry & Mejias 2018, 340). Every narrative is already competing with countless others that are constantly being flooded by all kinds of agencies. The question is how much it can be consciously steered as not all narratives stick or capture the collective subjectivity in a powerful way.

Matching capability here is recognising the possible inspirations and capturing them, as such the able narrative construction. Targetability includes the skills of holistic conceptualisation in order to choose witty indicators that reflect the goals of wicked problem-solving. As Mazzucato (2018b, 14-15) recommends that the mission should be measurable and ambitious, but realistic.

According to Mayne et al. (2020), the main capability here would be reflective-improvement capability. This is most relevant to mission formation, as it is the ability to develop and communicate theories of change and an ability to learn and adapt (Ibid.) On the other hand, it does represent the meta-capability which can be equated with the Kattel & Mazzucato (2018) version of dynamic capability.

1.3.3. Problem Focusing Beyond Sectors and Creativity Fostering

Missions should be framed so that they spark activity across disciplines, sectors and actors (Mazzucato 2018, 15). MIP coordinates around the problem, instead of around a technology, sector or discipline trying to create a 'pull effect' for interdisciplinary collaboration (Larrue 2021, 59). The main capability here is cross-silo relationship cultivation and collaboration (Mayne et al. 2020). Matching capability here would be to produce an environment for meaningful discussions between 'sectors' and for creativity. Already just for the reasons mentioned, the usual coordination routines in PA are not producing this outcome naturally. A related important capability is the ability to foster creativity within civil service.

1.3.4. Prioritisation Based on Risk and Potentiality Assessment

The issue of directionality must differentiate between the desirable and undesirable. The task is even more difficult in an uncertain environment based on speculations. MIP needs a holistic view of all the spillovers in order to thrive economy towards the desired value (Mazzucato 2021, ch. 6). Related to this is the skill of problem-focused and ambitious procurement, the demand side of politics needs to know how and what to demand.

Including also the idea in MIP of covering different components of the value-chain, (Mazzucato 2018 14-15; Larrue 2021, 61) faces serious problems in a globalised era of the 'hollow state' (Howlett 2000), of unresilient global value chains mirroring the division of labour between different types economies of different countries (Gereffi 2020). A lack of control that is impossible to regain within national policies, which is ever so true for a small state.

One of the core capabilities needed for problem-oriented governance is data analytics capability (Mayne et al. 2020). Connected capabilities here are holistic conceptualisation through which risk and potentiality assessment is made. Another interconnected capability is to use policy

instruments in order to favour and discriminate based on this assessment. Mostly done by means of the treasury, also procurement but can be affected by regulation and information influencing.

1.3.5. Collaboration With Different Factions or Agencies

There is a certain tension when it comes to collaboration with the private sector in terms of societal challenges as the motivations may clash. An important capability here would be state-society collaboration (Mayne et al. 2020). Hekkert et al. (2020) see that in MIP different actors contribute for different reasons, for firms, it is expected economic return. One of the implementation actions is to get the private sector to commit resources for societal challenges and that the public sector should be hands-on, helping the private sector in all ways possible (Larrue 2021). Adding also that the academy side also has its own logic of excellent science that may not serve most application needs.

1.3.6. Generally on the Essence of MIP

What it boils down to, is that MIP in essence is a change in a way of thinking, it is a certain approach with a set of values, an ideology. Mazzucato (2021) emphasises rethinking capitalism, the market, the role of the government, value creation, budgets etc. MIP calls for a cognitive revolution which in turn is supposed to produce the right policy mix and institutional change. In an implementation, it means that MIP comes into being when civil servants start to think in a different way and then through their own expertise, knowledge of their current context and their creativity they devise ways to give their new thinking framework a functional substance. It is a very ambitious approach which tries to include an *attack* from many different fronts. Without a strong understanding of the theory on all sides, the implementation of these features can send mixed signals and cause confusion, such as how to conceptualise both top-down and bottom-up, when to use or the other. As the dichotomy has its criticisms (Bache et al. 2015, 831).

1.4. BACKGROUND

1.4.1. Small State Peculiarities

Randma-Liiv (2002, 378-379) argues that small states have fundamental differences from larger bureaucracies such as the importance of individuals, multifunctional roles and blurring of the line between politics and civil service. This kind of personalism makes Weberian bureaucracy difficult, through mechanisms such as more informal communication and thus failure of recording resulting in discontinuities (Ibid. 385-386). Kattel et al. (2010) derive that low administrative stability hinders the creation of administration capacity, although these capacities along with coordinating capacities are the key to successful small state innovation development. In such a unique spot, small states must juggle bureaucracy and flexibility (Ibid.). Furthermore, small states have limited possibilities for agglomerations, low administrative capacity and higher dangers of vested interests (Kattel et al. 2010), all of which make small states in theory more vulnerable to MIP, because it depends upon those aspects. Yet there is another side to small states, the leaner, closer and less complex administration makes priority setting and participatory policy more manageable (Bonaccorsi, 2016, 70).

1.4.2. Post-Sovietism

Post-communist states in Central and Eastern Europe (CEE) share common features, such as being highly *agencified,* while at the same time lacking *agency agenda* in politics. Relatedly, also broader under-conceptualisation of PA reforms, spawning a piecemeal approach. (Randma-Liiv et al. 2011, 162) In innovation policy, Europeanisation has increased dependency on independent agencies in an already weak administrative capacity environment (Suurna & Kattel 2010, 658). The civil service of CEE still lacks *esprit de corps*, a binding loyalty to bring PA together, rather every government unit is likely to develop its particular culture leading to rivalry within PA (Randma-Liiv & Drechsler 2017, 603) In innovation policy the three main ministries are driven by their own visions of innovation and coordination is a challenge (Suurna & Kattel 2010, 661) CCE governments face the challenge of overcoming the negative consequences of the *ad hoc* setup in developing a strategic view of whole-of-government functionality and coordination lessening fragmentation (Randma-Liiv et al. 2011, 172), which is a threat for MIP which again depends on a strong state, at least on a conceptual level.

Post-Soviet Estonia has had a proclivity to distance itself from its past (Pettai 2021). Randma-Liiv et al. (2011, 166) also link administrative structuring for decentralisation with a protest against the heritage of a centralised communist administration. This reaction created a dominating neo-liberal worldview in politics and overarching extreme libertarianism, containing a lack of identification with, and trust towards the state, among even judges and politicians (Drechsler 2000, 268-269; Sarapuu 2012). Yet, Estonia shines as an extreme case even among other post-Soviet countries in weak involvement of civil society in the political process and anti-corporatism (Thorhallsson & Kattel 2012, 89). Kattel & Raudla (2013, 442-444) describe the underlying ideological position of Estonia as nationalist neoliberalism, where the embeddedness of capitalism as the vision of the free market is necessary for the survival of the nation.

It is not to say that Estonians still live in the shadow of the Soviet Union in a form of the Hegelian dialectic, rather, since they once did as a punctuation point; it started an evolving ideological road of PD. By now the concept of CEE PA is slowly evaporating (Randma-Liiv & Drechsler 2017, 603), and the defining punctuation point of soviet collapse is staying behind further away. Following, societal challenge-based innovation policy may propose fundamental difficulties in market-type innovation systems, among which Estonia is a rather extreme case (Karo & Lember 2016).

The financial crisis of 2008 led to the politicisation of decision making and strengthened the position of executives relative to legislatures among this also the increasing impact of the EU through Structural Funding in Estonia (Kattel & Raudla 2013, 439-440). The EU has been successful in formally enforcing institutional instruments, but less so on actual content change (Randma-Liiv & Drechsler 2017, 600). Sarapuu (2012) describes the phenomena of EU conditionalities as an artificial force holding Estonia under pressure, but when the force is released it tends to revert. Two aspects here are important: first, it indicates other continuing forces at work (cultural and ideological); second, it indicates a rather *cynical* agency. Estonia has been enthusiastically adopting many New Public Management (NPM) reforms since regaining independence (Mohr et al. 2021), however, an Estonian peculiarity manifested as de-agencification and consolidation of the structure (Sarapuu 2012). Overall organisational rate of change in institutionally fragmented Estonia has been unprecedentedly high (Sarapuu 2012).

1.4.3. Innovation Policy in This Context

Innovation has Schumpeterian economic connotations (Kattel et al. 2005), but now with concepts such as social innovation (Howaldt et al. 2016; OECD n.d.), it has come to just mean, in a sense, a human-created change that is conceptualised as an improvement. Moreover, grand challenges need open-ended social innovation (Kuhlmann & Rip 2014). Although, through other conceptualisations, an aspect of radicality is needed for public sector innovation (Karo & Kattel 2018). MIP essence is to provide new solutions to specific practical problems and is opposed to two other forms of innovation policy: system-oriented (which takes the whole nation system related to the issue into consideration and tries to widen the bottlenecks); and the earliest form, invention-oriented (concentrating on R&D and hoping the market takes care of the societal value) (Edler & Fagerberg 2017). Corresponding to those are the three framings of innovation policy: transformative change (societal challenges, SDG); national system of innovation; innovation for growth (Schot & Steinmueller 2018).

Growth in government activity has led to increased specialisations and thus fragmentation, however many policy issues transcend departmental boundaries and require coordination - as meta-policies. Also conceptualised as a confrontation between generalists and specialists. (Jann & Wegrich 2019) Innovation policy definitely acts as a meta-policy to some degree, but at the same time, it also has very specialised elements. Even then innovation policies are integrated policies (Bonaccorsi 2016), adding that meta-policies have often met with bureaucratic resistances as bringing in the MIP and societal challenges dimension, we face a triple challenge of economy, climate and governance (Fagerberg et al. 2015; Jann & Wegrich 2019).

2. METHODOLOGY

Interviews with experts were chosen as a source of new empirical data. The questions were derived from a lengthy process of documentation analysis and theory constructions. Eventually, 10 interviews were conducted (out of 12 planned, 2 could not be contacted), and there was contact with all the relevant organisations, thus the representation can be deemed holistic enough, considering the natural limitations of such research. Interviews were conducted with

representatives from Ministry of Education and Research (MER), Ministry of Economic Affairs and Communications (MEAC), Government Office, Estonian Research Council (ETAg), Enterprise Estonia (EAS), Foresight centre and affiliations with Accelerate Estonia and The Research and Development Council.

Interviews were chosen to be anonymous to gain more open information and were in a semi-structured format, although there was a formalised list of questions - as not all questions were able to be answered by everyone (experts from different positions) and there were exploratory questions that came out of the discussion and some from previous interviews to check the claims, also some specific ones directed to experts in specific positions.

3. CASE STUDY

3.1. ESTONIA AND MIP

3.1.1. Efforts Towards Challenge-Oriented Innovation Policy

The challenge-oriented approach in STI policy has been gaining popularity in Estonia (Lember et al. 2018, 6). The last ten years [as of 2015] have been based, at least rhetorically, on a systemic approach including reflexivity, however, reality still reflects a linear approach (Karo et al. 2015, 285). Interviews confirmed that within the process of building up a non-linear innovation system, there have been no radical changes, instead, it is described as an evolutionary process. Emphasis on societal challenges has paradoxically faced limited problems of legitimation, which likely is caused by actors' tendency to re-interpreting it to fit existing routines and to get access to funds (Karo & Lember 2016, 139-140).

The year 2007 can be considered as one of the first systematic attempts to move STI policy toward socio-economic relevance by designing national R&D programmes (Lember et al. 2018, 6). However, the implementations of national programmes have been delayed and complicated (Karo & Lember 2016). There have been indicators of some institutional change, but challenges

have also arisen from the lack of a more general innovation culture of openness and experimentation from different stakeholders in the society (Karo & Lember 2016). Relatively asymmetrical and fragmented RDI policy networks hinder cooperation and the development of a single governance of the innovation ecosystem (Karo et al. 2015, 284). Karo & Lember (2016) have done a substantial overview of the history of Estonian STI policy until 2016, especially through the lens of societal challenges (for a more detailed overview: Karo & Lember 2016, 134-142).

3.1.2. The Double-Headed Serpent

In the spirit of reductionism and compartmentalisation, the historical division between economics and *science* (to put it simply) is institutionalised in Estonia by two different ministries. One being the Ministry of Economic Affairs and Communication (MEAC) and the second being the Ministry of Education and Research (MER). Innovation is the bridge between the two *grand* fields that the two ministries represent (Edler & Fagerberg 2017, 14). In Estonia the science and the business side and punitive collaboration between them because of different interests in research (long-term and theoretical vs short-term and practical), both linear, but from different ends (Karo et al. 2015, 285). As such, the innovation policy is a *double-headed serpent*, both heads possessing their own agency and pulling, at least in a bit different direction, neither of them really being fit for the overarching nature of MIP. An interviewee described the relationship between those two as a tug of war with a certain amount of rivalry, although communication has been improving. So far the academic head has gained the more dominant position (Karo et al. 2015), as of now according to interviews MER has been shifting its focus away from academy wishes toward more applied research, which was seen as a very positive leading change. The mouths of the serpent that bring the bite (intermediary implementing agencies) are The Estonian Research Council (ETAg) for MER; and Enterprise Estonia (EAS) for MEAC. None of these institutions, however, have direct control over many instruments that affect RDI, such as tax policies, the budgets, and the competencies of the branch ministries (Karo et al. 2015, 284). After all, innovation policy is a fusion of instruments carried under different labels (Rothwell 1982 through Edler & Fagerberg 2017, 16).

Such cross-department and ministerial issues are contemporary governance challenges (Fagerberg et al. 2015). Attempts to improve this bridging can be seen as the latest strategy ‘Estonian Research and Development, Innovation and Entrepreneurship Strategy 2021-2035’

(RDIE), as the name suggests, brings together the previously separate functions of ‘Knowledge Based Estonia’ (KBE) strategy and ‘Entrepreneurship Growth Strategy’ which was under the responsibility of MEAC.

3.1.3. The Strategies

The current RDIE is the main strategy related to this subject, with its predecessors, the three KBE-s, the first starting in 2002. It is more coherent, however, to start from their contextual *lords*. From 2005 until 2030 Estonia approved ‘Sustainable Estonia 21’ strategy, which is the Estonian adoption of Agenda 21 - presenting *all the good things* as goals: sustainability; cohesion of the society; cultural, economic and welfare growth (‘Sustainable Estonia 21’ Approval 2005; UN n.d.).

In 2010, Europe 2020 set three priorities of smart (based on knowledge and growth), sustainable and inclusive growth - aiming for higher employment, 3% of GDP for R&D, climate coals, better education, and less poverty. A clear focus on societal challenges, but much of its focus in terms of substance was on the 2008 financial crisis. (European Commission 2010) “Competency agenda, 'Estonia 2020"’ is the Estonian application of ‘Europe 2020’ - which is entirely economics based, perhaps a single statement can be found of ‘developing steering mechanisms for innovation to produce socio-economic output’ [while in here it is likely meant as knowledge transfer]. (Republic of Estonia Government 2012) STI is just seen as a tool for these general economic goals in ‘Estonia 2020’, thus actual policy choices were left to KBE (Karo & Lember 2016, 135). Continuously, the recent long-term umbrella strategy ‘Estonia 2035’ is based on SDG and adapted for Estonia putting emphasis on economic growth, innovation, sustainability, health, equality and a science-based and caring society (Republic of Estonia Government n.d.). The threat here too, as Bache et al. (2015) observed a phenomenon, in the case of UK climate policy goals, of meta-policies becoming symbolic by breaking down at an implementation level of specific measures.

3.1.4. ‘Knowledge-based Estonia 2002-2006’ (KBE-1)

KBE strategies were jointly designed by MER and MEAC, MER being the formal coordinator (Karo & Lember 2016, 134). In *‘Sustainable Estonia 21’ Approval* (2005) KBE-1 is referenced to claim that RDI is to support directing the economy and society towards a sustainable path - societal challenges are clearly present in strategic goals also in STI policy level already from 2002. KBE-1 explicitly poses an argument, that a small state can not succeed in all RDI areas,

choosing three key areas: ICT, biomedicine and material technology - national programmes for prioritisation are to be initiated. These key areas are seen to have a transformational potential for traditional industries - applying new technology in traditional industries increases added value. The quite ambitious view of restructuring the economy. The measures chosen, however, are mostly quite basic: more funds for R&D, better education to produce human capital, and informing society of RDI.

3.1.5. 'Knowledge-based Estonia 2007-2013' (KBE-2)

Key technologies of ICT, biotech and material technologies - areas with the most potential for growth and added value continue. Socio-economic problem-driven research, through the design of national R&D programmes is decided upon, however, the programmes were formalised only in law 2012 (Karo & Lember 2016). On socio-economic focus, it is explicitly specified to focus on improving the quality of life of the citizens through areas such as energetics, safety, environmental protection etc. Overall very much a continuation of the first strategy.

3.1.6. 'Knowledge-based Estonia 2014-2020' (KBE-3)

Explicitly stated, that in a situation, where the state intervenes in the economy as little as possible, prioritising STI can be used to affect the economic structure. The catchphrase 'for the society' was present all over the document. However, it seems it was the socio-economic value equating with economic growth. The main societal challenges here are economic - knowledge transfer, and actual economic added value from R&D economic structuring towards it (responsibilities of MER and MEAC). Relation to SDG can be found in the aspect of focusing on the health sectors in S3 (this is the first strategy to mention S3) format and in the focus on socio-economic R&D funding in the branch ministries - state as a smart procurer. It even seems that the rhetorical focus on societal impact (economic growth excluded) is lower than on the previous KBE.

Take the focus on the usage of ICT throughout other sectors from the strategy (which is just a standard process of digitalisation in the current technological paradigm). A sort of modernism credo, is apparent, for example, in the ecological economic paradoxes, such as 'paperless office' actually using more paper and Jevons paradox: increased efficiency means more consumption, not the other way around (York 2006). Values, ideologies, and institutions both affect and are

affected by technology and there is a reason for criticism of the technological fix for everything (Oelschlaeger 1979).

3.1.7. 'Estonian Research and Development, Innovation and Entrepreneurship Strategy 2021-2035' (RDIE)

RDIE focuses even more on knowledge transfer and takes into account global trends such as climate change and SDG. When considering routines mostly an incremental continuation, the biggest change is the increased length of time and adding the *E* to the RDI in a coordination effort. An interviewee closer to the strategic level admitted that societal challenges can not be found too much in the RDIE, but rather on the overarching 'Estonia 2035' strategy level. Based on current RDIE focus areas (FA) which, are combined with S3 prioritisations, shall be constructed road maps based on strategic, qualitative and quantitative analysis describing problems, needs and possible solutions for these areas. In the process, an expert council is gathered based on expertise in the area and merit, in an effort to avoid vested interests, although they will be included when the roadmap has started to materialise, although expert councils consist of representatives from professional associations and R&D institutions (Veemaa et al. 2021, 10).

3.1.8. Government Office

Research and Development Council consists of the Prime Minister and ministers of MER, Finance and one from MEAC and their appointed members advising on the matters of R&D (Government Office n.d. -d). It is the highest *head* of decision for RDI policy.

There are several innovation endeavours such as Innovationteam, which is a small team focusing on public sector service innovation in cooperation with, by now, all the ministries. It answers to the lack of usual dynamic capabilities of the state, by focusing on human-centred design, social and open innovation and cooperation. As a pilot, the approach was deemed successful and is continuing currently. (Government Office n.d. -a) Also, 'New innovation programme' combines 4 separate innovation measures (Innovationteam, Accelerate Estonia, public sector innovation measure by Government Office & EAS measures), by offering a 2 step programme to boost public sector innovation. In the first step government organisations present a problem and a project, then certain projects are chosen and in the second step, the right measure of the 4 is found to test it. (Government Office n.d. -c)

‘New measure to boost innovation capacity in the public sector’ is to come later in 2022 focusing on societal challenges, increasing cooperation between the *trinity* of innovation policy (civil servants, scientists and entrepreneurs) and experimentation. (Government Office n.d. -b) Overall, the Government Office is increasingly taking the role of a horizontal coordinator, especially in recent years and within the latest strategy. Representatives from interviews noted that it made no sense before to coordinate without funds, but as now receiving EU funds this role can be picked up, there still seemed to be some reluctance to take on a coordinator role, which is desired by other public sector organisations.

3.1.9. Main Organisations

Estonian Development Fund (2016-a) was directly responsible for drafting S3 (Müür 2021). According to Konsa, EAS and KredEx are focused on the redistribution of EU funds and Estonian enterprise support should perhaps be reformed (BNS 2015). In the past several years some organisational restructuring has happened.

Estonian Development Fund’s main purpose was to invest in firms (receiving shares) in the search for innovation (Estonian Development Fund Act 2012). It combined risk investment and foresight analysis, inspired by Finnish Sitra, but since people with public-sector backgrounds were employed there, it acted as an extension of the central bureaucracy and significant changes in RDI policies were not observed (Karo 2014). The organisation was making losses and closure was seen as the most viable option by most (Jaakson 2015). Estonian Development Fund (2016-b) was liquidated in 2016. The foresight vision role was picked up by the Foresight Centre (n.d.), as the name suggests, which analyses long term development trends to aid in foresight policy design, it is a think-tank located under the parliament of Estonia - it mostly has research on societal issues. And another restructuring: KredEx was in the role of providing financial solutions for firms under MEAC - Enterprise Estonia and KredEx merged at the beginning of 2022, the final merger will take place within the year with a new name Estonian Business and Innovation Agency (KredEx n.d.).

EAS is an enterprise supporting organisation also supporting innovation in firms. Current EAS (n.d.) methods include financial subsidies (for digitalization, applied research), sharing knowledge of opportunities and counselling (on how to apply for EU funds, IP, finding partners

for cooperation, open innovation, capacities for innovation in their firm, on the state of research in their field of technology intelligence). Except for the limitation of financial aid beneficiaries to current focus areas which overlap with S3 (ICT, health, valorisation of local resources, smart and sustainable energy). Commenting on the battle of vested interests and the dichotomy between de facto and de jure, one interviewee brought out that although tourism is not *de jure* as important it gets as much administrative resources as innovation. Indeed, out of 350 employees in EAS (n.d.) 35 deal with turism, 23 deal with innovation and 2 with sustainable growth.

ETAg was created in 2012 out of the consolidation of two former funding agencies, the Estonian Science Foundation and the MER's advisory council of 9 scientists; and a part of Archimedes Foundation that was administering EU structural funds (Tõnismann & Virtanen 2021, 136). ETAg (n.d.) funds research and implements research, development and innovation (RDI) policy.

Tehnopol Science and Business Park (Tehnopol) (n.d. -a) is a start-up incubator for knowledge-based firms, in the areas of health, green or ICT founded by MEAC, Tallinn University of Technology and Tallinn City. In cooperation with MEAC Tehnopol carries out the Accelerate Estonia incubator programme aimed at areas of start-ups where the state plays an important role. (Ibid. 2020, n.d. -b) Accelerate Estonia (2019, n.d.) tackles wicked societal problems that require horizontal coordination between state agencies, creating a platform for cooperation and aiming to turn them into business opportunities, a testbed for radical innovations. Analysis of public information does not reveal dissonance between the mission statement and the attempt.

Accelerate Estonia started with a 700 000 € budget for 14 months (Tehnopol 2020) Accelerate Estonia (2021) gained more prominence by receiving 4 million € for 2 missions that tackle environmental and mental health challenges, showing a clear increase in the trend. Accelerate Estonia seems to hold a certain prestige among novel growth, as both Innovationteam and 'New measure to boost innovation capacity in the public sector' are to cooperate with Accelerate Estonia (Government Office n.d. -c, -b, -a). In certain areas this 'MIP-ish' approach is taking root, however, considering funding ratios it can be considered differential growth. Even still, the prestige and hype of it seem to be quite loud, which if persistent, could contribute substantially to an ideological shift. From interviews, it was revealed to be a call for a need so that radically potential projects would have a place to grow that would otherwise be in some administrative limbo. It was an effort of a strong agency fighting for it.

3.1.10. Applied Research Programme (RUP)

Applied Research Programme (RUP) is a newer program, taking FAs into consideration, otherwise quite straightforward (EAS n.d.). It was seen positively, when it came up in interviews, as a genuinely better attempt to foster applied research and to counter its long-lasting challenge in Estonia. Interviews revealed also that it is more risk-oriented.

3.1.11. Missions

Based on RDIE strategy and FA Veemaa et al. (2021, 11-12) offered a policy design approach for missions, for Estonia to choose 3-5 missions. Since the missions transborder sectors and FA the administration should be located in Government Office and coordinated from there. A mission manager is considered very important and hired through a formal top-level executive hiring process. Every mission manager should be aided in administrative issues by a coordinator, also a new position. A mission council should be formed, which would include MEAC and MER representatives. (Veemaa et al. 2021, 11-12) Would be showing a great shift in prestige and values as previous project managers were hired through regular channels, which most definitely will also reflect the quality of leadership. It would be the most direct and coherent attempt at MIP and a significant shift and no doubt also answer many bottlenecks of the previous approaches, thus we could see learning and innovation policy design capacity increase.

However, interviews revealed that this approach was scrapped by Government Office quite quickly as non-fitting for Estonia and it was seen as unrealistic. It reveals that the capability to conceptualise and policy reflexivity are not missing within Estonia when considering the *science based policy making* - yet there is some serious gap in adopting these ideas. Difficulties in implementing those approaches still gasp for breath. There seems to be a cap between technocratic ideas and their acceptance.

3.2. National R&D Programmes

Three of the six initiated programmes were for socio-economic problems, environment, health and energy (Lember et al. 2018). Programmes faced challenges, some more technical, such as difficulties in finding good projects - so, in order to spend the funds weaker projects got the

share, regardless of goals (Ibid., 20), a clear small state capacity problem, but also related to the structural problem of low business R&D. As it appeared in the challenge of the business side to continuing and applying the research (Ibid., 22).

Programme managers were under the intermediaries (EAS and ETAg) and interaction with the upper management was only *formal* and there was interest in *ownership* of the programmes. Ad hoc form with a short history and no future, cut out the possibility to improve capabilities, thus all the cultivated skills and knowledge were lost, and there was no creation of institutional memory. Also, the one-time grant application process destroys the potential for reflectivity, capability learning and transformation into a strategic actor. (Lember et al. 2018, 44-46) There was a serious problem with institutional routine building and cultivation by their design, it is a kind of institutional drift in design, doomed to fail by neglect. The main problem was the lack of coordinating resources, the solution would have been to manage them on a higher, beyond ministry level, e.g. under Government Office or at least on a ministerial level (Lember et al. 2018). These programmes were not given prestige and importance - also a tool of resistance. Overall *excellent science* logic was dominating the socio-economic perspective and these were not clearly conceptualised (Ibid., 44). Innovation policy, as per its nature has no political agent and force, yet science has a very strong and institutionalised one, which would also explain the outcome. Not all of that neglect can be attributed to machiavellian devising, however by the position and prestige given we can see a will in action, even if unconscious.

3.3. SMART SPECIALISATION

3.3.1. Conceptualisation of S3

The concept has entered the policy arena through relatively strong rhetoric of innovation and with its own budget, but limited guidance for practical policy design and implementation (Karo & Kattel 2015). There has been a lack of understanding of the concept (Kitsing, 2015), and even still stakeholders do not share a common understanding (Müür 2021, 557). As the EU allows an extremely wide interpretation of S3 (Seppo et al. 2016), this sort of situation has a high chance to arise. There is a clear contradiction in the S3 logic between the supposed bottom-up design being dominated by top-down funding logic, local and municipal levels have minimal roles and only a few measures carry local perspectives (Valdmaa et al. 2021; Schulz 2020, 56). S3 is an ex-ante conditionality of the EU that does not conform well to policymaking routines for many CEE

countries and at least the first fast specialisation is to formally satisfy EU conditions (Karo et al. 2017, 287; Karo et al., 2015). New concepts such as S3 compete with other policy drivers that are already better established, mostly all kinds of dominating funding and accountability logics (Karo et al. 2017).

Entrepreneurial discovery has been relatively state-led, the process was delegated to Estonian Development Fund employing ex-entrepreneurs (so-called start-up people: neglecting traditional industries), yet the analysis was done without much emphasis on sectoral differences (Karo & Kattel 2015, 8; Karo & Kattel, 2017, 280) Entrepreneurial exploration has not been systematic and continuous in Estonia and the process has not taken Estonian conditions into consideration. Policy designers do not have a clear overview of what happens in the area and so far there has been a lack of feedback methods. (Veemaa et al., 2021, 4) Consultations were limited to ex-post legitimation on already decided issues (Karo & Kattel 2015, 8). An interviewee stated that the same happened with current FAs, although they make it up by involving *everybody* to decide on niches within those areas. Interviews as well as (Schulz 2020, 56) revealed that the conceptualisation of priorities was also a continuation of the previous.

3.3.2. Administrative Neglect of S3

The first wave of S3 took place in the period 2012 to 2015, described by a lack of coordination and synergy between measures (Seppo et al. 2016). The first wave of S3 was rather the evolutionary improvement of the previous measure of national programmes, as interviews revealed. The Estonian Development Fund did not have the power to lead the process and there were ownership problems, thus the second wave started from a clean state, where neither experience nor contacts carried on (Seppo et al. 2016, 29). S3 has become the domain of the *double-headed serpent*, with very limited participation of other ministries and regional actors (Karo & Kattel 2015, 8). EAS and ETAg do not have a function to build partnerships and networks for developing a common understanding of the direction of economic development or coordinate RDI projects with different stakeholders (Müür 2021, 560). State-centric RDI activities carried over to the second wave of S3 (Karo & Kattel 2015, 8). This process also made bottom-up logic weaker due to a lack of capabilities there and capacity-building rarely occurred (Schulz 2020, 57). S3 has been following old routines which do not fit it and no structural change to answer that has taken place (Karo & Kattel 2015, 8). Consensus in interviews revealed that it is still the same. S3 Secretariat compromises of only one staff member responsible for

loads of administrative tasks (Schulz 2020, 57). Academy-business link was left to specific policy measures which were already limited by EU financial rules, even consultation with industry associations has not been transparent and the capabilities are lacking there (Karo & Kattel 2015, 8). Shutting down the Estonian Development Fund has left even this fragmented entrepreneurial discovery that was before to gather dust (Schulz 2020). Interviews revealed too, that eventually current FAs were a sudden political choice based on the previous. There is an obvious culprit of not well-organising capabilities for the task and neglecting administrative capacities and resources - symptoms of institutional drift.

3.3.3. The scale of Prioritisation for S3

S3 was only about 20% of European Structural and Investment Funds that MER and MEAC received for the 2015-2020 period, most funds instead go into basic research and entrepreneurship financing with no sectoral restrictions (Lepik 2014; Karo & Kattel 2015, 11). Firms in growth niches represent 4% in 2016 (Espenberg et al. 2018, 12). However, S3 does not evaluate based on the firm's area but based on the project, which means the actual funding scope is much wider (Muuli 2017). S3 has become the main mechanism for prioritisation, but it lacks directionality, and collaboration structures and are defined too broadly (Müür 2021, 557). Most interviewees also noted that there is no real prioritisation and almost anything can be fitted into S3 areas. Furthermore, restructuring and upgrading traditional industries through the chosen priorities has problems, e.g. both public and private actors fail to apply ICT due to lack of experience and peripheral regions are left out (Schulz 2020). There has been no discussion on what those plans of restructuring really mean (Karo et al. 2017, 280). One interviewee even claimed that it is an aged concept and should be replaced by MIP.

Priorities are interpreted in a wide way because interest groups feared losing support as involvement was wide and the *status quo* is held by those actors, but also by the bureaucratic scheme (Schulz 2020, 56; Müür 2021, 558-559). From interviews, the same policy-pessimism appeared as interest groups pushed for it to be included and saying ‘no’ on a political level is not in fashion. There was a symbolic understanding of the importance of prioritisation, but fear of losing funding and liberal ideology held it back (Müür 2021, 558).

3.3.4. Relation to MIP

As an experimental policy S3 demands competency building, creativity, experimentation and reflexivity (Seppo et al. 2016, 4), all of which can also be found in MIP. Thus, the capabilities of S3 and MIP are overlapping, also their essence of *experimental* policy and reconceptualising of the role of the state. Likely that on the adoption and propagation level they produce synergies by cultivating the public sector in a specific way. The main thinker of S3, Foray (2018) argues that S3 is a form of MIP based on the categorisation that both are not only non-neutral (as there are very few truly neutral innovation policies), but also by a higher degree of intentionality and a prioritisation and by developing new activities that target transformation.

For Estonia, among interviewees 3 main opinions were present:
1) that S3 either has no real relation to societal challenges;
2) that *modernism credo:* solutions to societal problems will automatically follow technological and economical progress (e.g. one of the focus areas is health, thus more funds for health sector will solve health problems);
3) or that economic progress is in itself a societal challenge (perhaps even the most important one) - in some sense, it is related to *the modernism credo*.

3.3.5. Relation to societal challenges

Although it is mentioned that societal challenges are a secondary goal to economic growth to S3 (Seppo et al. 2016), in practice and most rhetorics in strategies there is no other connection to societal challenges, as most interviewees stated. S3 tries to formulate itself (at least in Estonia since the first wave) as a non-neutral search for potential growth to cultivate agglomeration. This prioritising stands on the fact that the economy is of asymmetrical information and the public sector gets the short stick on this end, thus enter entrepreneurial exploration. (Ibid., 9-11) In its logics, the outcome of it can be quite banal. State as a smart investor, fixing the financial-market error of not investing heavily into potential growth. When it comes to societal challenges, its main logics are not in support of it, the directionality is chosen based on potential economic growth.

3.4. RITA

Among the 2012 national programmes was RITA lasting from 2015 to 2022 giving MER horizontal coordination orientation and steering through funding (Tõnismann & Virtanen 2021, 136-137) Goals of the programme were to increase state role in strategic directing of R&D, also towards societal challenges and to use applied research to solve socio-economic problems (MER 2015; Tõnismann & Virtanen 2021, 136). European Regional Development Fund (ERDF) funds 82,16 % of the total of almost €32 million (MER 2015, 18). The largest part of the funding, goes towards bigger top-down strategic interdisciplinary (at least 2 different public sector organisations are a conditionality) research, €17 million. The second-largest goes to applied policy research where applying ministries have to co-fund 50% (ETAg n.d.; MER 2015). Both were lacking in *applied* quality and ministries mostly tried to use the funds to finance their previous unfinished projects and try to fit them (Rokk et al. 2022, 10) Interpreting the law without the meaning behind it, but in order to find loopholes, a cynical adoption or capture - a sort of tool of resistance. There was criticism on whether the bureaucratic criteria serves its purpose and how easily it is manipulated (Rokk et al. 2022, 11). The classic tragedy of the impossibility of administration which could be answered with reflexivity. It is a sort of self-fulfilling prophecy or a catch-22, administration is not given chance to be effective, which *proves* its uselessness and delegitimises it. Which in Estonia is well nested within the austerity and thin state ideology.

Research and Development Council lacks scientific competence to make decisions upon research subjects and areas (Rokk et al. 2022, 10) a few interviewees also criticised the politicisation and low quality of debates that take place there (a sort of *Habermasian* critique), albeit there was a slight frustration which on its own does not invalidate the claim, as it is a sign of betrayed idealised expectations. More generally, many interviews revealed a certain frustration within the topics of the political arena, indicating their politicised existence and perceived policy-pessimism. Furthermore, scientific advisers (SAs) find it difficult to evaluate specific expertise areas of ministries (Rokk et al. 2022, 16). The common nominator, a recurring challenge is how to manage and coordinate expert knowledge.

When it comes to cross-ministry research subjects, they are searched in a form of a common nominator or previously known overlaps (Rokk et al. 2022, 6). Cross-sectoral cooperation can be considered quite shallow in that sense, the effect positive effect instead comes from the SA

network. According to the RITA programme manager, cooperation between ministries has improved when it comes to presenting ideas (Rokk et al. 2022). This is a general consensus from interviews too that cooperation (overall) has been improving. Ministries with previous experience in research, within or having a subdivision that deals with similar capacities, show more initiative in presenting research ideas (Rokk et al. 2022, 6), showing potential in capacity building. As *policy framing*, the process of turning goals into ideas is negative (destructive), in a sense that the goals do not directly shape the ideas, only filter the ideas that come. Problem-orientation is just a rather weak filter in this case. A representative interview revealed that there was a lot of internal reflexivity within RITA and learning from mistakes during the programme. The representative also revealed that some very good projects were left unfunded, for the reasons that they were not related to societal impact - but also mentioned the difficulty of expert civil servants being able to fit anything into societal challenges.

3.4.1. Scientific Advisers

Through interviews, the instrument of employing SAs within ministries was one of the few and most mentioned conscious and visible capacity building instruments that was considered successful. This consensus is also backed up by a recent RITA evaluation by Rokk et al. (2022), that concrete contact person and expert feedback on projects have been very well received. Furthermore, the SA network provides an overview of what happens in other ministries - a neutral cross-ministry coordination (Rokk et al. 2022). From the descriptions, there is a form of human management, sort of comradery, healthy competition, *esprit de corps*, etc. A definite capacity building through new routines and it is expected to continue. Revealed that coordination is a *salesman's job* and lobbying, in which initiative matters (Rokk et al. 2022).

Naturally, there were weak points as well, SAs were being assigned increasingly strategic tasks in the development of new RDI policy measures in the branch ministries, deviating from the original purpose of providing better sector-based knowledge and SAs had to deal too much with administrative burdens (Karo et al., 2015; Rokk et al. 2022). Perhaps, there may be a positive side to that too, as diplomatic negotiators in such a predicament may provide a tacit understanding of the workings of different state-academic routines. Another smaller instrument of success was also the bureaucratic form developed by ETAg and used for research procurement by ministries has helped them better formulate their applied research desires, sort of *client* communication (Rokk et al. 2022). There was also a measure to support funding for SAs

employment in professional associations to increase their sectoral knowledge of current research. An overview showed that some employed do not even have education in the field, perhaps indicating a sort of capture hiring them as administrators.

The RITA programme is an important piece in capacity building and change of routines, some interviewees stated that it did change things substantially. Its ambitions from a MIP perspective can be considered evolutionary. In interviews the general opinion about it was positive, it was considered ambitious in comparison to what it was built upon, it was mostly designed by MER and ETAg, seen also as a general reflection of MER turning the role more towards socio-economic benefit. Out of all of these main pieces, it seems to be the one with the most successful impact.

4. CONJECTURES FROM INTERVIEWS

In this section the main general consensuses from interviews will be presented and also some opinions, it will be separated by subjects.

4.1. MIP approaches

It was noted that among secretary generals and higher-ups the knowledge of innovation varied greatly, but has been on an increasing trend. Knowledge of politicians on the issues has been seen as a barrier to the process, some see them as being working against such approaches. There was some sense of a lack of inspirational leadership.

Most interviewees were familiar with MIP and Mazzucato theories, but MIP was found ill-defined, not accommodating the situation within Estonia. However, most agreed that there were no alternatives to some kind of missions and thinking about societal issues. Some expressed that MIP is a too big piece to chew and that society is not yet ready for it. Few expressed that missions in Estonia have different connotations and are rather understood as long-term goals, not short-term problem-solving.

However, most thought there are good elements from MIP to be taken over. For a few, the most important part of MIP is the coordination capacities which must be adapted. It was seen that Estonia needs to be part of global missions as it is clearly too small on its own. One stated that regional effort, e.g. with other Baltic states would be a good answer, but it is hard to implement. Most thought that regions within Estonia are too small for MIP. Few expressed that vagueness and lack of good output indicators hinder the MIP approach. Most thought that culture towards MIP is growing but really appeared in conscious form with current RDIE. Some noted that eventually a generational change is needed for MIP.

4.2. Coordination

The general consensus was that coordination is difficult, but also that it has been improving visibly, already from the way people communicate with each other and increased respect between factions (scientists, academics, civil servants). Some expressed there is a serious challenge to bring all the stakeholders together, it usually only happens when the values align. It

was also thought that not much can be done for coordination on a ministry level. A Government Office representative explained too, that they get abundant requests to coordinate issues, but must pick their battles.

Much of the coordination effort goes not into finding synergies, but to reduce duplication. Some also described a phenomenon of over-coordination where too many stakeholders blur the purpose too much. One stated that there is general misspeaking or even rivalry between ministries, the latter, especially between MER and MEAC, but the situation is improving.

In the recent example of the COVID-19 crisis, it was presented by a few that coordination has been unprecedented and the silo towers collapsed - that capacities to solve societal challenges when really needed are there.

4.3. Experimentation and Risking

There was a general consensus that there are serious barriers to risk-taking and experimentation within the public sector and not much has been done to accommodate for it. Most often legal-bureaucratic barriers were presented as barriers, e.g. too technical procurement or funding laws. Some see an increase in risking and experimenting, most are more pessimistic. Most saw a great divide between increasing rhetorics for experimentation, but no safety of failure offered, and even punishment for it. This rhetorics and reality dichotomy was seen also in other areas. It was claimed by a few that lobbying within the public sector is important to get new things done and also to get support from some higher-up positions. One saw this unwavering risk aversion as the biggest barrier to MIP and also added that although most public sector will always be risk-averse, those who are willing should also be able.

4.4. Prioritisation

Opinions about prioritisation were very divided, this was the most contested issue. Some thought that either high-level science is getting increasingly expensive or critical mass is needed, thus Estonia can not afford to do everything and is forced to specialise; others, on the other hand, thought that Estonia is so small that it can not afford to let some sectors die out and that the market could offer better directionality. Some did state that prioritisation is getting more legitimate. It was also noted that analysing capabilities are growing within those departments and

units in ministries. One interviewee thought that MEAC ideology has been hindering prioritisation.

There was disagreement on S3, but the majority were clear that it has not been successful. Most agreed that prioritising is politically very challenging by causing friction with vested interests. Most think that S3 has not had any impact on routines and administrative capacities. Few stated that S3 was a complete failure.

4.5. Change in Capabilities

Change has not in expert knowledge becoming more important for personnel hiring. As discussed before RITAs SA was seen as a very positive routine change with great impact - stated by one as the start of non-linear STI policy by increasing capacities in ministries. Also being important in smart procurement capacity building.

Most agreed very positively that MER has changed considerably more towards applied research. The majority expressed that most of the change has been rhetorical. One expressed a very important change seen with the last strategy was an ideological shift of seeing that most problems are cross-sectorial and would benefit from a more coordinated approach.

Most evaluated that funding and moving money around matter the most. Most agree that funding routines have not changed and that they dictate much of what can be done. Budget structures within a period do not allow much change either.

Small state limits were a frequent problem, such as Estonia being a thin state that may have one civil servant dealing with multiple fields that other even similar size nations have departments for each of those fields. It was mentioned that a single person department head change can affect coordination visibly.

According to a few from the first wave, it was learned that the state must be a smarter procurer otherwise scientists do what they want; also upkeeping the built infrastructure from EU funds is very costly and should be done more sustainably.

4.6. Collaboration with the Other Factions

There were quite positive views in changes of attitude in the private sector being more interested to fund R&D and also dealing with societal challenges, in which case it was seen that the public sector does not offer enough possibilities. Many still evaluated that the capability of the private sector to answer with R&D is a problem.

The academy was widely criticised for not offering applicable input locally, instead of following their own logic or global excellent science indicators. One interviewee stated that by now there is also a shift of attitude in society that the return of investment is needed from science. Many noted that the demand side has been weak, but there is an increasing trend towards a more capable procurement.

4.7. Policy Arena and Strategies

There was some criticism on strategies as the alternatives have not been considered enough, also on choosing FAs. It was agreed upon that generally most decisions are made on a wider consensus and most decisions are compromises. The reason for incremental and evolutionary strategic design (a sort of PD) was seen as a small state limitation of always interacting with the same experts. The role of strategies and clauses are deemed important to be cited when fighting for a political cause. Most political fighting was seen as a tug of war between blue-sky and applied research; there was a general consensus that scientists have acted predatorily, pushing an agenda that benefits them, but MER has changed toward an applied research focus.

4.8. Layering

It was noted that every new approach is difficult to implement and there is always a learning curve - it was also mentioned that perhaps the fads change too fast. Some stated that there is a sort of *schizophrenic* situation where many competing things are tried at once, most noted a sort of layering and ever-increasing instruments. Many stated that the policy mix is not reasonable and there is too much layering. Few interviewees described it, even as too many approaches come and get out fad, leaving sort of *zombie* policies layering on top of each other. Some stated that Estonia also provided direction not only funds by the EU. Others stated that while language and rhetoric change according to the EU, their implementation is more fitted into old routines.

5. DISCUSSIONS

The main theme seems to be coordination, as it definitely is one of the main MIP capabilities. There seems to have been ravines between the three *factions*: scientists, civil servants and entrepreneurs. There is even a sense of *warring factions* with opportunistic diplomacy including resentment, and disrespect. On this front the culture of trust and cohesion of the society seems low, there is a low sense of respect for the division of labour within those sections of society - likely having a reinforcing effect, think prisoner's dilemma. Such culture affects collaboration issues and offers challenges that go beyond the instruments of creating a platform for communication or simple involvement. Furthermore from the MIP perspective, such cultural specificity can be a fatal blow as any system that depends on dynamic *true* collaboration between these factions can not take root in a low-trust opportunistic society. Such culture must first change and diplomatic bridges built. Since shared community engagement is important, but also trust, as it reduces lower transaction costs of relationships and is important for coordination (Bonaccorsi 2016, 78). What also argues for that perspective, apart from interviewees' claims of it, is that the most successful measures have been those that show elements of such diplomatic bridge-building. Bringing scientists to work within the public sector as SAs makes them face similar challenges in the public sector, being within both worlds acting as negotiators. Innovation policy is in a sense a meta policy or at least a coordination policy and needs genuine will among stakeholders to at least benefit from it in its own framework, otherwise, the collaboration is hard to force and can be easily resisted.

There seems to be a disjoint between barriers found at the implementation level and wider political choices and meta structures, successful implementation would need some changes in funding and procurement laws which are oriented to previous logic. However, this information, agency or will do not flow well from implementers to politicians who make the final decision on such matters. Implementation would benefit from some higher-level restructuring support that goes beyond smarter funding distribution. There has been a display of the possibility to grow capacities and capabilities, but they are often hindered by other structural or cultural barriers. The effect of institutions related to innovation policy not having control over many instruments affect it (Karo et al. 2015, 284) is definitely seen. By this diagnosis, ideological or cultural PD has been the main culprit that holds other barriers hostage limiting in ways that they can be

overcome or even simply sabotaging their process. This cultural PD is very much dependent too on small state and CEE PA specialities such as agenficition and *ad hoc* solutions, lack of holistic approach to government. Capabilities and a different way of thinking have to be cultivated incrementally and since Estonia has been an extreme case of a market-based innovation system this kind of conversion is longer. It seems that society is not yet ready for full-scale MIP and also needs to shift the focus to more pressing administrative issues.

Layering seems to be very present throughout the process and a sort of incoherent policy mix that grows with it. It can be mostly conceptualised as a form of *tools of resistance*. It seems lack of political will at some anchoring points causes institutional drift and neglect that corners implementers and does not allow for capability building. Overall it seems MIP as a sort of meta-policy needs wider acceptance and conceptualisations among politicians and other stakeholders. Also, a sort of reverse institutional conversion is present of changing new approaches to fit old routines. Fragmentation and vested interests have caused the policy to be reinterpreted from many sides, it is seen mostly as a side effect of democracy, especially in a contested issue. The concept of a chaotic policy arena of strategic games seems to describe the situation well. The small state and CEE peculiarities of *ad hocery* and fragmentation play an important role in that process too.

CONCLUSIONS

This paper looked at the implementation difficulties of MIP as a case study in Estonia. Viewing how institutional change takes place and what are the barriers to it, by combining neo-institutionalism with MIP literature with a touch of the concept of ideology. Estonia has been facing challenges in trying to implement a non-linear STI policy through a process of layering and incoherent policy mixes. Much to do with multiplicity and fragmentation of decisions making and lack of consensus and will on some anchoring points. There are some directly limiting factors for being a small state that does not allow perfect MIP adoption with all its elements, however, they seem not to be the main direct hinderers in the process, and the same goes for capabilities. By this diagnosis the ideological or cultural PD is hindering to overcome both limitations, it is not to say that those limitations do not matter, but perhaps the possible solutions are not given much of a chance. Although the way coordination and other processes are infused with small state peculiarities, it very much seems to be the case that low administrative stability hinders capacity building. In a way, the cultural PD is in turn shaped a lot because of the small state and in this case also CEE peculiarities.

This study argues that cultural and ideological change of routines is very important to foster change in complex policy fields and that direct intervention and implementation can be captured and that could benefit from supporting structures, at least in a small state context. Following the same line of argumentation, coordination also depends much upon culture, trust and sort of diplomacy. The study has also found that mechanisms for incremental institutional transformation such as layering, conversion and drift work the other way around too as tools of resistance to strategic change and can act as mechanisms for PD - can in a way be conceptualised as tools of the agency, although this paper also argued that those *agencies* are not perfectly rational and conscious.

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