Towards Normative Statements and Related Criteria for the Assessment of MUTP Decision Making under Risk, Uncertainty and Complexity and a related Context Framework

Prepared

by

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Introduction

The following themes are derived from the findings of OMEGA Project 1. They emerged as important observations and issues relating to Risk, Uncertainty and Complexity from the analysis and synthesis of both Working Paper #2, entitled 'The Contemporary Treatment of Risk, Uncertainty and Complexity in Decision making in Selected Disciplines' *and* Working Paper #3 entitled 'The Treatment of Risk, Uncertainty and Complexity in Transport, Regional and City Planning and Urban Development'. Please see Working Paper 4 'Generic Lessons for Improving the Treatment of Risk, Uncertainty and Complexity in the Planning of Mega Urban Transport Projects' for the full analysis and synthesis of these Working Papers in which the importance of context was highlighted.

At the Lund OMEGA Workshop we asked Partners to help develop a set of normative statements and related criteria for decision making under Risk, Uncertainty and Complexity. As a starting point for this exercise a series of tentative criteria have been derived here from the findings of the OMEGA Project 1. These are presented below alongside some earlier contributions received by our Dutch Partners. We welcome from Partners further suggested related criteria either under the existing themes outlined below, or suggested new themes (we are aiming for four criteria per theme wherever possible).

Theme 1: Importance of Context

Recommended definition:

"Context is the set of circumstances or facts that surround a particular event or situation." (Random House Dictionary, 2009). For the purposes of examining MUTP decision making under RUC we can subdivide MUTP contexts into those which are external (exogenous) and those which are internal (endogenous) to the project.

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #1.1:** An awareness of 'context' is a key factor in successful decision-making that addresses risk, uncertainty and complexity (RUC) (either explicitly or implicitly) within and outside the MUTP/planning field. This is to be expected since all decisions that are made are based on an **individual's or group's perceptions of context** and the **levels of RUC prevailing (or anticipated) in that context at the time of making such decisions.**

- **Normative statement #1.2:** MUTP planners and delivery agents need to be fully aware that **'change'** is gathering increasing **pace in 21st Century** due, among other things, to **rapid technological improvements and forces of globalisation**. These are highly important contextual factors that affect the development of risk, uncertainty and the complexity of interactions.

- **Normative statement #1.3:** MUTPs themselves *may* also positively contribute to the pace of change. This is particularly important given the likelihood that inadequate sense-making of context very often later leads to **dysfunctional developments** - both in relation **to later phases of the project lifecycle** and in respect of changes that occur in city and regional systems **after MUTP implementation.**

- **Normative statement #1.4:** MUTP stakeholders must identify and appreciate the **critical contexts (and there interdependencies) that surround pivotal project decision making.** These critical contexts form the backbone of project planning and appraisal that ultimately mould the outcome of the project. During all phases of the MUTP, including the scoping process, a system should be put in place to **regularly monitor the characteristics of each context.** These are to be made both transparent and accessible to all project decision makers and others wishing to learn lessons from these experiences.

- **Normative statement #1.5:** By accepting that context awareness is a vital pre-requisite for effective decision-making it is clearly critical **to inject this awareness for *all* phases in the project lifecycle.**

Summary of Normative Evidence from WP4: Related criteria

- **Project context criteria**: An initial framework presented at the Lund OMEGA Workshop that sought to identify/categorize different types of project contexts that impact on risk, uncertainty and complexity in MUTP decision-making highlight the following:
  - cultural and societal beliefs/ values,
  - time and space,
  - economic circumstances,
  - institutional frameworks and networks, and

- political influence (not least because of its impact on MUTP decision-making).

We would be most grateful for Partner contributions to expand and refine this typology.

- **Project context change criteria**: Project contexts change over time with the result that MUTP planning, appraisal and delivery have to cope with a very broad spectrum of contextual elements that will alter during the various stages of the project lifecycle. Because such 'changes' are claimed to be gathering increasing pace in the 21st Century due, among other things, to rapid technological improvements and forces of globalisation, any evidence/indicators/measures of these developments will better help sense-make the impacts of these change on MUTPs as well as explain changed values whereby over time projects previously seen to be 'failures' are deemed 'successes' and vice versa.

- **MUTPs as context change agents criteria:** MUTPs acting as effective agents of change contribute significantly to their contexts. Failures to appreciate this can be important given the likelihood that inadequate sense-making of context can lead to dysfunctional developments - both in relation to later phases of the project lifecycle and in respect of changes that occur in city and regional systems and the societies that host them after MUTP implementation. Evidence/measures/indicators of change spawned by MUTPs consequently represent important aids to the sense-making of the impacts of such projects.

- **Contexts of pivotal decisions criteria:** Evidence/indicators and measures that help to sense-make the critical contexts (and there interdependencies) that surround pivotal MUTP decision making will provide immensely important insights into the backbone of decision making for the project planning and appraisal that ultimately moulds the outcome of the project.

- **Individual/group stakeholder perceptions criteria:** Because the performance of an MUTP is seen from different perspectives - from a multitude of different stakeholders involved in or impacted by the project - evidence/indicators/features of the different types of individuals/groups can throw significant light on the sense-making of these contextual influences. With different stakeholder groups and individuals. This owes much to personal, group and institutional perceptions and experiences where (for example) values change, new agendas form, new allegiances and networks wax and wane, and new imperatives come and go.

- **Project context monitoring criteria:** Regular and sustained monitoring throughout the project lifecycle of all contextual influences is clearly of utmost importance. Particular importance needs to be paid to *contextual change* resulting from a sense-making of the interplay of:
    - ideas,
    - beliefs and

Evidence of monitoring at all phases of the MUTP, including the scoping process, to regularly monitor the characteristics of each project context is essential. These are to be made both transparent and accessible to *all* project decision makers and others wishing to learn lessons from these experiences.

Theme 2: Strategy

Recommended definition:

"A strategy is a plan that 'joins-up' major goals, policies and actions into a cohesive entity" (Dimitriou, 2007)

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #2.1:** In the early planning stages, there should be a clear **statement of MUTP goals and objectives, roles and functions, appraisal and evaluative criteria, key input assumptions and potential impacts**. These need to be properly disseminated to all project stakeholders and thoroughly discussed with all impacted stakeholders. They need to be **identified in an open and transparent manner.**

- **Normative statement #2.2:** Planners, appraisers, delivery agents and operators need to consider MUTPs as more than 'projects' since they are often 'strategic change agents' that have **far reaching spatial, social, economic, environmental and other impacts at different phases of their project lifecycle.** As a minimum, MUTPs represent a **bundle of projects (programmes)** and at a maximum are a **bundle of mega projects which may be seen together as 'meta project'** (i.e., a project associated with several accompanying plans/programmes). The latter clearly require considerable strategic thought at the outset and subsequently on an on-going basis.

- **Normative statement #2.3:** An 'effective' strategy is one that achieves desirable (political) effects *without* incurring **disproportionate costs (both monetized and non-monetized).** Planning strategies for MUTPs need to **balance requirements for implementing a vision** for the project and its accompanying spatial and temporal contexts with the practical requirements associated with the efficiency of services offered, their cost ceilings etc., and of course, the resources (including institutional and regulatory support) available to deliver the project. In this regard, it is important to acknowledge that for PPP/PFI projects**, private sector goals and objectives may well *not* naturally align precisely with those of public sector sponsors**. This is so because the private sector is typically driven by **short-term interests**, whereas, the public sector has expectations that are usually **longer term in respect of desired outcomes**. Achieving **consensus** in this context is difficult but invaluable. Because the private sector especially values 'certainty' on the part of public sector delivery this consensus can be facilitated by **government introducing**

policy and regulatory frameworks that reduce uncertainty for private sector investments and operations.

- **Normative statement #2.4:** MUTP planning, appraisal and delivery strategies need to **identify which forces of change they are trying to influence or harness.** Here, it is presumed that the **vision(s) of sustainable development** is the 'overarching vision' to which MUTPs are expected to contribute and that the harnessing of any forces the project musters to this end can *only* be considered desirable. **Sustainable development frameworks** generated and enforced internationally, nationally and locally can act as effective guidelines for these efforts if accompanied by appraisal and performance indicators and enforcement legislation.

- **Normative statement #2.5:** Strategies for the planning of MUTPs typically need to be **flexible/adjustable and robust, paying due attention to short, medium and long term consequences** *simultaneously* with mid-term measures acting as the bridge between short term aims and long term aspirations*. **Changes in context** brought about by such influences as **changing stakeholder positions** in response to changing international, national and local policies and enforcement legislation are also critically important. As a consequence of the above, as already noted, highly prescribed **'blueprint' approaches** to MUTP planning, appraisal and delivery are too inflexible, contextually insensitive and are rarely appropriate over the project lifecycle.

- **Normative statement #2.6:** Any strategy for planning MUTPs needs to take a practical and realistic view of *when* **the MUTP design work is to be 'frozen' as a basis for providing the blueprint for implementation and funding.** Once constructed and operational, it is also important for MUTP planners and managers to understand the **importance of 'defrosting' this blueprint** so that subsequent project developments can naturally **adapt to changing forces, influences and needs.** These are among the most difficult *and* important decisions of MUTP stakeholders.

- **Normative statement #2.7:** Although perhaps unpalatable, it is important to concede that many of the **strategic components of MUTP planning, appraisal and delivery (and of the project itself) are often** *very* **difficult to identify or quantify.** This is true both at the outset of project planning and throughout the project lifecycle. This is so because of the complexities associated with 'open' and 'complex' systems. **Impacts of MUTPs, in particular, may** *only* **emerge over time.** They are frequently difficult to discern, as are **tipping points** when new ideas and methods for project planning, appraisal and delivery emerge and as **major shifts in policy and economic developments** transpire.

Summary of Normative Evidence from WP4: Related criteria

- **Clarity and transparency criteria:** Because the dissemination of clear statements of MUTP goals and objectives, roles and functions, appraisal and evaluative criteria, key input assumptions and potential impacts is essential for public scrutiny and public participation, evidence/indicators and measures of the effective and transparent dissemination of the project information to all project stakeholders is critical**.**

- **Mega/meta project criteria:** Because as a minimum, MUTPs represent a bundle of projects (programmes) and as a maximum a bundle of mega projects that may be seen together as a 'meta project', evidence/measures/indicators of project scale and programme composition is vital to better appreciate the scale of complexity, size and investment of MUTPs.

- **Strategic planning crtieria:** Since an 'effective' strategy for MUTP planning is one that achieves desirable (political) effects *without* incurring disproportionate costs (both monetized and non-monetized), as well as achieve some sense of 'balance' in outcomes and vision delivery, evidence, measures and indicators of these outcomes in spatial and temporal contexts is vital for realistic project appraisal. This appraisal needs to include insights into the efficiency of MUTP services offered, their cost ceilings and of course, the resources (including institutional and regulatory support) available to deliver the project.

- **PPP/PFI project crtieria:** Because private sector goals and objectives of MUTPs employing PPPs/PFIs *do not* naturally align precisely with those of their public sector sponsors (the former valuing more the short run gains and the latter the long run), achieving a consensus is difficult but nevertheless invaluable. Since the private sector especially values 'certainty' on the part of public sector delivery this consensus can be greatly facilitated by government introducing policy and regulatory frameworks that reduces uncertainty for the private sector. In this regard, evidence, measures and indicators of how this is achieved is invaluable for lessons to be inbuilt into future MUTPs.

- **Visions of sustainable development criteria:** Given that MUTPs need to identify which forces of change they wish to unleash, influence and/or harness – and given that it is here presumed that the vision of sustainable development is the 'overarching vision' to which MUTPs are expected to contribute - evidence, measures and indicators of such contributions, especially in the context of the formal Sustainable Development Frameworks (SDFs) generated/enforced internationally, nationally and locally are invaluable guidelines for assessing these contributions. (These are further discussed and elaborated in a separate OMEGA exercise prepared in association with Partners led by Prof. Nick Low which seeks to offer normative statements and criteria for assessing MUTP sustainability challenges which is to follow this document).

- **Project robustness criteria:** Because MUTP planning needs to be flexible/adjustable and robust - paying due attention to short, medium and long term consequences *simultaneously* – evidence/indicators and measures of changes brought about by changing stakeholder positions in response to altered international, national and local policies and enforcement legislation are critically important.

- **Project blueprints and defrosting criteria:** Given MUTP planning needs to take a practical and realistic view of *when* the MUTP design work is to be 'frozen' as a basis for providing the blueprint for implementation and funding, and when this vision is to be defrosted following implementation, indicators of the appropriate time to move away from the blueprint approach to treating the project as an 'open system' are invaluable.

- **Project strategic component criteria:** Since it is important to acknowledge that many of the strategic components of MUTP planning, appraisal and delivery are difficult to identify let alone quantify - both at the outset of project planning as well as throughout the project lifecycle - it is important to be able to identify intended/unintended impacts of projects as they emerge over time. In particular, it is most useful to identify key tipping points when new ideas and methods emerged and the major shifts in policy and economic developments that transpired, and why. Such understanding informs future strategic planning for MUTPs.

- **Strategic capacity criteria:** These include indicators/measures that respond to questions such as:
  o does the project planning and management undertaken effectively organize the capacity of strategic thought and action for the project? (Mendel Giezen, 2009)
  o does the project's declared strategic mission define the frame for operational objectives in a manner that focuses on wider and longer horizons simultaneously to the short term - with strategic mid-term goals bridging both? (Mendel Giezen, 2009)
  o does the project management organize 'outside-in knowledge' and offer effective networks of deliberation of this which raise alternative perspectives of how to combine strategic perspectives with action? (Mendel Giezen, 2009)

- **MUTP project statements:** These are in effect project mission statements that need to specify in a transparent manner early on in the planning phase:
  o MUTP goals and objectives,
  o project roles and functions,
  o project appraisal and evaluative criteria,
  o key project planning and design input assumptions, and
  o major potential anticipated impacts etc.

Theme 3: Projects as Closed/Open Systems

Recommended definition:

"Projects as 'closed systems' are projects where outcomes are expected to be both controllable and in accordance with pre-determined plans, schedules and programmes. Projects as 'open systems' are those that see the project and its interaction with 'context' as exploratory, almost organic, and which allows for unexpected outcomes to become recognized and accepted as part of an 'emergent order'" (Dimitriou *et al.* 2008).

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #3.1:** MUTPs are demonstrably not **'closed systems'** or a system of **commoditised services** (though they may encompass elements of commodity service provision). Rather, they are **'open systems'** treated on specific occasions (for practical purposes alone) as 'closed systems' that themselves **change contexts and are themselves changed by context.** They often have public service objectives and are **employed (implicitly or explicitly) as a means to effect strategic change** in city and regional systems (through for example, regeneration and economic restructuring efforts and/or providing strategic services) even though they may **utilise aspects of the market in the financing and funding** of their associated public services.

- **Normative statement #3.2:** MUTP lifecycles are typically fraught with **concerns about risk, uncertainty and complexity** associated with (inter alia) their:
  o size,
  o cost,
  o long gestation and
  o implementation periods,
  o impacts, and
  o uniqueness.

- **Normative statement #3.3:** Systems must be in place to allow MUTP planning, appraisal and delivery exercises to be treated as 'open systems' that see the **project and its interaction with 'context' as exploratory and almost organic**, and which allow for **unexpected outcomes** to become recognized and accepted as part of an **'emergent order'** This treatment of MUTPs (and sometimes their contexts) as largely 'closed is done against the background of an adoption of essentially **linear (sequential) management framework** and logic of the type where certain components of the MUTP are **'frozen' during different phases (to make implementation more comprehensible) often for longer periods than is desirable** irrespective of the downstream ability to respond to changing contexts.

- **Normative statement #3.4:** MUTPs are frequently planned, considered and operated as 'closed systems'. Reality, however, suggests that MUTP planning

(especially) and delivery (also) are **subject to manifold contextual influences that make detailed control on all fronts difficult if not impossible** to achieve. MUTP planning, appraisal and delivery exercises should, therefore be treated as 'open systems' which see the project and its interaction with 'context' (in its broadest sense) as **exploratory, almost organic, and where unexpected outcomes** become recognised and accepted as part of an **'emergent order'.**

Summary of Normative Evidence from WP4: Related criteria

- **Closed/open systems criteria:** Because MUTPs are frequently planned and operated as 'closed systems' – especially for their construction, management and delivery – it is important to provide evidence/measures and indicators that demonstrate over space and time that while this closed systems perspective may be pragmatic in the short run, in the medium and long term, MUTPs operate and grow as 'open systems' that adapt almost organically to broader influences external to the project *and* to internal changes within it. Evidence/measures and indicators that demonstrate this set of interrelationships and dynamics needs to be highlighted to better inform future MTP developments of how in reality the closed systems paradigm defies logic and imposes severe restrictiveness of 'closed systems thinking' on what are in essence open system developments.

- **Open systems criteria:** To fully comprehend MUTP systems as 'open systems' it is essential that evidence, measures and indicators which demonstrate the interrelationships between the project and its environment(s) are recorded in project monitoring exercises. Here the interaction of the project with 'context' is seen to be exploratory and take place in a manner that allows for unexpected outcomes to become recognized and accepted as part of an 'emergent order'. In this regard, evidence, measures and indicators of this 'emergent order' becomes important for MUTP lesson learning/sharing.

- **Project risk/uncertainty/complexity criteria:** MUTPs are typically fraught with concerns about risk, uncertainty and complexity throughout their lifecycle. Evidence, measures and indicators of these should especially refer to project:
  - size,
  - cost,
  - gestation periods,
  - implementation periods,
  - impacts, and
  - uniqueness.

Theme 4: Governance, Regulatory Frameworks and Enforcement

Recommended definitions:

Governance can be defined as the exercise of political authority and the use of institutional resources to manage society's problems and affairs;' (Williamson, 1991).

A framework is defined as the basic, underlying structure to a set of regulations. A framework is composed of a several complementary elements or concepts in support of something larger. Regulations are most often defined as principles, rules, or laws designed to control or govern behaviour. From a broad perspective, regulations are the instruments used to express government policy as a way to rectify market, economic or social imbalances. Therefore, in this context, a regulatory framework can be defined as the macro-level steps that a regulator must complete in order to bring forward regulations (Rabeau, 1998).

To enforce is to compel the observance of law or to support by force such as a claim, demand or obligation (OED, 2009).

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #4.1:** International bodies such as the EU increasingly provide **standards to assess and reduce risks** during the implementation of cross-border projects and projects that fall within their international jurisdiction. National bodies are typically responsible for implementing systems to meet these international standards at the local level as well as those deemed necessary for national and local requirements. Such regulations can both reduce and increase project uncertainties, risks and complexities plus the **sensitivity of the project to changing policy and planning contexts.**

- **Normative statement #4.2:** The development of one or more national agencies to provide **guidance and quality control over MUTP planning, appraisal and delivery** - as part of the process to consider and balance differing views or competing interests of the various stakeholders - are far and few between. This is, perhaps, with the exception of agencies such as the National Audit Office in UK which have more of an accountancy scope of concern that is typically too narrow to be able to offer a balanced overview of what is/ is not a successful MUTP. The relative **infrequency of planning, appraising and implementing Mega Projects within any one country** is a contributing factor to the lack of such agencies.

- **Normative statement #4.3:** Even when international agencies exist with regulatory frameworks and accompanying codes of practice, their frequent limited or **non-enforcement,** combined with **inadequate inspection procedures**, are potentially very problematic. It is common for **environmental risks** caused by MUTPs to trigger

pressure from concerned stakeholder groups that lead to the call and introduction of further legislation and regulations. For this to be meaningful, however, regulations *must* be backed up with **competent enforcement bodies with sufficient powers**.

- **Normative statement #4.4:** In the **spirit of globalization**, governments and international agencies - with the support of regulators and anti-trust lawyers etc. - seek to increase competition and **competitive practices** as a means of directly or indirectly further **reducing barriers to competition**. This *can* throw MUTP stakeholder companies into the ever-more heated pursuit of a **'best practice'** that is *not* always to the **benefit of customers and the local communities** which such projects traverse and impact and even, sometimes, to the detriment of project users, employees and even shareholders.

- **Normative statement #4.5:** Constraints on what commences initially as an 'ordered' MUTP system can easily produce conditions under which that system **shifts to being more complex and increasingly dysfunctional**, to a point where it even **collapses into a chaotic state**. Translating this into the **regulative frameworks** for MUTP planning, delivery and operations - where public bodies seek to exert **excessive control through bureaucracy** – this may result in a slow build up of tension through **frustration between MUTP provider and enforcer** that ultimately leads to a collapse of the system. The **risks, uncertainties and complexities** for MUTP decision making **stemming from insufficient political will, governance and regulation** must therefore be identified and monitored throughout the project for their effectiveness.

Summary of Normative Evidence from WP4: Related criteria

- **Regulatory framework criteria:** International, national and local regulatory frameworks are employed in MUTP planning, appraisal, delivery *and* operations. Typically they cite their own evaluative criteria. In the UK, however, the government often uses EU directives/ regulations and their related enforcement criteria. Such regulations can both reduce and increase project uncertainties, risks and complexities as well as the sensitivity of the project to changing policy and planning contexts.

- **Guidance and quality control criteria:** With the exception of agencies such as the National Audit Office in UK - which primarily have an accountancy scope of concern that is too narrow for a balanced overview of what is/ is not a successful MUTP - there is a dearth of agencies offering quality control guidance for such projects in balancing the differing views or competing interests of the various stakeholders in MUTP developments. For this reason, any evidence, measures and indicators that may be collected and collated in a structured way of the kind put together by the OMEGA research programme is potentially invaluable.

- **Enforcement criteria of quality control:** Because it is common for environmental risks caused by MUTPs to trigger pressure from concerned stakeholder groups to

lead to the introduction of further legislation and regulations affecting later MTPs, the systematic collection and analysis of such evidence is invaluable. For legislation to be really meaningful it *must* be backed up with competent enforcement bodies that are endowed with sufficient powers to act effectively. Indications of this competency and capacity - with measures of the effective use/impact/enforcement of these regulatory practices and accompanying codes thus become increasingly significant for future MUTP lesson learning/sharing.

- **Globalization, competition and competitive practice criteria:** As a means of directly or indirectly further reducing barriers to competition, in the context of global efforts to increase competition and competitive practices in MUTP developments - project stakeholders can be thrown into the ever-more heated pursuit of a **'best practice'** that is *not* always to the benefit of project customers and the local communities that it traverses and impacts on. This can sometimes be to the detriment of project users, employees and even shareholders. To assess this, evidence/measures and indicators collected and analysed that can substantiate or otherwise the above premise would be invaluable for future MTP developments.

- **Indicators of excessive regulation:** Where public bodies seek to exert excessive control through unnecessary bureaucracy concerning MUTP planning, appraisal and delivery – this may result in a build up of tension in the form of frustration between MUTP provider and enforcer which ultimately can lead to a collapse of the system. The risks, uncertainties and complexities for MUTP decision making stemming from such excessive intervention on the one hand, and insufficient political will and commitment and regulation on the other, need to be identified early on in project development, and subsequently monitored throughout the project lifecycle so as to detect and diffuse the growing tensions before they do too much damage.

Theme 5: Relevant Project Information

Recommended definition:

Information can be defined as a collection of facts or data which, is specific and organized for a purpose, is presented within a context that gives it meaning and relevance, and which leads to increase in understanding and decrease in uncertainty. The value of information lies in its ability to affect a behaviour, decision, or outcome. (Business Dictionary, 2009)

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #5.1:** Gaining insight into the operations of a MUTP will always help reduce risk. Understanding the **dynamics of the context of such project operations (and their impact one upon another)** highlights the critical importance of possessing *relevant* **information about the dynamics of these contexts** as a potential determinant to project 'successes. **Decisions made under partial and especially inadequate information** expose a project to the influence of

uncertainty. The more knowledge available about the project and its context, and the interface between the two, the less uncertainty and hence the less risk surrounds decisions.

- **Normative statement #5.2:**   Given the above, **regular and sustained monitoring** throughout the MUTP project lifecycle of all contextual influences is clearly of utmost importance. This is especially so if MUTP planning and delivery is to be effective in **responding to changing circumstances**. Particular importance needs to be paid to **contextual change resulting from a sense-making of the interplay of ideas, beliefs and values associated with different stakeholder groups and individuals**.

Summary of Normative Evidence from WP4: Related criteria

- **Information and knowledge gathering criteria:**   Gaining insights (and thereby knowledge) into the planning and operations of a MUTP will *always* help reduce risk in the face of uncertainty - as will understanding the dynamics of the context of such project operations and their impact one upon another. Providing evidence/measures and indicators that highlight the:
  o   dynamics of these contexts (as a potential determinant to project 'success'), and
  o   decisions made under partial/inadequate information (that expose a project to the influence of uncertainty),
  could prove invaluable for MUTP lesson learning/sharing.

- **Project monitoring criteria:** Appropriate monitoring capabilities within the MUTP must be combined with presence of effective information channels to allow critical information concerning 'evolving contexts' to be acted upon throughout the project lifecycle. Evidence, measures and indicators of a project's capability to undertake such regular and sustained monitoring is critical throughout the MUTP project lifecycle of all contextual influences. This is especially so if MUTP planning and delivery is to be effective in responding to changing circumstances.

Theme 6: Tools/Techniques for Coping with Risk, Uncertainty and Complexity

Definitions:

Tools are things, either concrete or abstract, with which some operation is performed. (OED, 2009)

Techniques: Manner of artistic execution or performance in relation to formal or practical details (as distinct from general effect, expression, sentiment, etc.); the mechanical or formal part of an art, esp. of any of the fine arts; the manner of execution or performance in any discipline, profession, or sport; also, skill or ability in this department of one's art; mechanical skill in artistic or technical work (freq. used without article or qualifying word). loosely, a skilful or efficient means of achieving a purpose; a characteristic way of proceeding; a knack, a trick. (OED, 2009)

Summary of Normative Evidence from WP4: Guidelines

- **Normative statement #6.1:** While models and other analytical tools (including 'case histories') that are firmly based on 'closed system' thinking do pose major limitations, they do have an important role to play in attempting to **sense-make a MUTP during its different lifecycle phases.** This is on the *proviso* that detailed **attention is paid to the impact on context** of such closed systems analysis, and the **way in which context impacts on the project**. Such tools, however, are generally fundamentally flawed by virtue of their **in-built inability to cope with open systems and the evolutionary fluidity that ultimately accompanies their development over time.** Many MUTP sponsors and stakeholders (including politicians and business leaders) are acutely aware of this with the result that model **MUTP outputs are used or discarded depending upon whether they support or negate previously held views and/or 'gut feelings' of these parties** – which frequently places the **techno-rationalist professional at odds with those pursuing other (political and business) agendas.**

- **Normative statement #6.2:** Evidence-based MUTP tools and techniques are potentially problematic *if* the **characteristics and features of the contexts in which they were conceived/ previously used are not fully identified and understood**. This is so since these **tools and techniques** *may* **sustain, even reinforce, undesirable path-dependent practices that are contrary to sustainable development visions and ultimately have the effect of the 'templating' of unsuitable solutions** based on previous experiences perceived as successful from a singular past point of view in one point of time/place that are inappropriate to the new context.

- **Normative statement #6.3:** Many note that **hindsight and 'best practice' is likely to be** *only* **appropriate in the context of 'ordered, stable closed systems'** and most applicable during project construction. This is so since **constant changes in context make it especially difficult to effectively use prescriptive tools, models and techniques that are based on the notion of a 'closed system' equilibrium** when the 'equilibrium' is in fact not known. This is because by nature such systems are largely insensitive to such change. Instead, they essentially present a snapshot or range of snapshots of outcomes based on the perceived value of identified variables that reflect current and future contexts in one point in time.

- **Normative statement #6.4:** Systems should be put in place to **guard against misrepresentations derived from unchallenged path-dependent MUTP analytical and forecasting practices.** MUTP planning, appraisal and delivery tools and techniques should instead be part of a **balanced decision making process and framework that prevent these tools and techniques being used to solely support project sponsor vested interests or 'gut feelings'** derived from past practices in different contexts.

Summary of Normative Evidence from WP4: Related criteria

- **Criteria for assessing models/tools and techniques**: While analytical tools (including 'case histories') firmly based on 'closed system' thinking do pose major limitations, they do have an important role to play in attempting to sense-make a MUTP during its different lifecycle phases at particular critical stages. Evidence from case studies of this, particularly with regard to the most suitable timing of when to close/re-open the system for closer scrutiny would be invaluable for future MUTP lesson learning/sharing exercises. On the other hand, because many MUTP sponsors and stakeholders (including politicians and business leaders) use or discard the findings of technical models/tools and techniques seemingly without rationale, the collection of evidence through past case studies analyses (of the kind undertaken by the OMEGA research programme) becomes invaluable to differentiate on an evidence based basis whether such choices are based on views and/or 'gut feelings' that go insightfully beyond the understanding of the closed system or on the pursuit of (political and business) vested interests and agendas that distort the balanced outcome of such projects.

- **Measures to combat path dependency:** MUTP planning and analytical tools and techniques that seek to identify risk and uncertainties of a project and cope with the complexities of decision-making need to be critically reviewed with the intention of highlighting, and then weeding out, those that incorporate assumptions, premises, values and other evidence of unquestioned path dependency that contradict the current aims of project planning in its service of sustainable development aims. This is very important since many MUTP planning and appraisal tools/techniques sustain undesirable path-dependent practices that are contrary to the sustainable development visions such projects are expected to reinforce. Unaddressed, this has the ultimate effect of the 'templating' of unsuitable MUTP solutions irrespective of context that are based on previous experiences from a singular past point of view in one point of time/place that is likely to be inappropriate to the new context. The collection of evidence through past case studies analyses (of the kind undertaken by the OMEGA research programme) that ascertains the outcomes of past projects as they pertain to these concerns is invaluable for future MUTP lesson learning/sharing.

- **Criteria for judging 'best' and good' practice:** Since constant changes in project context can make it especially difficult to effectively use prescriptive tools, models and techniques that are based on the notion of a 'closed system' equilibrium - when the this 'equilibrium' is in fact not known – it is essential that statements of 'good' and 'best' explicitly allude to the contextual features in which they were drawn up, paying particular attention to the uncertainty, risk and complexities of this context. Rather than such tools and techniques offering recommendations based on a snapshot analysis of past events scenario planning is advocated which incorporates different scenarios of contextual changes that in turn are anticipated to impact on project performance.

Theme 7: Innovation and Markets

Recommended definition:

The word "innovation" comes from the Latin noun innovatio, derived from the verb innovare, to introduce something new. It can refer either to the act of introducing something new or to the thing itself that is introduced. In terms of commerce, it is defined in the Oxford English Dictionary as "the action of introducing a new product into the market; a product newly brought on to the market". Innovation is a process which typically involves an enormous amount of uncertainty, human creativity, chance and risk taking" (Aronson, 2009; OED, 2009)

Summary of Normative Evidence from WP4: Guidelines

- **Normative statement #7.1:** **Innovation** is critically important to the 'success' of any MUTP. Such projects may indeed themselves be seen **as large-scale technical social innovation systems.** The adoption of decision-making based entirely on **path dependent processes** can stifle innovation to the detriment of the organisations involved in the planning, appraisal and delivery of MUTPs *and* their stakeholders. Parties employing such practices typically become less responsive and adaptable to new risks with the result that **innovation requires some excess capacity within their institutional** responsibilities for their planning, appraisal and delivery. Such resources are though not always available, especially in companies that are competing in the open market to the bottom line.

- **Normative statement #7.2:** Innovation is an important determinant of the 'success' of MUTPs, especially through the **introduction of innovative technology as a potential remedy for delays** which are caused by complexity and uncertainty during a military operation even though such actions are not always decisive. In practice, **MUTP stakeholders are typically risk averse and usually only employ well tested technology**. This generally leads to stifled innovation in many/most MUTPs.

- **Normative statement #7.3:** The techniques for quantifying risks when an innovative entity is introduced into MUTP planning, appraisal and delivery - and the consequences of this introduction - can yield **uncertain and even potentially highly damaging outcomes.** This accounts for the more measured view of innovation prevailing in MUTP developments and the **importance of striking a balance between innovation and risk-taking in decision-making and technology choice.** A particularly important determinant of the effective use of new technology to a MUTP is **the context in which the innovation was *first* developed, and the possible effects of introducing the innovation into a *new* context.** A critical question that needs to be asked in such circumstances is whether the risks of the new technology are outweighed by its potential benefits or do they merely **add *unbearably* to an already high risk venture?**

- **Normative statement #7.4:** One of the *almost* **inevitable consequences of innovation** and change in decision making regarding MUTP developments is to bring about **conflicts.** This accounts for much of the **resistance to innovation in MUTP developments** – especially among the more conservative organisations/agencies involved. Few such parties embrace **change as a learning experience;** a feature which improves innovation capabilities. Technological innovations and the interaction of such forces with the contexts of MUTPs can, furthermore, produce **unknown/unintended complex reactive forces/impacts liable to generate even more contextual change.** This can be particularity important for MUTPs where **practitioners apply their own tried-and-tested technology** to the project, and where decision making can develop into a series of **contradicting analyses and insights that ultimately can destabilise the project if not addressed**.

Summary of Normative Evidence from WP4: Related criteria

- **Criteria for judging MUTPs as Innovation systems**: It is contended that MUTPs may be seen as large-scale technical/social innovation systems. In this regard, the degree such projects are based on path dependent processes has considerable bearing on the extent these can stifle innovation in their planning, appraisal and delivery. This makes the critical review of the performance of MUTPs as innovation systems that are strategic agents of change particularly important. This is so because parties employing path dependent practices typically become less responsive and adaptable to new risks with the result that innovation requires some excess capacity within their institutional responsibilities to address these shortcomings. Evidence, measures and indicators of MUTP agencies addressing these concerns would be very welcome for future MUTP lesson learning/sharing, especially in case studies involving companies that are competing in the open market to the bottom line.

- **Criteria for striking a balance between innovation and risk-taking:** The techniques for quantifying risks when an innovative entity is introduced into MUTP planning, appraisal and delivery - and the consequences of this introduction - can yield uncertain and even potentially highly damaging outcomes which accounts for the more measured view of innovation prevailing in MUTP developments. This highlights the importance of undertaking research into which criteria should be suitably used to balance innovation and risk-taking in decision-making and technology choice. Here criteria which assess risks and uncertainties both internal and external to the project, and their impact one upon another, are important. The critical overarching question that needs to be addressed is whether the risks of the new technology are outweighed by its potential benefits or whether they merely add *unbearably* to an already high risk venture? The gathering of evidence, measures and indicators that will assist decision making with regard to this important question is of critical value to future MUTP planning and appraisal practices.

- **Measures of resistance to innovations in MUTP development:** One of the *almost* inevitable consequences of innovation and change regarding MUTP developments is for them to bring about conflicts and additional costs. This accounts for much of the resistance to innovation in such projects. Evidence to date suggests **f**ew MUTP parties embrace change as a learning experience; a feature which improves innovation capabilities. Measures and indicators of technological innovations within MUTPs (and the interaction of such forces with the contexts of MUTPs) can produce invaluable insights into possible unknown/unintended complex reactive forces/impacts liable to generate contextual change. This can be particularity important for MUTPs where practitioners apply their own tried-and-tested technology, and where decision making can develop into a series of contradicting analyses that ultimately destabilise the project if not addressed. Case study analyses of past projects can do much to contribute to knowledge-building in this area of investigation and thereby enhance future MUTP developments.

Theme 8: Project Stakeholders

Recommended definition:

The Oxford English Dictionary defines a stakeholder as a person or company, etc., with a concern or (esp. financial) interest in ensuring the success of an organization, business, system, etc. (OED,2009) The origin of 'stakeholder' in management literature can be traced back to 1963, when the word appeared in an international memorandum at the Stanford Research Institute (cited in Freeman 1984). Stakeholders were defined as 'those groups without whose support the organisation would cease to exist'. More recently Freeman (1984) defined stakeholders as 'any group or individual who can affect or is affected by the achievement of the firm's objectives'.

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #8.1:** The ability to identify and understand the **motives, beliefs and values of the wide range of stakeholders** involved in or impacted by MUTPs is *extremely* difficult, but nonetheless vitally important. Arguably, **stakeholder perceptions about 'the project' and any accompanying development** including restructuring and regeneration initiatives, represent the most powerful contextual force for MUTPs that will undoubtedly impact over the whole project lifecycle (albeit to differing degrees). For this reason, the **constant scanning of stakeholder groups, organisations and networks over time,** in order to determine their **agendas, willingness to commit, and ability and capacity to exert effective influence,** will remain critical before and after key decisions are made.

- **Normative statement #8.2:** **MUTP stakeholder contexts** that ultimately affect their decisions and commitment can be especially fluid. They are, as a result, a major source of risk, uncertainty and complexity in project development.

Stakeholders and stakeholder groups/networks, furthermore, **change in response to different perceptions about the nature, scale and impacts associated with MUTPs over the course of the project lifecycle.** New foci and agendas also emerge over time resulting in the need for MUTP sponsors to provide the **time and space for the project to evolve (breath).**

- **Normative statement #8.3:** **Consensus-building at the preliminary stages** of MUTP planning and formulation stages is typically essential for all such projects. Here, the **ability to scan and understand stakeholder policy frameworks, agendas and the positions they have adopted over time** to MUTP development is imperative.

- **Normative statement #8.4:** MUTPs must have **capabilities in place to allow the constant scanning of stakeholder groups, organisations and networks over time**, in order to determine their willingness, ability and capacity to exert effective influence on key decisions

Summary of Normative Evidence from WP4: Related criteria

- **Indicators of motives, beliefs and values of stakeholders**: The ability to identify and understand the motives, beliefs and values of MUTP stakeholders involved in or impacted by MUTPs is *extremely* difficult, but nonetheless vitally important. These need to be differentiated between those associated with 'the project' (however it may be defined) and those associated with any accompanying development, including for example, restructuring and regeneration initiatives. This makes the constant monitoring of stakeholder groups, organisations and networks over time/place, in order to determine their agendas, willingness to commit, and ability and capacity to exert effective influence, critical both before *and after* key decisions are made.

- **Measures of stakeholder responses to changed project contexts:** Understanding/forecasting changes in the perceptions of MUTP stakeholders - in response to new project context developments that have a significant impact on MUTPs over the course of the project lifecycle - is critical. Evidence, furthermore, suggest that new stakeholder foci and agendas also emerge over time as new knowledge/information is acquired, new innovations materialise and as conflicts emerge and are resolved. Measures and indicators of these developments is critical in light of the fact that it has become apparent in certain quarters that MUTP sponsors need to provide the necessary amount of time and space for project to fully evolve rather than have developments speeded-up without a knowledge of the consequences of this.

- **Criteria for project framing**: Because MUTP planning, appraisal and delivery need to take into account the concerns of civic groups, as well as social and economic organisations that are impacted by the project, it is essential that criteria and indicators which assess the contributions MUTPs make to the interests and agendas of such parties become clear – denoting project 'winners' and 'losers'. This calls,

among other things, for the inclusion in MUTP developments of policy and planning deliberations which reflect both permeability and transparency and that resolve conflicting appeals.

Theme 9: Trust and Transparency

Recommended definition:

Trust: To have faith or confidence in; to rely or depend upon.(OED, 2009)

Transparency is defined by the Oxford English Dictionary as the quality of being easily seen through, recognized, understood, or detected; manifest, evident, obvious, clear (OED, 2009). In the context of MUTPs we see transparency to mean 1) A Minimum degree of disclosure to which agreements, dealings, practices, and transactions are open to all for verification. 2) A Lack of hidden agendas and conditions, accompanied by the availability of full information required for collaboration, cooperation, and collective decision making.

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #9.1: Relationships among MUTP stakeholders** are critical factors in reducing aspects of risk, uncertainty and complexity in decision-making attributed to various stages of an MUTP's development. Of particular significance here is the **transparency in the interaction of stakeholders and the role of trust.** The building (and sustaining) of **reputation and trust** is vital in all aspects of MUTP stakeholder relations. **Early and sustained flows of information from MUTP planners and deliverers to those impacted by the** project enhances trust, builds reputations and develops support – vital ingredients of the viability of MUTPs where joint ventures are critical to the success of the project.

- **Normative statement #9.2:** For MUTPs to be implemented successfully, their planners, appraisers and deliverers need to identify which **key decisions require a high level of trust** and ensure this is delivered. This calls for a **differentiation to be made between trustees and trustors** (i.e., clarification of who is responsible for delivering the trust and those who are to expect it is delivered). It is significant here to note that **success reinforces trust** (and vice versa) and that the higher the risk, uncertainty and complexity associated with a particular action or decision, the higher will be the need for trust to be honoured and delivered.

- **Normative statement #9.3:** As well as **trustees and trustors,** MUTP **'winners' and 'losers'** must be identified as part of the project scoping and appraisal process. The identification of potential MUTP **'winners and losers' and how they change over time and space/place** is *critical.* This is especially important for efforts in making judgements about the success of such projects. It represents a key basis for relations with stakeholders since MUTP 'winners' are often seen as those that are clustered around important project nodes (i.e. line-haul termini, access points etc.)

and thus benefit from enhanced services, property price uplift and environmental upgrading.

Summary of Normative Evidence from WP4: Related criteria

- **Indicators of trust and transparency:** Transparency in the interaction of stakeholders and the element/role of trust in highly interdependent decision making for MUTP developments are critically important. This is particularly the case concerning decisions that have a bearing on project risk reduction, uncertainty and the treatment of complexity in decision-making that are attributed to the various stages of MUTP development. This makes evidence, measures and indicators of transparency and trust vital for all MUTP stakeholder relations. This builds reputations and develops support – both of which are vital ingredients of the viability of MUTPs, especially where joint ventures are critical to the success of the project.

- **Criteria for differentiating between trustees and trustors:** Project 'success' reinforces project stakeholder trust and reputation (and vice versa). Trust is critically important when decisions are shrouded in higher risks, uncertainties and complexities. These circumstances especially reinforce how important it is for trust to be honoured and delivered among project stakeholders with the result that there is potentially much merit in systematically gathering case study evidence that demonstrates these traits and pinpoints when trust and reputation is most critical and when less so. An investigation of this kind calls for a differentiation to be made between trustees and trustors and a clarification of who is responsible for delivering the trust as opposed to those who are to expect it is delivered.

Theme 10: Project Lesson Learning/Sharing

Recommended Definition

Lesson can be defined as an occurrence from which instruction may be gained; an instructive example; (OED, 2009)

Summary of Normative Evidence from WP4: Normative statements

- **Normative statement #10.1:**   Project learning *must* be an integral part of MUTP decision making, and to this end**, systems need to be put in place for distributing both positive and negative lessons** learnt by all stakeholders during each phase of the project. These systems need, furthermore, to facilitate the **sharing of these lessons** with the wider community impacted by the project during the evaluation stage.

- **Normative statement #10.2:** Systems need to be in place to enable thorough **post-project institutional learning of MUTP experiences and impacts.** This is not currently undertaken in the UK and elsewhere in any systematic manner to enable MUTP outcomes and the associated occurrence of risk, uncertainty and complexity

factors to be evaluated in project decision making. This **shared lesson learning and review** would prove particularly valuable in efforts to identify MUTP impacts that were not discernable previously.

- **Normative statement #10.3:** The importance of **case history and the existence of a body of 'good (not 'best') practice'** is *essential* to project lesson learning and sharing, especially with regard to the **identification and handling of risk, uncertainty and context (and the impact of 'context' on these)** in policy, business and professional fields associated with MUTP planning, appraisal and delivery. This practice may be found in other fields, disciplines and professions such as in the military, in earthquake engineering, in civil engineering, as well as in insurance and banking. **The absence of an equivalent body of systematically appraised and reviewed project experiences does not exist for MUTPs.** This confirms the above made observation that **little evidence of systematic institutional learning and knowledge-sharing from past projects** is taking place that go beyond: (1) the informal personal and company exchanges of experiences and (2) the employment of common international handbooks and standards which, among other things, have the effect of standardising MUTP solutions.

- **Normative statement #10.3: Stakeholder contexts** can be especially fluid and are therefore a major source of RUC. Stakeholders and stakeholder groups/networks change in response to **different perceptions about the nature, scale and impacts associated with MUTPs over the course of the project lifecycle.** New foci and agendas also emerge over time resulting in the need for the project to evolve.

Summary of Normative Evidence from WP4: Related criteria

- **Project learning/sharing systems and related criteria:** Because MUTP project learning and sharing potentially yields such high dividends – given the high costs and high risks typically associated with such investments - these knowledge-building efforts need to be an integral part of the project lifecycle. To this end, lesson learning/sharing systems need to be put in place to exploit both positive and negative lessons learnt by *all* stakeholders during each phase of the project and set against the sustainable development visions to which these projects are expected to contribute. As well as incorporating measures and indicators that facilitate the sharing of these lessons with the wider community impacted by the project, such systems also offer the promise of providing invaluable advice and guidelines for future MUTP stakeholders elsewhere in the world.

- **Institutional learning/sharing criteria:** The fact that post-project institutional learning/sharing of MUTP experiences and impacts is currently poorly undertaken heightens the importance of the need to introduce hereon a global system of post-project institutional learning/sharing of MUTP experiences and impacts of the kind launched by the OMEGA Centre at UCL. While this will/should initially focus on the treatment of risk, uncertainty and complexity in decision making and the power of context in such efforts, intellectual investments are also to identify MUTP impacts

(both positive and negative) that were not discernable previously and which resonate as new development priorities and agendas evolve.

- **Criteria for identifying 'good' as opposed to 'best' practices**: The importance of MUTP case histories - and the development from this of a body of 'good (not 'best') practice' - is *essential* to future project lesson learning and sharing, especially with regard to the identification and handling of risk, uncertainty and context (and the impact of 'context' on these) in policy, business and professional decision making fields within MUTP developments. The absence of a body of systematically appraised and reviewed MUTP global experiences is a major shortcoming for not only does it deprive investors of knowledge/information of where/how certain project returns can be optimised and costs be better contained, it also deprives such parties of an appreciation of the power and influence of different contexts, potentially explaining why particular project approaches work in one context and not in another. The lessons learned/shared also have the propensity to inform the retrofitting of existing MUTPs as the contexts of many such projects change in light of new global forces and developments such as climate change and energy constraints.

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