ISSN: 2997-2256

Research Article

Journal of Investment, Banking and Finance

We are in the Driver's Seat - A Magic Carpet Ride

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Submitted: 2024, Nov 22; **Accepted**: 2024, Dec 17; **Published**: 2024, Dec 24

Citation: Glitscher, W. (2024). We are in the Driver's Seat - A Magic Carpet Ride. *J Invest Bank Finance, 2*(1), 01-09.

Abstract

Humanity facing the challenge of shaping a transformation process for sustainable development. Decarbonization and the circularity of production processes are key concerns for project management. To manage these challenges a paradigm shift is necessary. Project managers should see themselves as designers of the future. To this end, the separation between strategic and operational management must be closed. The current first story of take-make-waste, supplemented by a second story for a green wonderland, continues to be based on an ideology of controllability and will not be able to solve the issues. What is needed is a global understanding of responsibility for strategic and operational management. A practical methodological approach to reach this objective has been presented and discussed over the past three years. Further studies and experiences are now available. These have led to the further development of the methodological approach and describe the cooperation between strategic decisions and the operational implementation of projects. Aim is to enable transformation process for the decarbonization of production processes and circular economy. The prerequisite is an expansion of the area of responsibility for strategic and operational management. This requires a third story far from the controllability ideologies, referred as Next7G Management and derived from the UN Brundlandt Commission of 1987, which proposed the principle of anticipating all actions to the extent that they are considered up to the seventh generation after them. This approach was further developed for strategic planning and the resulting implementation by operational management and applied to the next seven product generations. This will radically expand and change project managers' understanding of their role and competencies. They will become the designers of the future sitting in the driver's seat, who will have to think beyond the mere delivery of their project results in closed structures and thus be involved in strategic decisions in a creative way. Only in this way can the paradigm shift for sustainable global development be realized.

1. Introduction

At the IPMA World Congress 2008 in Rome, Mary McKinley said that the future development of project management requires project managers who take responsibility for sustainability. Eight years earlier, Paul Crutzen, Nobel Laureate in Chemistry, wrote that the industrial revolution is not just a moment in human history, but also the history of the planet. He called it the age of the *Anthropocene* [1,2]. Sustainability in project management has been discussed extensively in the literature for many years, with various facets. Reference should only be made here to the summarizing publication by Schipper and Silvius from 2014, which presented and discussed the state of the discussion at that time and to which Schoper (2018), among others, referred [3]. In more than a decade and a half, however, no methodological or organizational implementation of these approaches from the basic discussions in academic circles into applicable models and methods on a larger scale by companies is discernible. Reference should be made here to the publication by Silvius et.al. (2012) with the title: Sustainability in projects and project management: A call to action [4].

Providing food and water for the world's growing population, climate change, exploitation and depletion of raw materials, environmental problems and energy generation from sustainable sources, population explosion versus ageing - these are some of the essential challenges whose solution requires not only political will and the associated strategic decisions, but also intelligent, different, innovative management and project management. A conscious approach to these challenges, without falling into disintegrating panic or soul-killing paralysis, is essential to shape change.

The paradigm of separation between strategic decision-makers and operational implementers is no longer expedient here. We need to understand that we are no longer standing on the assembly line, but on it. And this is on a tectonic plate. The next quake is coming

- but we don't know when or how strong it will be. Initiatives for change are failing. Managers and executives do not get to the bottom of things sufficiently, because of the principles of project management pursued to date, essential aspects for the sustainable development of this important management method have not been considered. Their decisions and actions are based on the quarterly reports and on the financial year and the results to which they have committed themselves in terms of their bonus payments. We are still operating in systems of thought and methods that are over a hundred years old, hoping to recognize and follow the path to the future. The tectonic plates beneath us and the turbulence and currents in which they are caught are not sufficiently perceived and solutions are not realized.

It is easier to remain complacent than to continuously recognize where action is needed, how action can be taken and what these actions cause systemically. Answers must be found to these challenges. These are crucial for future global developments, from which the research question can be formulated as the basis for the positions discussed here: Designing a generic management model for the integration of strategic and operational management to meet the complex challenges for circular economy and the decarbonization of production processes. We will walk paths that we have never walked or wanted to walk before, we will see things that we have never seen or wanted to see before. We will question everything we have done so far and take on a different kind of responsibility and ethics. This affects all our strategic and operational decisions. We are not prepared for this. A possible methodical application-oriented holistic approach is presented and discussed here.

The central research question, which is continued with this work, is: How can a practicable, application-oriented, generic methodological approach be designed to tackle the complex issues of decarbonization and the circular economy?

2 Methodological Approaches

2.1 Philosophy and Methodology

Initial approaches to the future of project management developed in internal studies and workshops with students from the international Master's degree program Global Production Engineering at the Technical University of Berlin (www.gpe.tu-berlin.de) were presented by together with Prof. Dr. Yvonne Schoper and the author at the Project Management Forum of the German Association for Project Management - GPM - 2019 in Nuremberg. The results were further developed and presented for discussion by both authors in 2021 and [5,6]. From this, a first generic methodological approach was further developed, presented and discussed on how project management could be further developed towards sustainability and circularity in the future [7,8]. Further discussions within the German Association for Project Management led to an investigation into sustainability in project management by the GPM Executive Committee in 2023 (internal report). Due to the tragic loss of Yvonne Schoper in April 2023, the previous research and activities could no longer be carried out together.

2.2 Conceptual Approach

The investigations were continued with literature studies on the topic of sustainability in project management and investigations into possible approaches to merging strategic and operational management. Case studies from the industrial environment were used. Further investigations were carried out using examples from the industrial environment of manufacturing companies on issues relating to the decarbonization of production and paths to a circular economy. As a result, the conceptual development of a generic model was further developed and put up for discussion. Possible effects on project management from a strategic point of view in the industrial environment of additive manufacturing, the influence of artificial intelligence and the use of digital twins with its possible influences on project management in the direction of the circular economy and decarbonization were examined and described.

3. Three Stories

The industrial production and logistics processes that have existed for over a hundred years are largely subject to a linear approach. These cause emissions and waste. According to studies, only 7.2 % of all processes on a global scale were circular in 2023 (https://www.circularity-gap.world/2023). This is the *take-make-waste narrative*. For some time now, a second narrative has been creating the illusion that a way of producing and living is possible that can continue to maintain prosperity without ifs and buts, if only we do the right thing. This includes discussions on de-growth, renunciation and apocalypse. I call this second narrative the *green wonderland*. As both narratives are based on the same principles and paradigms of an *ideology of controllability*, a third narrative is needed. This must not hide the respective dark sides of the first and second narrative but must recognize them and confront them in a pragmatic, solution-oriented way.

3.1 The First Narrative: Take-Make-Waste

The effects of the global phenomena and changes caused by industrialization are a reality. Humanity is confronted with its *controllability ideology* and the associated linear process thinking of *take-make-waste* and its effects on a global scale [9,10]. Management systems for strategic and operational procedures have been developed, implemented and updated for this purpose. Project management is also affected by this as a realization method. Its players deliver the results of their projects in closed structures; questions of sustainability are secondary [11]. Project managers do not yet see themselves as designers of the future, which they are through the delivery of their project results.

The project life cycle is the focus of project management. Extending the view towards shaping the future must also consider the product life cycle [11,12]. Concepts and methods for sustainable developments in the sense of closed-loop management, such as those formulated by Braungart as the *cradle-to-cradle principle* in 2014, are not yet sufficiently in focus or do not meet the complexity of the issues.

Existing management systems and behaviors are not sufficient for the upcoming challenges of decarbonizing production and

logistics processes and the circular economy to conserve resources and avoid waste. They need to be expanded to meet these challenges. According to Kerzner (2019), the innovative concepts and approaches required for this are made more difficult by the fact that project management is not included in the strategic decision-making and selection processes [13]. In fact, according to Kerzner, the desire of project managers to be involved in strategic decisions on innovative issues was rejected by executive management. The challenges of decarbonization and closed-loop management cannot be solved in this way due to their high level of complexity.

Even a vehicle like the VW Golf from 1978 has 7,000 components, as shown in Fig. 1. Modern vehicles contain 30,000 components, modern passenger airplanes 2,000,000 components [14]. The necessary changes to the approaches for re-design processes for each individual component are being developed and discussed [15]. Their realization is slow. The prerequisite is a change in human behavior towards these challenges [16].

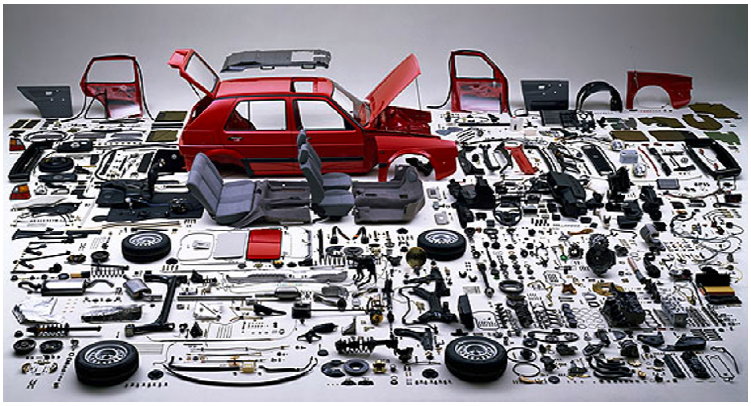

Figure 1: The First Model of the VW Golf Disassembled into its Components (Hans Hansen, Photographer)

The first narrative of *take-make-waste* and the associated *ideology of the controllability* of industrial processes and their products on a global scale and the associated increase in prosperity is reaching its limits. They leave behind burdens that will occupy us for a long time to come. The former Economics Minister of the Federal Republic of Germany, Werner Müller, later put it in a nutshell as CEO of Ruhrgas AG at a press conference on the establishment of a foundation for the dewatering of disused coal mines. When asked by a journalist how long this dewatering would have to be carried out due to the existing risk of drinking water contamination, he spoke of eternal burdens: as long as people live there, this must be done [17]. Projects and their executors thus deliver the design of the future based on strategic management decisions in which they are not involved. The strategic levels are separated from the operational levels (see Fig. 2). Operationally generated Knowledge is not used and is lost.

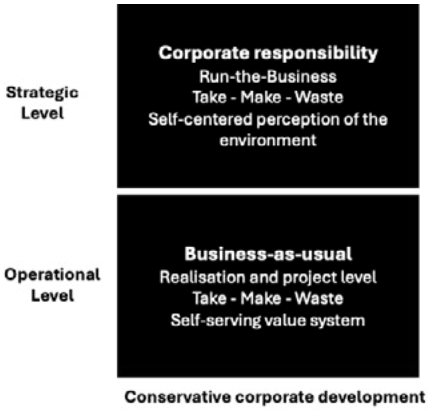

Figure 2: Separation of the Strategic Levels from the Operational Levels in Organizations

The first narrative of *take-make-waste* is no longer sufficient for all issues relating to the sustainable development of industrial processes. The methodical separation between strategic decisions and the subsequent operational implementation by project management does not lead to the necessary results. According to Gilbert et.al. (1996), sustainability can be defined for strategic and operational management in such a way that natural capital remains intact, and the extraction of resources should not exceed their restoration [18]. Waste avoidance must be integrated. This defines the first approaches for the circular management of production and distribution processes.

3.2 The Second Story: A Green Wonderland

If growth is the problem on a planet with limited resources, can shrinking be a solution? The de-growth ideologies, which promise a *green wonderland* as a second narrative, are opposed to the growth strategy of the first narrative of *take-make-waste* as the way forward. However, both assume that the problems can be

controlled by their ideologies and thus cause new damage. They do not fundamentally question the *controllability ideology*. Using the example of energy generation from sustainable sources such as solar panels, Fig. 3 shows the associated shift in problems [19]. The other associated problems such as dark doldrums, storage media and distribution grids show unresolved issues in this context.

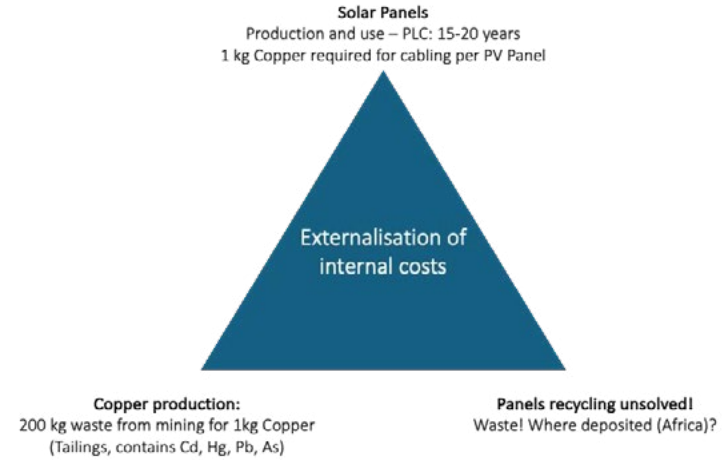

Figure 3: Controllability Ideology of the 2nd Narrative that Controls Nothing

Sustainability initially got off to a promising start [20]. Since then, however, a lot has gone wrong, as the discussion now mainly revolves around renunciation, reduction and a *return to nature*, wherever this paradise may be. Doing less of the wrong thing does not solve the problems, it is still wrong and it is still the application of the *controllability ideology* in reverse [21]. It does not challenge the status quo and adds nothing better. The scientific discipline of ecology, described by Haeckel in 1866, was transformed into an ideology about a hundred years later and a quarter of a century later it became a dogma and a protective discipline [22]. Solutions to the global problems caused by anthropogenic actions are not possible in this way.

If sustainability does not seem suitable for this, what then? We cannot avoid changing our behavior and the associated strategic and operational actions of existing management practice to achieve decarbonization and circularity of human production and logistics processes. What strategies are there to solve the problems? The challenge is like getting a carpet to fly. Political decision-makers attempt to enforce sustainable developments through legal interventions and regulations, such as the regulations on ESG criteria [23]. Their decisions and actions are subject to the time horizon of election periods of four to five years. The number of regulations is increasing and their handling by companies is complicated and costly [24]. It remains to be seen whether these will have the intended effect. The management of companies sees this primarily as an additional bureaucratic burden without the intended effects [25].

The narrative of a *green wonderland* is not wrong, it just does not solve the problems and creates new ones through displacement. It is not radical enough. By communicating this narrative worldwide, companies have let the reins be taken out of their hands and are merely reacting. There is a lack of tangible participation in social debates and the communication is defensive. They do not emphasize their social significance. Yet they are the most important drivers of the necessary transformation process, as they can provide knowledge, resources and capital. Management faces the challenge of once again becoming the driver of the social debate and emphasizing its social relevance. With its executors and its implementation expertise, project management makes a decisive global contribution to future sustainable development beyond the mere delivery of results. It must face up to its responsibility. Strategic and operational management is not part of the problem, but part of the solution.

3.3 The Third Story - The Magic Carpet Ride

The third narrative does not want to go forwards or backwards - but in a completely different direction. The communication tsunamis of *take-make-waste* and the *green wonderland* are blocking our view of viable options. They fundamentally overlook the ability of the human species to innovate and adapt. Circular strategic and operational thinking and action is required. Humans are exposed to the imposition of an ecology that they do not understand but are trying to control. Our hunger for energy and raw materials is changing the planetary balance. Previous habitats may become uninhabitable. Management has no organizational form that understands the complexity of an ecological balance, corresponds to it and acts accordingly. It is about understanding the connections between human hubris and ecological systems [26,27].

What is needed is an avant-garde that sets out to change the world and *make* the *carpet fly*. Strategic management, in cooperation with operational management, must win back the initiatives, reactivate existing innovative forces, take on existing challenges and assume responsibility on a global scale: *One world - our responsibility!*. The Anthropocene is a global challenge, requires a global understanding and therefore a different way of thinking - a paradigm shift. According to Einstein, problems cannot be solved with the kind of thinking that gave rise to them. Decision-makers are called upon to pursue questions for which no answers are known. Ignorance must become the general horizon of thought,

and the question of the unknown must determine strategic and operational decisions and develop solution strategies. The first step is to recognize that *we are in the driver's seat* [28]. The decisive *tipping points* are not scientifically defined but are human in nature.

3.3.1 The Super Customer

The customer is the focus of strategic and operational management. All decisions and actions are geared towards satisfying and retaining them. To this end, their behavior, wishes and needs are scrutinized to plan, produce, deliver and maintain the products JA. necessary for them and their purchasing behavior. The return of products and their further use through remanufacturing are at least discussed. The complexity of the challenges demands cooperation with a wide variety of organizations and creativity. This requires enhanced project management skills. Agile concepts and methods are already existing and used approaches for greater integration of the customer in project management processes. They are not sufficient for the issues outlined here. Assuming that the global dimension must be included, we can define a *super customer*: The planet (Fig. 4).

Figure 4: The Super Customer (Source: NASA)

The super customer has a decisive disadvantage: he cannot articulate himself, cannot place orders or sign contracts. To meet its requirements, we are dependent on interdisciplinary ecological research. Science and research have the right to be wrong. We do not know what we do not know. What is needed are the skills and courage to move through an unclear and unpredictable area.

3.3.2 Strategies for the Next Seven Generations

The origin of the idea of sustainability can be traced back to a tradition of the Iroquois and their principle of the seventh generation, in which the effects of actions are considered up to the seventh generation after them [29]. The Australian architect Julia Watson investigated how indigenous peoples developed simple technologies for their survival in habitats that are difficult for humans (deserts, high mountains, wetlands, forests) and developed these further within the temporal changes that occur in these structures [30]. In her publication, she refers to the ecologist Berkes (1999) and the complex he named *TEK - Traditional Ecological Knowledge* - consisting of individuals, local knowledge about land and animals, resource management systems regarding agriculture, animal husbandry and hunting, the social institutions of the communities and finally the paradigm of the world view of indigenous peoples [31]. This symbiotic structure of fact-based knowledge and mythological fictions served the indigenous peoples Watson studied as the basis for their survival in inhospitable regions of the planet as a shared vision.

Almost at the same time as Berkes, the American biologist Lynn Margulis published *The symbiotic planet* after thirty years of evolutionary research in 1998. Margulis' *serial endosymbiont theory - SET* - summarizes her far-reaching considerations on the evolution and regulation of the entire planetary biosphere. Her research was confirmed by molecular biology [32]. Both examples show that humans have the basic knowledge necessary for planetary responsibility. In the process of industrialization and the doubling of the world's population within a generation (1985 to 2020), only fragments of this knowledge remain. The third narrative combines these fragments into a new overall picture as the basis for the *Magic Carpet Ride* to decarbonization and the path to a circular economy: Next7G Management - Management for the next seven generations. It provides the skills and control systems for the pilots of the flying carpets.

Objections that foresight over these long periods of time is impossible in human societies with rapid new technological findings and processes with a planning horizon of more than one hundred years are justified. Management, tied to quarterly results and contracts that often do not extend beyond five years, cannot meet these challenges. The challenge of planetary responsibility must plan for and anticipate processes that extend beyond these periods. *Apple*, for example, shows that this is possible with the *iPhone*: 15 product generations in 16 years. Whether these model generations meet the criteria of sustainable development remains to be seen. However, it shows that people are fundamentally capable of this - it is a question of imagination, will and attitude.

3.3.3 Next 7G Management - The Infinite Minded Leader

Sustainability, considering the requirements of the *super customer*, is becoming the core business and top management task. The supervisory bodies of companies are required to plan, decide and monitor accordingly. This is an organizational change and not just a redesign of existing business processes. All business areas - existing and future - must understand sustainability as the most important pillar of the company. These must be aligned with the strategic goals [33]. It is about taking overall responsibility and adopting the appropriate attitude: *One world - our responsibility - our decisions* [34,35].

The strategic and operational management of organizations must face up to the challenges and take responsibility not only for their institution and project results, but also extend this to the planetary requirements for the decarbonization of manufacturing and logistics processes and the introduction of products into cycles of resource conservation and waste avoidance. This is a paradigm shift. For the first and the second narrative, strategic and operational processes were geared towards the direct delivery of results. The people involved were primarily results oriented. Attitudes and thinking were focused on results and short-term gains.

This is no longer expedient for the third narrative. To make a carpet fly in the figurative sense, a completely different approach is required for circular processes. It is geared towards the fact that no quick results can be achieved. Thinking and acting in such a way that quarterly and annual results are no longer the focus, nor is the timely delivery of project results in line with budget, schedule and content. Strategic and operational managers become infinite-minded leaders [36]. A management system is required that can allow open questions to remain unanswered in the long term, providing solutions and dealing with uncertainty and risk. There are many questions and few answers that go beyond initial approaches. What is needed is a simple and clear generic methodological approach that encompasses both strategic and operational management and incorporates sustainability in all its facets. This approach requires interdisciplinarity and an accumulation of available knowledge and skills. The portfolio in Fig. 5 shows a comparison of the differences for management between the first and second narrative compared to the third narrative.

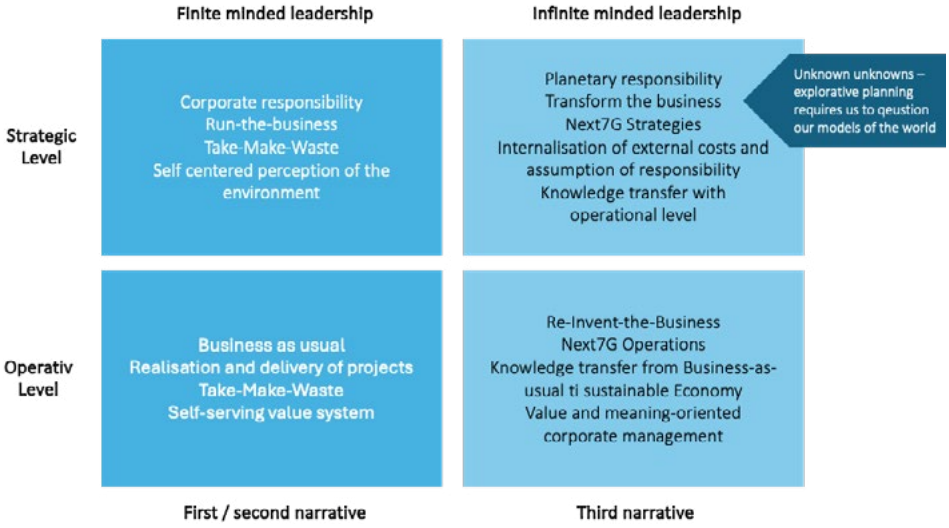

Figure 5: Understanding roles for strategic and operational management of Next7G Management for sustainable processes

3.3.4 Control Systems

Next7G management scrutinizes all products, and the processes required to manufacture them in their entirety. From the linear value chain of *take-make-waste*, it is necessary to subject the design of all components of products to this process and to design them in such a way that they can be fed into recycling or remanufacturing processes [37]. The production process is also affected by this. Older, well-known and established management models, such as Kaizen, which comprise a philosophical-cultural superstructure for all management practices, reflect the basic attitude. This must be implemented throughout the entire company [38,39]. Toyota's improvement kata as a muda principle is an example of a company-wide model (Rother, 2009). It merely specifies the form that thinking, and behavior follow in response to a situation.

In the first step of Next7G Management, the strategic options for maintaining the core business (*Run the business*) and in the second step, business model innovations for sustainable developments (*Re-Invent the business*). In the third step, ideas are pursued that appear feasible in principle but whose implementation is still vague (*Transform the business*). These are projects that are more akin to start-ups and in which breaking the rules is the norm. This model was further developed from an old concept by McKinsey (2009) for Next7G management and the distribution of tasks between strategic and operational management is shown in Fig. 6 as a proposal for discussion [40]. It can be adapted or supplemented to meet organization-specific requirements. The first step for management is to define and communicate the strategic options and, in a second step, to implement them step by step. The strategic and operational levels each have competence and experience-related tasks that require direct coordination and communication.

	Strategic Management	Operativ / Project Management
Horizon 1: **Run the business** (Short term: 2-3 years)	Portfolio strategy for all products and processes and project managers involved in this strategic processes. Maintaining competitive position for core business. Cash cows deliver profits for the re-invent processes. Marketing and finance embedded in the strategic processes.	Project management rather conservative, static. Project managers identify possible further development potential within the processes and project results under sustainable criteria. Documentation required.
Horizon 2: **Re-Invent the business** (Middle term: 5 - 7 years)	Re-Design of products and manufacturing processes. Project management involved in the decision making processes: timelines, skills, risks identification, R&D requirements, costs. Marketing involved for sales strategies.	Projects leave familiar environment. Methods integrates hybrid methods as required. Proceddsed and results are defined and delivered in mangeable and clearly defined steps. Enhancement of competitive positions. Risks and barriers increased.
Horizon 3: **Transform the business** (Long term: 7 – 12 years)	Products and manufacturing processes persue visionary goals. Taking into account the experiences gained from Horizon 1 and 2 projects. Project management and Marketing involved in the strategic processes (knowledge management required). Indentification of R&D processes been required.	Project managements leaves familiar methods and take risks for failure. Frustration levels increased. Resilence required for Project Managers and teams. Keeping groundbreaking developments in focus. Developing potential for previously unknown and new markets (Marketing involved). Focus on closing product cycles.

Figure 6: Three-Horizon Model: Growth Strategy for Sustainable Corporate Development

There are role models of global companies that follow a similar model with regard to their strategic position: A global FMCG player that aims to complete the decarbonization of its 100+ manufacturing sites worldwide by 2040, an industrial equipment supplier (robotics) that operates PaaS (Product as a Service) and an e-commerce/technology company that is exploring how to combine the distribution of its high-value products as a leasing model with return and remanufacturing processes [33,41,42]. Project management is then required to make the carpet fly. An extended competence profile for project managers for the management of sustainable projects was described by Wiek et.al. 2011 [43]. The necessary framework contains the project management competencies for systems thinking future thinking, strategic thinking, interpersonal competencies and values for sustainable development over longer periods of time. This profile is characterized by the ability to lead in an interdisciplinary environment in a results-oriented manner.

Fig. 7 shows the relationship between strategic and operational management in terms of how the seven future product generations are to be designed. Uncertainty increases from the third generation onwards and becomes visible only as a vision by the seventh generation. It thus goes further than we can see. It extends the three-horizon model for strategic and operational decisions in terms of feasibility. It answers the basic steps of the procedure for strategic decision-makers in close cooperation with operational management. It answers the possible approaches, in which time horizon which steps are possible in terms of content with which resources and which time horizon. This *big picture* provides the substantive approach for decarbonizing production processes and the necessary steps towards a circular economy with a gradual reduction in waste and shows where developments are necessary. It is an iterative model and can be handled in the same way as portfolio management.

Figure 7: Generic Big Picture for Strategic and Operational Planning next7g Management

The only constant in these models is change. Permanent pressure to adapt keeps organizations fit if there is a systematic approach to reacting accordingly. It can be assumed that new developments will have a profound impact on strategic and operational managers in organizations. Technologies still in the early stages of development and introduction, such as *digital twins and artificial intelligence* for e.g. the development of new materials and design and manufacturing processes, will have a massive impact on industrial design and manufacturing processes [44-46]. The combination of these technologies, which has not yet been considered in detail by research, has not yet been considered. When these are developed and deployed, the current dividing line between strategic and operational management will be shattered. What then?.

Companies that have already integrated project portfolio management have an organizational model and relevant experience of using it by expanding the competencies and organizational responsibilities for Next7G management. This model can also be covered by a project management office, as outlined in the case of the global player for FMCG described above [33].

4. Conclusion: We are in the Driver's Seat!

The role and competencies of project managers will change. From the realizer without strategic influence, as described for the first and second narratives, they will become shapers of the future in the third narrative and will influence the strategic decisions for sustainable developments. His role changes: on the one hand, the

finite minded leader is still required to deliver the project results. On the other hand, he must also *be* an *infinite-minded* leader who is able to think beyond the delivery of his project results. We are not prepared for that. The path to decarbonization of production and the introduction of a circular economy requires enhanced project management skills, as described above.

As outlined by Bruce Usher, Columbia Business School, 2023, most of the global investment over the past thirty years has gone into digitalization technologies. He expects most of all investments over the next thirty years to be in the decarbonization and circularity of industrial processes. This is associated with a necessary paradigm shift in strategic and operational management: existing processes are inadequate because they do not take the super customer into account. On a global scale, it is necessary to move away from the controllability ideology that determines the direction of developments in the first and second narratives. A fundamental paradigm shift is needed to realize decarbonization and the circular economy and thus preserve the basis of life for future generations and enable prosperity. Project management and its practitioners have a great opportunity here to become pioneers of positive change. They must face up to this challenge and find answers. This is where organizations such as the IPMA are called upon.

As formulated by Silvius and Schipper back in 2014, *sustainable project management is the planning, monitoring and control of project implementation and supporting processes, considering the environmental, economic and social aspects of the life cycle of project resources, processes, outcomes and impacts, aimed at achieving benefits for stakeholders and carried out in a transparent, fair and ethical manner with the active participation of stakeholders*. While the first narrative has so far been a shared vision, the current discussions about the second narrative show that it will not be able to solve the problems. On the contrary, it will create new problems as it ignores fundamental factors. At best, it can create transitional solutions.

Human behavior is the key to the solution. It's not about rescue, it's about conservation. Jim Skea, the current Chair of the IPCC, sees the constant message of possible doom as paralyzing the ability of the entire species to act and innovate to initiate and implement the necessary measures to cope. Let's start with the solution: We are in the Driver's seat! Let's ride the magic carpet! [47-55].

Personal Notes

These and all my other publications, lectures, etc. are the result of my personal interest in the subject. I do not receive any funding from official or private sources. My teaching duties at the Technical University of Berlin are honorary positions. I only receive support for travel expenses from the Deutsche Gesellschaft für Projektmanagement (GPM) and the IPMA. Thanks for that support. I'm a member of the IPMA's SIG ESG and the GPM's SIG PM at universities. Memberships extend only to these two organizations. In this context, I would like to thank the team of the IPMA's SIG ESG (Sara Bossi, Lana Butkovic, Gilbert Silvius and Peter Pürckhauer) and our team lead Max Panaro for their thematic support. For this and all other publications and lectures to date, I would also like to thank Mladen Vukomanowicz, Vladimir Obradovic, Peter Thuy, Ingrid Giel, Peter Renner, Konstantin Theile and Günther Seliger, the founder of the Global Production Engineering course at the Produktionstechnisches Zentrum of the TU Berlin. Of course, there are many more people with whom I have discussed these topics in a variety of ways. I would like to take this opportunity to thank them as well.

My special thanks also go to all my students from 24 nations for discussions, suggestions and the now almost seventy master's theses over the past twenty years, particularly on the topics presented here.

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