

The Dawn of a New Era for Project Management

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Projects are today widely used as a business model for private and public sectors and they constitute the preferred model for developing changes in construction, oil and gas, chemical processes, aerospace, defence, etc. A common characteristic of such projects is that many are large and complex. Many of them involve intervention with nature or affect the public in some way. Thus, they are exposed to media monitoring and public attention. Windmills deliver green energy but placing a windmill in someone's backyard or even up in the mountains may cause protest demonstrations and local conflicts.

Complex projects are found in different industrial and public sectors and span over different types of project such as building and construction, product innovation, ICT systems development, organizational change, etc. We distinguish between technological and organizational complexity. Complexity is a relative term depending on the capability of the organization. Thus, a small project may be complex for a small organization.

Complex projects face several sustainability challenges:

- Conflicts between the intervention in, and protection of, nature.
- Emission of greenhouse gases.
- Recycling of materials and goods.
- Large use of materials, resulting in an increase in transport vehicles and even more CO₂.

Large energy projects use large land areas and may change landscape and fauna along with it. Road construction requires land—sometimes crop land. This has been the situation for many years, and politicians and industry have tackled this—but the new governmental and national regulations from UN and EU have raised awareness that this has to be done in a new and more balanced way.

Emissions and recycling are not mature to the same degree in resolving conflicts of interest, and the situation is not under control. Carbon emissions per capita are increasing all over the world. Global natural resource use has accelerated. In addition, the growth of global material use has accelerated over the past four decades, while economic growth and population growth have been slowing.

The global temperature is rising, and the weather is changing. We have seen more heavy rain, more strong winds and more large flood disasters over the last decade, and as a result, climate change is here! Furthermore, the outbreak of the Covid-19 pandemic (that the UN Health Organization warned us about many years ago) demonstrates that how we live, travel, and build and maintain our cities and infrastructure is crucial for the survival of mankind. The building and construction industry use 60% of the land, 50% of the raw materials, 30–40% of the energy and 15–20% of the fresh water.

Most of these resources are spent in projects. However, the projects are not only the problem—they are also the solution. Projects are about value, and value is more than successfully delivering a complex project in terms of time, cost and quality. Value is what connects projects with a long-term effect on society and organizations. Managing a



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project in a sustainable way will create long term effects and greater value for the society and project owners. We must change the mindset and the focus of project owners and project managers in how complex projects are planned, delivered and maintained so that we achieve the UN Climate panel's +1.5 °C goal before 2040—spending money on the “right projects” and in the “right way” is needed to deliver on this long term goal. We need project owners and project managers that have the knowledge and skill required to develop and execute these projects so that we can, in the future, live safe in our cities and use the infrastructure we have invested so much money in. Sustainable management of our projects needs to be part of the project owner and the project manager's agenda and responsibility. It is not something that project management profession can leave to politicians and investors to solve.

The traditional project management approach is based on a body of knowledge developed by the Project Management Institute. It defines a set of knowledge areas with a description of the various processes in each area. Digitalization is an enabling technology that can support the change in the way we manage complex projects towards sustainability. Some important drivers are modelling and visualization tools, machine learning, and communication and collaborative tools. Combining these enabling technologies with project management process knowledge and domain knowledge is a must if complex projects should be delivered in a more sustainable way.

Modelling tools offer the opportunity to develop digital models of the resulting products of the project as well as the processes involved in managing the project and the work. Visualization tools use virtual reality to allow the user to view the product or process before it is built. This is important in complex products such as large buildings, ships, chemical facilities, manufacturing plants, etc. They are widely applied in civil, electrical and mechanical engineering. Machine learning can improve the decision process in project management and thus reduce risk and uncertainty. With better communication and collaboration tools, coordination and management tasks will become simpler, but it will require a new way of working for most project managers, as there are challenges in working on a virtual platform instead of a physical one.

These drivers will lead to changes in the way we work with and in projects. We will see a situation with more virtual work. We will work with models before the project starts and do more planning in a virtual environment. We will use new collaborative tools and conduct more business through digital solutions rather than face to face. We will understand the product processes better through effective visualization techniques. This change is already well on its way due to the handling of the Covid-19 situation. The positive side is that it makes project management more environmentally friendly as it reduces the need for physical contact. This is especially important in global projects.

In the year 2020, two large global events happened—the global Covid-19 pandemic “hit” most countries and the EU established new sustainable goals of reducing the CO₂ level by 55% compared to the 1990 level. A global pandemic is an example of an unknown-unknown situation and it is an external contextual risk that most project owners and managers have no knowledge or training for. Wrong handling has proven to be fatal and deadly for many countries' citizens. The pandemic has had a large impact on most countries' economies, and it has had an impact on what type of projects governments will prioritize and be able to start up in the coming years.

The new EU sustainability goals can be classified as a known-unknown—for existing and upcoming projects, project owners and managers know that is something they have to apply themselves to, but what kind of opportunities and risks this will introduce to their projects is unknown.

Industries have gradually adopted a more sustainable project approach during the last decade. We see examples of construction sites claiming to be CO₂ neutral, and environmental concern is part of the decision process for new projects. However, this change has happened slowly, and it can also be argued that it is not at a pace that solves climate change.

The handling of complex projects in a more sustainable way will introduce new opportunities and risks. The green evolution will create new jobs and new industries, but it will also introduce new risks such as how can we be safe in our towns, have enough fresh water, build more cities, and use more material, while still not compromising the UN 1.5 °C goal. Project managers need new tools and skills to handle influencers' contributions in either positive or negative directions; this needs to be included in the risk analysis for major projects with nature intervention.

There are two major risk management strategies that project owners and project managers can follow:

- Mitigation—reduce operations and products that may harm the environment to reduce the global climate influence.
- Adaption—design buildings and infrastructure according to new criteria due to climate change.

If we follow the mitigation strategy, we must, for example, refurbish houses to a larger degree rather than building new ones. We must reuse products rather than scrapping them. We must recycle materials and use more renewable energy in building and operation of projects in the future.

The project manager must take responsibility for so called “green project management”—reducing transportation and the use of energy and materials. The project scope has to be designed with sustainability as a major criterion. The project owner must exploit opportunities that may be uncovered during execution of the project. All projects carry uncertainty. Some of this uncertainty is negative and can lead to a risk focus. However, uncertainty may also be positive and create opportunities. Hunting for opportunities and presenting solutions for the project owner should be part of the daily business for any project manager.

As already mentioned, the approach described above will need a shift in mindset that we believe has already started. In the year 2020, the pace and level of focus on more sustainable project development and execution has been moved to a whole new level. We claim to see the dawn of a new era for project management that aims at sustainability. This includes:

- Extended evaluation criteria.
- New management focus.
- Extensive use of digital tools.
- Improved performance through risk and opportunity management.

When selecting projects, we must take sustainability into account in addition to the traditional profitability criteria. This may well mean that some profitable projects should not be undertaken or that a less profitable project that is more sustainable is selected rather than the most profitable one.

We need to train the future project managers to work in a multidimensional competence environment where sustainability is a major focus. They will have powerful digital tools at their fingertips for collaboration and communication, and they will systematically hunt for opportunities.

A better risk and opportunity management approach, as outlined above, will contribute to solving sustainability issues in future complex projects.

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