# The Environment for the Execution of a Digital Development Platform for Renewable Energies

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## Introduction

Both Digital Technology Platforms (DTPs) and Renewable Energy Sources (RES) are inextricably linked to aspects such as innovation, modern technologies, including information and communication technologies, and ecology. DTP and RES based solutions are currently widely promoted due to the drive for cost reductions or environmental protection; thus, the related topics are relatively frequently addressed in the scientific literature. However, it should be noted that so far, issues concerning the opportunities DTPs provide in relation to RES equipment and systems have only been hinted at and have not been thoroughly discussed. The scientific debate has centred on either DTPs or RES, but the possibility of combining these two concepts or models has not been adequately explored.

It is worth noting that several authors employ terminology indicating the integration of DTPs and RES. This is reflected in the terminology used, such as digital energy platforms, electronic energy platforms, IT platforms in the energy market, RRI platforms for energy, and platforms for energy trading and risk management (abbreviated as ETRM), which include solar energy trading platforms or web platforms for water energy monitoring and control. However, none of the publications go into detail about the implementation environment for RES digital technology platforms.

## Description

When discussing such an environment, it is necessary to first explain the features and operation of the RES digital technology platform. DTPs are primarily defined in the scientific literature as digital tools that serve as the foundation for establishing and strengthening relationships among various market players, including businesses and consumers, as well as administrative institutions (public administration bodies). Such relationships are made possible by DTPs, which allow these entities to conduct transactions and establish interactions, including business interactions, as well as communicate with one another via the internet. The coexistence of a modular core and complementary elements that are interdependent and function on common principles and a comprehensive value proposition is the essence of the digital platform ecosystem. Because of the need for coordination among the many entities that comprise the

digital platform ecosystem, it appears possible to approach the platform ecosystem as a meta-organization: Less formalized than a company but more formalized than markets.

Another definition states that DTPs (in technical terms) are extensible code bases that allow for the addition of additional modules and functionalities at any time, as well as in socio-technical terms; a set of specified technical elements, including software and hardware, as well as related organizational processes and standards that allow for the establishment of organizational ecosystems (*i.e.,* networks of links between diverse entities). The author's definition of DTP, on the other hand, is as follows: Electronic (digital) tools that can take the form of services or content and allow for the development of a foundation for establishing and intensifying contacts among various market entities; whereas a critical feature of these platforms is the ability to constantly expand with new modules or functionalities. There are currently examples of successful DTP/RES integration. It is visible in the increased implementation of ETRM projects (*i.e.,* platforms for energy trading and risk management). Platforms based on blockchain technology are undergoing significant development. They enable energy trading without the use of brokers or commodity exchanges, which reduces costs.

## Conclusion

DTPs are also widely used to manage digital wind farms, hydropower plants, and operating systems aimed at digitalizing energy consumption. Examples of successful forms of integration between DTPs and RES serve as the foundation for future technological and solution development in this field. In the context of RES or, more broadly, the energy market, a Digital Technology Platform (DTP) should be defined as a digital space where users can communicate with one another and establish various relationships and interactions related to the energy and RES markets, as well as access specific energy products, services, and resources provided by other users or organisations. According to another viewpoint, the RES digital technology platform is a new business model based on digital technology that provides pioneering and innovative solutions to various problems related to the operation of the energy sector, such

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as demand and supply coordination, grid management, data acquisitions and cost reductions.