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The world in 2050 and the New Welfare scenario



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ABSTRACT

The PASHMINA (paradigm shifts modeling and innovative approaches) project grew out of the need to improve our understanding of the paradigm shift in the energy-transport-landuse nexus and, more broadly, in world development. In envisioning the world at 2050, we envisaged future growth in four possible directions: growth without limits, growth within limits, stagnation, and New Welfare. The scenario considered as preferable reflects a transition toward a New Welfare, characterized by a high level of cooperation, heightened concern for the environment and for social welfare, and an increased share of immaterial consumption. This scenario is based on the recognition that the development of new technologies – although relevant – turns out to be insufficient to resolve the issue of resource scarcity alone. Important behavioral changes are also needed. In the New Welfare scenario, GDP as a measure of growth becomes obsolete and needs to be replaced with ways of measuring progress that are more reflective of natural, human, and social capital. The New Welfare scenario also charts a pathway toward a low-carbon future, with an overall reduction in energy consumption, density, and intensity, and a greatly reduced reliance on fossil fuels. A new, smart electric grid facilitates active demand management and decentralized production of power. Natural gas or even small nuclear plants tackle problems associated with the intermittency of renewable energy sources. Among other likely shifts under this scenario is a re-conceptualization of production, from short-lived to longer-lasting goods and from private to open source knowledge products and services; growth in recycling and zero-waste processes; and a shift from profit-driven business to entrepreneurship that seeks to satisfy social needs and build local capital. The world undergoes a transition from unequal growth to prosperity in a multi-polar, globally interdependent world. New global democracy networks and institutions are created, and constitutions extend beyond the protection of human rights to the recognition of “nature rights.” Citizens’ income is tied to the social welfare-oriented duties and participatory governance. This scenario further leaves room to new forms of self-regulation of common resources. Actions necessary for the shift to the New Welfare paradigm include the adoption of new metrics for measuring progress, measures to increase public acceptance of technological and societal change, the creation of new global and local institutions devoted to sustainable management of shared environmental resources, sustainable production and consumption patterns, and a low-carbon energy and transport systems.

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1. A blueprint of the New Welfare scenario

The PASHMINA (paradigm shifts modeling and innovative approaches) project grew out of the need to improve our understanding of the paradigm shift in the energy–transport–land use nexus and, more broadly, in world development. The project in fact specifically focused on the interaction between economic and ecologic systems.

In envisioning the world at 2050, we envisaged future growth in four possible directions: growth without limits, growth within limits, stagnation, and New Welfare. Growth without limits is marked by little care for social welfare or the environment and increased consumption of mass-produced goods. It roughly illustrates the current prevailing paradigm. Growth within limits reflects balanced growth and globalization working towards climate goals with a uniform top-down approach. Stagnation reflects an individualistic approach marked by intense competition, but little cooperation, little care for the environment or human welfare, and slow economic growth or even decline, characterized by less mass consumption.

The scenario considered as preferable reflects a transition toward a New Welfare, characterized by a high level of cooperation, heightened concern for the environment and for social welfare, and an increased share of immaterial consumption. This scenario is based on the recognition that the development of new technologies – although relevant – turns out to be insufficient to resolve the issue of resource scarcity alone. Important behavioral changes are also needed. In the New Welfare scenario, GDP as a measure of growth becomes obsolete and needs to be replaced with ways of measuring progress that are more reflective of natural, human, and social capital. This scenario further leaves room to new forms of self-regulation of common resources.

Under the New Welfare scenario, consumption of material goods is reduced while that of services and intangibles increases. The economics of “enough” prevail as the dominant paradigm. The world undergoes a transition from unequal growth to prosperity in a multi-polar, globally interdependent world.

Among other likely shifts under this scenario is a reconceptualization of production, from short-lived to longer-lasting goods and from private to open source knowledge products and services; growth in recycling and zero-waste processes; and a shift from profit-driven business to entrepreneurship that seeks to satisfy social needs and build local capital.

A paradigm shift also occurs in the form of government. New global democracy networks and institutions are created, and constitutions extend beyond the protection of human rights to the recognition of “nature rights.” Citizens’ income is tied to the social welfare-oriented duties and participatory governance.

The New Welfare scenario also charts a pathway toward a low-carbon future, with an overall reduction in energy consumption, density, and intensity, and a greatly reduced reliance on fossil fuels. A new, smart electric grid facilitates active demand management and decentralized production of power. Natural gas or even small nuclear plants tackle problems associated with the intermittency of renewable energy sources.

Under this scenario, carbon pricing is implemented at the global level, and an international climate trust provides funding for investment in mitigation and adaptation strategies to deal with climate change.

So what will the world in 2050 look like, if the New Welfare scenario is achieved? We will see slowed population growth, an increase in the share of land devoted to production of bioenergy feedstocks, less demand for travel, a significant decline in greenhouse gas emissions, a significant decline in loss of biodiversity, and increased social awareness of environmental issues.

Actions necessary for the shift to the New Welfare paradigm include the adoption of new metrics for measuring progress, measures to increase public acceptance of technological and societal change, the creation of new global and local institutions devoted to sustainable management of shared environmental resources, sustainable production and consumption patterns, and a low-carbon energy and transport systems.

2. Building the New Welfare scenario: the PASHMINA paradigm shift analyzer and exploratory scenarios

The New Welfare scenario was the result of exploratory analysis of global scenarios and paradigm shifts undertaken by the EU FP7 PASHMINA research project (www.pashmina-project.eu). This has generated comprehensive **qualitative** global scenarios by scanning a wide range of existing scenarios and visions up to 2050, and harmonising them through a new scenario framework that explicitly focuses on paradigm shifts (the “PASHMINA Paradigm Shift Analyzer”). Building a global-scale socio-economic scenario framework requires the combination of parsimonious qualitative narratives (storylines) with quantitative projections of key socio-economic variables. The latter have been produced by integrating **quantitative** results from many previous future-studies and by developing a new generation of long term meta-models. Accordingly, the analysis has been carried out along two parallel tasks:

- **Qualitative analysis:** identification of “shifts” in future trends in relation to a plurality of socio-economic, technological, territorial, environmental and institutional factors. This task aimed to develop visions of alternative futures (exploratory scenarios) based on the qualitative analysis of different pathways of development dependent on key drivers and paradigm shifts. A community of experts of different disciplines was involved in a two-round DELPHI survey. Special attention was given to possible paradigm shifts in the energy–transport–environment nexus and in the land-use and territorial functions.
- **Quantitative analysis:** development of meta-models and long-term forecasts. The meta-models address the main long-term evolutions of key economic, social, technological and environmental indicators, illustrating possible future states of

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