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Governance, Competitiveness, and Sustainable Development: Examining and Comparing Autocracies and Democracies

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Political regimes significantly determine the ability of nations to develop one way or another. Political regimes and their associated governance require tools and frameworks such as institutions, infrastructure, technology and innovation, prosperity, people, and the biophysical environment to operationalize the political regime narrative in the countries' development. Prior studies on political regimes, governance, and competitiveness have primarily focused on the political economy or economics. Consequently, it is important to conduct research departing from political regimes and governance, maintaining the crucial role of economics, and incorporating multiple factors and outcomes of sustainable development. This study aims to examine a large set of relationships between governance, institutions, infrastructure, technology and innovation, prosperity, the biophysical environment, and people. Using 69 development indicators from 117 countries categorized into four political regimes (e.g., closed and electoral autocracies, and electoral and liberal democracies), 10 model configurations were analyzed using PLS-SEM. This study substantially expands the criteria for assessing the four main political regimes. Governance, prosperity, and technology and innovation relationships were slightly more robust and positive in democracies than in autocracies. Conversely, relationships involving institutions, infrastructure, and the biophysical environment were slightly stronger in autocracies than in democracies. Relationships involving the biophysical environment and people were generally weak. Global results had more positive, stronger, and fewer non-significant or negative relationships than the political regimes' findings. Overall, democracies' relationships were slightly stronger and more positive than those of autocracies. However, liberal democracies did not demonstrate the expected advantages over other political regimes.

Keywords: Political regime, governance, institutions, prosperity, people, biophysical environment

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I. Introduction

Political regimes may influence both the nature and effects of governance, competitiveness, and national (sustainable) development. Countries' governance constituents, such as participation and inclusiveness in decision-making, accountability, transparency, protection of human rights, and policy formulation and implementation, are, by and large, a function of the political regime.

Political regimes set the structure of government and how power is distributed between the dominant coalition and the remainder of society (Stoker 1998). They impact the rights of citizens and their access to education, healthcare, and economic opportunities (Kaufman and Haggard 2019). The major organizing features of political regimes are reflected in certain development actions which, in turn, may be mirrored in development indicators. In a few words, political regimes significantly determine the ability of nations to develop one way or another (Przeworski and Limongi 1997; Jerven 2012; Geddes 1999; Easterly and Levine 1997; Rodrik 2000). Consequently, political regimes may substantially influence (sustainable) development (herein SD).

Late humankind's history may be characterized by competition among different political regimes. For example, in the recent past, political regimes were central in the bipolar world of the Cold War, and currently, they are central in an increasingly multipolar world (Ikenberry 2015; Waltz 2000; Greenstein 2006). Such competition was considered finished in the so-called "end of history," but this assessment was proved wrong very rapidly (Zizek 2006). In the last few decades, philosophically, the post-modern critique of the idea of "progress" (Lyotard et al. 1984) questioned the effectiveness of capitalism in delivering its theoretical promises and called attention to its content validity deficits highlighting the unsettled liveness and complexity of humans. More recently, pragmatically, via disappointment with the unrealized ideal of liberal democracy, some countries have backslidden and become more authoritarian (Kaufman and Haggard 2019).

Part of the liberal democracy challenge stems from poor regime performance, which generates distrust and skepticism in the regime (Mishler and Rose 2001). Underperformance on the economic dimension (e.g., highly skewed distribution of wealth and other resources) spills over to and manifests in the social and economic realms (Milanovic 2016; Galbraith 2012; Piketty and Saez 2014). Consequently, unfulfilled economic expectations, the complexity of development, and citizens' difficulties in discerning quality information, among others, increase the proclivity of people to believe alternative narratives (e.g., different to liberal democracy or different liberal democracy conceptualizations), thereby contributing to societal fragmentation (Pennycook et al. 2020; Norris and Inglehart 2019). The more problematic development is, the higher the likelihood of people looking for and experimenting with alternative political regimes hoping to find solutions to their problems. Such a search may lead to democratic backsliding (Kaufman and Haggard 2019; Haggard and Kaufman 2021). In turn, democratic backsliding may make sustainable development (SD) more difficult and/or worse (Haggard and Kaufman 2021; Wahman et al. 2013). For instance, regimes furthering the use of power mainly benefiting a certain societal group may restrict participation and inclusion (Barchiesi 2011; Aeby 2018; Lund 2006) precisely when liberal democracy needs such attributes the most (Baumann 2013). Moreover, the increasingly necessary consideration of the environment in sustainability transitions (Markard et al. 2012; Coenen and Truffer 2012; Loorbach and Rotmans 2010; Frantzeskaki and Loorbach 2010) may further complicate socio-economic difficulties because resources are required to better balance the economic, social, and environmental dimensions.

Political regimes and governance are interrelated. Likewise, political regimes and their associated governance require tools to express the political regime narrative in countries' development. These tools may include, among others, institutions, infrastructure, technology and innovation, prosperity, people, and the biophysical environment (World Bank Group 2019, World Economic Forum 2018). For example, institutions provide standards and guidance to use resources (un)sustainably; infrastructure provides physical systems and facilities enabling (un)sustainable practices; and technology and innovation make the development of greener and more efficient processes, products, and services possible. In addition, technology and innovation are crucial in finding better solutions for sustainable development problems. In other words, political regimes, governance, competitiveness, and countries' sustainable development interact and manifest nationally and globally. Together, these frameworks and tools are vital for supporting SD. Next, we discuss why studying some of the crucial relationships between political regimes, governance, competitiveness, and sustainable development is important.

Unfortunately, most of the political regime discussions center on comparing liberal democracies with other political regimes which are deemed inferior in terms of the central values characterizing liberal democracy (e.g., citizens' participation and inclusiveness, transparency, accountability, adherence to the rule of law, protection of human rights, efficient markets, the satisfaction of individual desire, and management of the nation by a bureaucratic liberal state) (Stoker 1998; Davidson 2012). Such comparisons are based on the liberal democracy "ideal," and attention is directed to the corresponding deficits in other political regimes (Diamond 2015), stating that liberal democracy is our best. However, it is necessary to direct further attention internally, not externally, to address the many manifestations of democracies and, in particular, the gap between the "ideal" notion of liberal democracy and its "lack of full operationalization," which seems to be the leading cause of the liberal democracy problem.

The nature of a country's political regime plays a significant role in determining its ability to strengthen social welfare and foster economic and sustainable development (Acemoglu et al. 2005; Ross 2001; Congleton 1992; Besley and Burgess 2002). Research on political regimes explores, among others, aspects such as democracy, power structures, regime change, and the factors that shape political development (Burch et al. 2019; Dawes 2009; Dellmuth and Bloodgood 2019). The proper dynamics of political regimes depend on effective governance, legitimate political institutionalization, legitimacy, economic development, inequality, and the presence of a capable bureaucracy (O'Donnell et al. 1986; Pye 1990; Przeworski and Limongi 1993; Rivera and Knox 2023). Thus, stability or change of political regimes is related to countries' development. However, most political regime research focuses on the political economy and/or economics, but it rarely considers and integrates with the environmental dimension.

Global competitiveness research focusing on productivity has included a large number of development indicators from which countries' strengths and weaknesses can be inferred (e.g., Schwab and Zahidi 2020; Greif 2006; Zahra 1999; Huggins et al. 2014; Porter et al. 2008). The multiplicity of indicators allows configuring a diverse set of indicators arrangements. Institutions, infrastructure, and technology and innovation are among their vital components (Porter 2004; Sala-I-Martin et al. 2007). Innovation-based competitiveness is considered the most advanced (Porter et al. 2006). While the set of indicators incorporated in some competitiveness studies may be significant, the focus is on the features of the macro-economic environment that may facilitate, promote, and enhance the economic dimension. Consequently, the environmental and social dimensions are sidelined.

A comprehensive understanding of the challenges and opportunities in achieving a harmonious balance between environmental, social, and economic dimensions are the key features of sustainable development studies. Sustainability studies may examine, among others, governance, policy frameworks, resource management, social equity, intergenerational equity, ecological limits, ecosystem services, and global cooperation, providing valuable insights for researchers, policymakers, and practitioners striving for a sustainable future (Burton 1987; Krakoff 2007; Kamalam 2017; Cf 2015; Lee et al. 2016; Langhelle 1999; Weiskopf et al. 2020). While sustainable development studies ought to integrate, in different forms and scales, the multiplicity of factors encompassed in the environmental, economic, and social dimensions (World Bank Group 2019; Schwab 2020, 2019), many of these studies focus on the biophysical and/or economic dimensions and only a few carry out integrations of the three sustainability dimensions. Even rarer are studies of sustainability making such integration while also giving centrality to political regimes and governance. Political regimes and governance constitute the core of society's organizing, and such a core is fundamental for the type and degree of countries' development. The nature of a country's political regime plays a significant role in determining its ability to strengthen social welfare, foster economic development, and uphold sustainable development (Acemoglu et al. 2005; Ross 2001; Congleton 1992; Besley and Burgess 2002). Consequently, it is necessary to undertake research that departs from political regimes and governance, maintains the crucial role of economic activities, and adds the multiplicity of development factors and outcomes of the three sustainability dimensions.

The purpose of this study is to examine a large set of relationships between governance, institutions, infrastructure, technology and innovation, prosperity (the economic dimension), the biophysical environment (the environmental dimension), and people (the social dimension). We use 69 development indicators and 10 model configurations.

As indicated above, governance characteristics (e.g., participation and inclusiveness in decision-making, accountability, transparency, protection of human rights, and policy formulation and implementation) are a function of political regimes. Consequently, positive governance influences may be expressed in an enabling environment that strengthens countries' competitiveness and sustainable development (Kaufmann et al. 2010; Sarpong and Bein 2021). Similarly, competitiveness in enhancing efficiency would foster sustainable development. In turn, preserving the natural environment and achieving long-term citizens' well-being depends on political regime, governance, and competitiveness.

Institutions, infrastructure, and technology and innovation may be viewed as governance's frameworks and tools to undertake/translate decision-making and policies, thereby attaining desirable levels of the economic, environmental, and social dimensions. Similarly, prosperity, people, and the biophysical environment may be viewed as tools by political regimes and their associated governance to achieve global competitiveness in terms of technology and innovation, infrastructure, and institutions.

The multiplicities of sustainable development need integrations of numerous interdependencies, which may lead to a comprehensive understanding of complex systems in terms of environmentally responsible, economically viable, and socially acceptable development.

Political regimes, governance, institutions, infrastructure, and technology and innovation can substantially influence sustainable development's social, economic, and environmental dimensions. Similarly, political regimes, governance, prosperity, social, economic, and environmental dimensions may influence institutions, infrastructure, and technology and innovation. Studying complex relationships may help discover unintended consequences, systemic

risks, and vulnerabilities associated with specific interventions, as well as with states and configurations of development. Likewise, examining together political regimes, governance, institutions, infrastructure, technology and innovation, and the social, economic, and environmental sustainability dimensions may help identify canceling out effects and synergies, potentially enabling the formulation and implementation of more coherent, consistent, integrated, efficient, and effective development policies than hitherto.

This study makes three theoretical contributions. First, this research is an attempt to approximate sustainable development complicatedness by relating, in a set of 10 model configurations, closed autocracies, electoral autocracies, electoral democracies, and liberal democracies with governance, the biophysical environment, people, prosperity, institutions, infrastructure, and technology and innovation. This study substantially expands the criteria for assessing the four main political regimes. The study draws, among others, from governance theory (Stoker 1998), institutionalism (Scott 1987), neoclassical economics (Arnsperger and Varoufakis 2006), post-normal science (Ravetz 1999), and Lacanian theory (Zizek 2006). The research assumes that all constructs studied reflect social organizing as well as states of socio-ecological development. It highlights the centrality of people's organizing, in terms of political regime and governance as well as the diversity of construct effects stemming from both different model configurations and different scales (political regime and global). Second, the expectation was that liberal democracy would have the strongest construct relationships and a better balance among the economic (prosperity), social (people), and environmental (biophysical environment) dimensions than the other political regimes. However, results indicate only a slight advantage of democracies over autocracies, and not a clear advantage of liberal democracy over the other political regimes studied. Since sustainability requires the global dimension, it is necessary to operationalize the principles of liberal democracy both at the national level and global level because the principles of liberal democracy are essential for achieving the integrations required globally. Furthermore, late deglobalization and/or the decoupling of the global system suggests the need to integrate and reconcile liberal democracy with nationalism and globalism, especially with more substantive forms of democracy. Third, findings consistently show deficits in the biophysical environment and people constructs, that is, the environmental and social sustainability dimensions. The deficits align with the necessity for further integrating the three sustainability dimensions. However, the economic dimension (prosperity) continues to be central to sustainable development. People's organizing in terms of political regimes and their associated governance are crucial to tackling these challenges. Amalgamating the sustainable dimensions requires interesting theoretical integrations drawing from, among others, complexity theory, agency theory, power theory, stewardship theory, stakeholder theory, resource-dependence theory, and institutional theory.

II. Literature review and hypothesis development

This research compares and contrasts closed autocracies, electoral autocracies, electoral democracies, and liberal democracies on the relationships between governance and the biophysical environment, people, prosperity, institutions, infrastructure, and technology and innovation. The study draws eclectically from governance theory (Stoker 1998), institutional theory (Scott 1987), neoclassical economics (Arnsperger and Varoufakis 2006), post-normal science (Ravetz 1999), Lacanian theory (Zizek 2006), as well as from biophysical principles.

Model constructs' constituents and relationships

Dahl characterizes democracy based on six criteria (institutional assurances) (Dahl 1998, 85), "elected officials, free as well as fair elections, freedom of expression, alternative sources of information, associational autonomy, and inclusive citizenship."

In autocratic regimes, leaders are not liable to civilians (Dahl 1956, 1971; Schedler 2013). In autocracies, there is no competition in elections (one-party regimes) and the chief executive or the legislature is not part of the elections. Regardless of election results, the chief executive and/or the legislature could still be the paramount ruler (Schedler 2013; Brownlee 2009).

Democracies could either be electoral or liberal. In electoral democracies, the rule of law and/or liberal principles are not satisfied, whereas in liberal democracies, both tend to be satisfied. Similarly, in liberal democracies, there are well-functioning checks and balances in addition to protecting the individual's liberties, access, and equality under the law. In particular, the rule of law is a fundamental prerequisite for implementing the liberal principle as it ensures that decisions are implemented (Merkel 2004).

The type of government regime in force in the countries of the planet may be critical in determining the quantity of CO_2 emissions reductions that each nation pursues (Chen et al. 2019). Democracies seem to prioritize the pursuit of a green earth, evidenced by their investments to decarbonize the atmosphere (Baranzini et al. 2000; Welton 2020; Hamid et al. 2022). Theoretically, liberal democracies prioritize greener development over autocracies and, thus, may outperform autocracies in sustainability (Ward 2008). However, empirical evidence is mixed regarding sustainability performance in liberal democracies vis a vis autocracies (Ward 2008). Autocracies focus on the satisfaction of the elites, not the masses, and seek to secure and strengthen their socio-economic positions. Therefore, pursuing public goods such as environmental quality is of lesser importance in such regimes than in democracies (Ward 2008; Fredriksson and Neumayer 2013). Consequently, the political regime may impact the biophysical environment. For example, democracies may help their citizens and the environment more than autocracies (Swinnen 2010a, 2010b; Klomp and Hoogezand 2018; Schulze 2021). A country's degree of substantive democracy, rather than its democratic age, is the key determinant of the environmental change it pursues (Fredriksson and Neumayer 2013).

Governance in less democratic countries may result in inappropriate trade openness policies, leading to increased energy consumption and environmental deterioration (Chen et al. 2021). Likewise, low-corruption democratic regimes seem to emit less CO_2 than autocratic regimes (Povitkina 2018). Democratic regimes provide opportunities for the citizens to articulate demands, organizing protests about insufficient access and unequal distribution of essential services (Map 2002; Ide et al. 2021). However, upper-middle and high-income economies, which may be democratic, have, due to over-consumption and relatively high energy use, larger per capita ecological footprints than less developed nations (Global Footprint Network 2022; Grunewald et al. 2017). Government effectiveness components, such as public service standards, civil service quality, and magnitude of (un)biased political pressure, may positively or negatively affect CO_2 emissions (Piabuo et al. 2021). Lack of adequate public policy formulation, monitoring, and implementation (Siry et al. 2005) may preclude achieving sustainable development goals. In contrast, good governance may decrease deforestation (Kishor and Belle 2004). Likewise, governance quality relates to water system characteristics such as monitoring surface water or monitoring groundwater resources (Wuijts et al. 2018). Similarly, energy savings, CO_2 reductions, and net-zero goals and actions are closely associated with careful and supportive government

policy and may entail a different form of governance (Visscher et al. 2016; Rovers 2014; Galvin 2014).

Institutions closely relate to the state and dynamics of the biophysical environment (Redclift and Woodgate 2010). For example, institutional quality impacts renewable energy consumption (Bayulgen and Ladewig 2017; Cadoret and Padovano 2016; Carley et al. 2017; Pfeiffer and Mulder 2013; Uzar 2020a). Similarly, national political institutions can reduce CO_2 emissions by adopting emission reduction policies (e.g., imposing carbon taxes), securing enforcement and compliance, and regulating the behaviors of emitters (Povitkina 2018). Institutional components such as effective enforcement impact environmental management by approving and monitoring rules and necessary conditions for successful environmental action (Coleman 2009; Gibson et al. 2005).

Infrastructure such as transport, energy, and water may influence the biophysical environment (Shilling et al. 2007). For example, energy infrastructure (e.g., wind-generated energy) may reduce CO_2 emissions (Ding and Somani 2010). Natural gas consumption may decrease (Dong et al. 2018) or increase (Dong et al. 2018; Bildirici and Bakirtas 2014; Xu and Lin 2019) CO_2 emissions. The current energy crisis in some countries has prompted nuclear energy to be classified as environmentally friendly despite, among others, the likelihood of meltdowns and the colossal half-life of nuclear waste. Likewise, water infrastructure may increase the demand for energy due to the intensive treatment processes for non-freshwater sources such as salvaged wastewater (Stokes and Horvath 2006). Road design and maintenance may cause tropical deforestation (Chomitz et al. 2007). Similarly, infrastructure may not impact the biophysical environment (Maliszewski and Perrings 2012). Thus, the relationship infrastructure-biophysical environment may be complicated and complex.

Technological innovation has been deployed in pursuing sustainable development goals (SDGs) (Omri 2020). To reduce greenhouse effects on the biophysical environment, several renewable technologies such as wind, nuclear, solar, and geothermal (Jagoda et al. 2011) have been (re)invented in novel ways positively impacting industry processes (Jagoda et al. 2011; Herzog 2009).

Developed nations devote more resources than developing nations to diminish atmospheric CO_2 (Paramati et al. 2017; Wei and Ye 2014). Curbing CO_2 emissions is costly and involves structural adjustments and technological investments (Jiang et al. 2019). Consequently, developing nations may need more resources to drive technological innovation to better the biophysical environment (Lu et al. 2020).

Technological innovation for carbon capture and storage (CCS), in trees, beneath the earth, or in other forms, helps decrease atmospheric CO_2 levels (Kemp and Kasim 2010; Chu 2009). Thus, technological innovations such as CCS, green investments, and renewable technologies (Huang et al. 2021) impact business activities and the biophysical environment's betterment (Lu et al. 2020).

Prosperity has enabled different degrees of countries' financial and human capital development (Schmidt et al. 2008; Yao et al. 2020; Shoaib et al. 2020) which may be reflected in environmental investments (Schmidt et al. 2008). Therefore, nations' economic development influences the biophysical environment's state and dynamics (Schmidt et al. 2008; Yao et al. 2020; Shoaib et al. 2020). By and large, prosperity has been, so far, the central goal of development.

The people dimension is one of the key elements of SD. It includes SDGs 1 (no poverty), 3 (good health and well-being), 4 (quality education), and 5 (gender equality), which mainly address human development (van Vuuren et al. 2022). According to the 2030 UN Agenda, improving people's dignity and equality and ending poverty are some of the leading sustainable development goals (United Nations 2015). Consequently, the people dimension highly relates to prosperity and

the biophysical environment (Nilsson et al. 2016; Sachs et al. 2019) as well as to the infrastructure, technology and innovation, and governance of countries (Brende and Høie 2015). Thus, integrating sustainability dimensions (e.g., people, prosperity) has fuzzed the demarcation between socio-economic development and the biophysical environment (Caballero 2019).

Natural biophysical environments vary in scale and attributes. The interactions between the physical environment and biological life forms within the natural biophysical environment influence the survival, development, and evolution of natural biophysical components and systems (e.g., crop, forest, grazing, infrastructure, and marine fishing yield factors) and may foster or hamper socio-ecological development. Due to multiple relationships and the powerful effects of human actions, the social and economic dimensions and the biophysical environments are co-evolving continuously. As "development" has unfolded, it has become easier to observe the effects of human activities on the biophysical environment. For decades, there have been varying degrees of emphasis on planetary rejuvenation and maintenance (Brandt et al. 2013). The UN's sustainable development goals (SDGs) encapsulate this basic tenet under SDGs 2, 6, 7, 12, 13, 14, and 15 (van Vuuren et al. 2022; Caballero 2019). However, planetary maintenance, restoration, and enhancement may require enormous economic capital (Calahan et al. 2018) which is unevenly distributed across the nations of the world (Galor and Zeira 1993), leading to diversity in the state and dynamics of socio-ecological environments (Sheng et al. 2021) as manifested, for example, in the different degrees of attainment of SDGs (Luyckx et al. 2021).

Based on the above literature synthesis, we hypothesize:

> **Hypothesis 1.** The strength of the relationships between governance and the biophysical environment, people, prosperity, institutions, infrastructure, and technology and innovation will increase from closed autocracies to liberal democracies.

We explore this hypothesis by examining how power is distributed in society (e.g., four political regimes), reflected on decision-making and policy implementation (e.g., governance), and operationalized with the help of three global competitiveness tools (e.g., institutions, infrastructure, and technology and innovation) and manifested in the economic (e.g., prosperity), social (e.g., people), and environmental (e.g., biophysical environment) dimensions. Development indicators and constructs/dimensions co-exist at different stages of evolution in different contexts. Thus, in addition to what may be deemed a "traditional" configuration – societal organizing manifested in competitiveness, referred to above, we also study an alternative configuration, that is, how power is distributed in society (e.g., four political regimes), reflected on decision-making and policy implementation (e.g., governance), and how it is operationalized with the help of the tools constituted by the economic (e.g., prosperity), social (e.g., people), and environmental (e.g., biophysical environment) dimensions and manifested in institutions, infrastructure, and technology and innovation. This configuration maintains the centrality of society's organizing in terms of political regimes and governance and allows for different and plausible construct interactions.

III. Methodology

Below, we describe the measures, data sources, model configurations examined, and models' assessment.

Measures and data

The constructs' definitions, data sources, and examples of their indicators follow. Table A1 in the Appendix provides the constructs' complete set of indicators.

We follow Dahl's categories of political regimes (Dahl 1998), namely closed autocracies, electoral autocracies, electoral democracies, and liberal democracies (see Tables 1 and A2). Political regimes' effects on development may take time to materialize. Therefore, we assume that political regimes' impacts on development indicators would become more effective over time. To reflect such an effect, we assume a five-year lag between a political regime and its effects on global competitiveness constructs (institutions, infrastructure, technology and innovation) as well as on the economic (prosperity), social (people), and environmental (biophysical environment) sustainability dimensions.

Governance refers to "the traditions and institutions by which authority in a country is exercised, which includes the process by which governments are selected, monitored, and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them" (Kaufmann et al. 2011, 4). In other words, governance entails the process of decision-making and policy implementation. It usually has a higher change rate than political regimes.

Governance was measured with six broad dimensions: control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, and voice and accountability (see Appendix Table A3 for details) (Worldwide Governance Indicators 2010).

Table 1. Political regime clusters.

Political Regimes	Country Clusters
Closed Autocracies	Bahrain, China, Hong Kong SAR, Jordan, Morocco, Oman, Saudi Arabia, United Arab Emirates, and Vietnam
Electoral Autocracies	Algeria, Armenia, Azerbaijan, Bangladesh, Bhutan, Burundi, Cambodia, Cameroon, Chad, Cote d'Ivoire, Egypt, Arab Rep., Ethiopia, Honduras, Kazakhstan, Kenya, Kuwait, Kyrgyz Republic, Madagascar, Malaysia, Montenegro, Mozambique, Nepal, Nicaragua, Nigeria, Pakistan, Singapore, Tajikistan, Tanzania, Thailand, Uganda, Ukraine, Venezuela, RB., Zambia, and Zimbabwe
Electoral Democracies	Albania, Argentina, Benin, Bolivia, Bosnia and Herzegovina, Bulgaria, Colombia, Croatia, Dominican Republic, Ecuador, El Salvador, Georgia, Guatemala, Indonesia, Jamaica, Lesotho, Malawi, Mali, Malta, Mexico, Moldova, Mongolia, Panama, Paraguay, Peru, Philippines, Senegal, Serbia, Slovak Republic, Sri Lanka, Timor-Leste, Tunisia, and Turkey
Liberal Democracies	Australia, Austria, Belgium, Botswana, Canada, Chile, Costa Rica, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Rep., Latvia, Lithuania, Luxembourg, Mauritius, Netherlands, New Zealand, Norway, Poland, Portugal, Slovenia, South Africa, Spain, Sweden, Switzerland, Trinidad and Tobago, United Kingdom, United States, and Uruguay

Source: Lührmann et al. (2018).

Institutions comprise "the rules of the game in a society, that is, the humanly devised constraints that shape human interaction" (North 1990, 3). Institutions' data were obtained from United Nations Data (2018). Examples of indicators for institutions are property rights, transparency of government policymaking, ethical behavior of firms, and efficacy of corporate boards.

Infrastructure refers to road transport infrastructure, information technologies and telecommunications, newly built real estate, and external availability of the country by land, air, and water (Snieška and Bruneckienė 2009). Infrastructure data were obtained from United Nations Data (2018). Examples of indicators for infrastructure are quality of overall infrastructure, quality of roads, quality of air transport infrastructure.

Technology alludes to "the set of activities by means of which human beings modify their external environment" (Saviotti 2005, 12), and innovation appertains the integration and diffusion of capabilities to produce innovative offerings through scientific research (Kuhlmann 2001; Kuhlmann and Edler 2003). Technology and innovation data were obtained from United Nations Data (2018). Examples of indicators for technology and innovation are the availability of the latest technologies, percentage of individuals using the internet, local supplier quality and quantity, and production process sophistication.

The fundamental focus of "prosperity" is balancing the socioeconomic conditions to ensure prosperous economic growth and adequate employment facilities, evenly distributing lower and lower-middle-level living standards, securing compound attributes of physical and non-physical infrastructures, reducing income inequality within as well as across countries, and achieving sustainable cities and regions through available safe housing facilities, improving quality of living standards, and pollution levels (van Vuuren et al. 2022). Prosperity data were obtained from World Bank Group (2019) and van Vuuren et al. (2022). Examples of indicators for prosperity are net savings, annual growth of GDP per capita, employment, and prevalence of nourishment.

The biophysical environment is the biotic and abiotic surroundings of an organism or population. Biophysical environment data were obtained from Global Footprint Network (2022). Examples of biophysical environment indicators are yields of cropland, forestland, grazing land, build-up land, and fishing grounds.

Model configurations

Models studied include multiple relationships among governance, institutions, infrastructure, technology and innovation, prosperity, the biophysical environment, and people.

Since development is complicated, development constructs may have different path dependencies, and they may co-exist interacting at different degrees of intensity; thus, there is no a priori reason, other than the researcher's purpose, for just certain constructs to be antecedents, mediators, or outcomes. Nonetheless, we acknowledge that the economics perspective has dominated development studies, but it may need to be further integrated with, among others, power, governance, and more socio-ecological perspectives. Consequently, we researched 10 model configurations (Model Sets 1.1–1.5 and 2.1–2.5; see Figures 1 and 2) encompassing two facets. The first set of models depicts the influence of governance on global competitiveness components (e.g., institutions, infrastructure, and technology and innovation) and on the biophysical environment, prosperity, and people. The second set of models examines the influence of governance on people, prosperity, and the biophysical environment) and their effects on global

competitiveness components. Slight changes in model configurations may be reflected in consistent results as well as in important result differences.

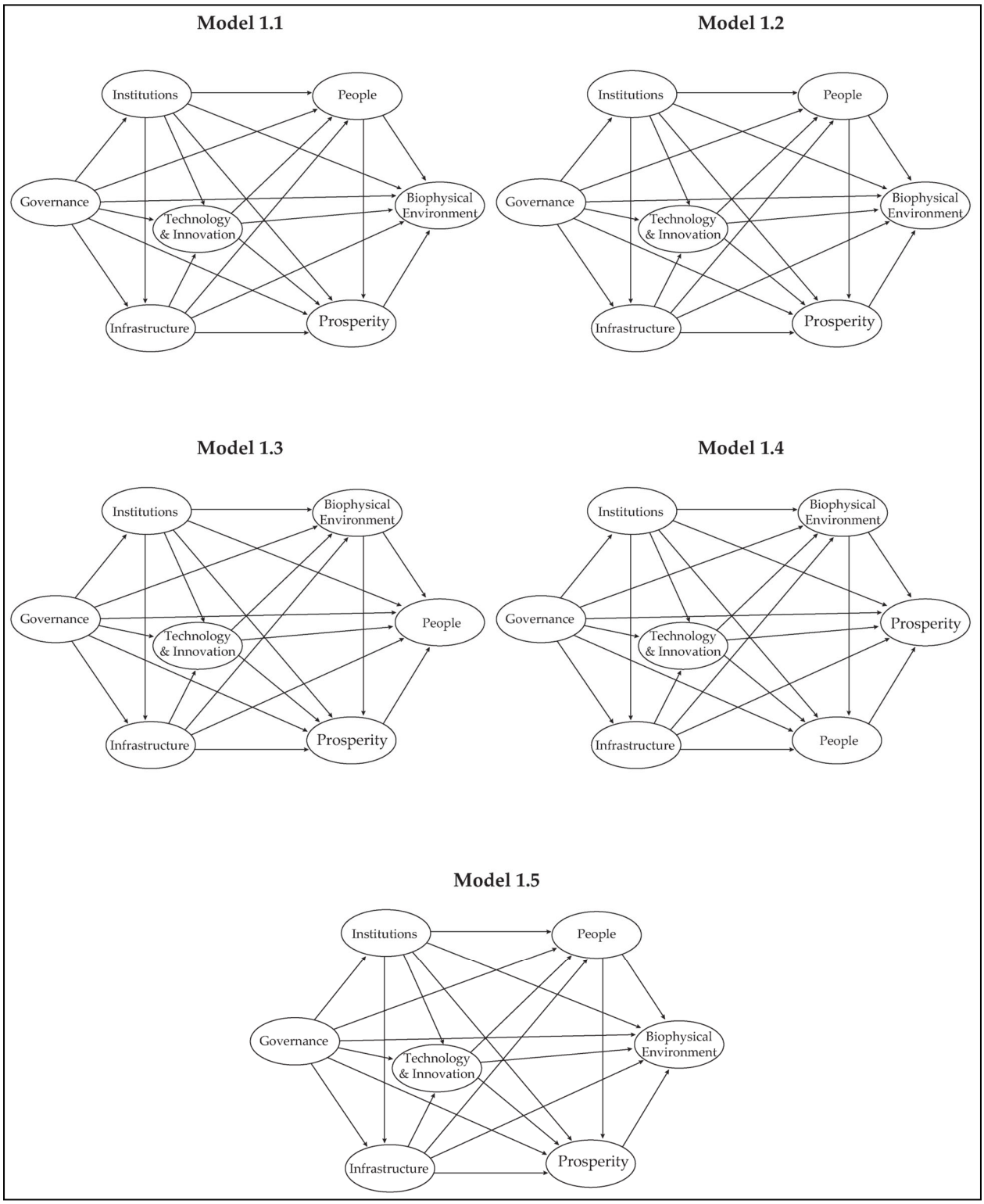

Figure 1. Models 1.1 to 1.5.

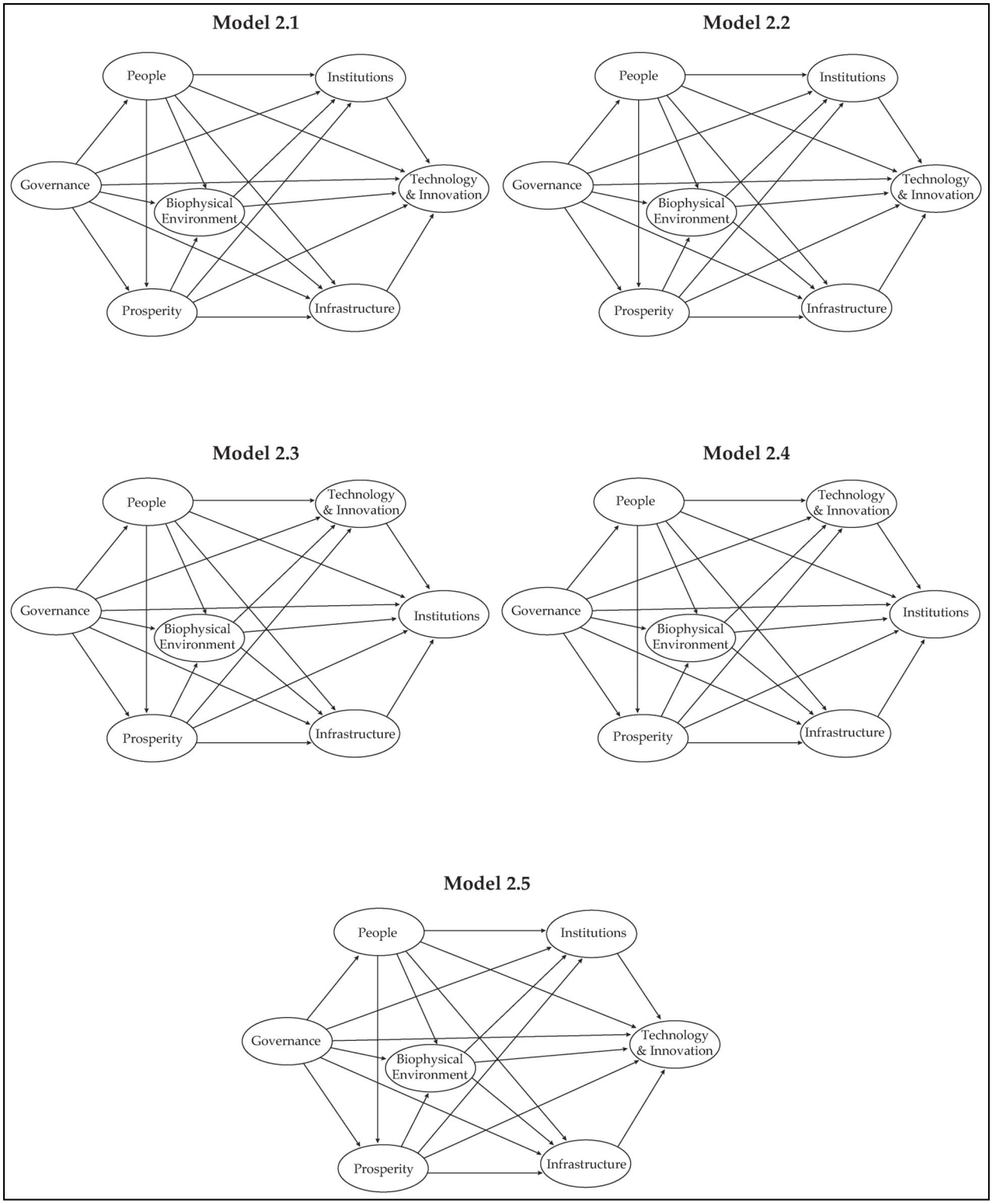

Figure 2. Models 2.1 to 2.5.

Model constructs' reliability

Table 2 shows Cronbach's alphas, Dijkstra's PLSc reliability, and composite reliability. Cronbach's alpha and Dijkstra's PLSc reliability equal or higher than 0.70 are considered acceptable (Nunnally 1978; Dijkstra and Henseler 2015; Nunnally and Bernstein 1994; Brunner and SÜβ 2005). Table 3 shows the models' average adjusted R-squared per political regime. Table 4 shows the models' fit and quality indices for all the political regimes and for the global level.

Table 2. Model constructs' reliability.

Constructs	**Model 1.1**	**Model 1.2**	**Model 1.3**	**Model 1.4**	**Model 1.5**
	Composite reliability Cronbach's alpha Dijkstra's PLSc reliability	Composite reliability Cronbach's alpha Dijkstra's PLSc reliability	Composite reliability Cronbach's alpha Dijkstra's PLSc reliability	Composite reliability Cronbach's alpha Dijkstra's PLSc reliability	Composite reliability Cronbach's alpha Dijkstra's PLSc reliability
Governance	0.971 0.964 0.972	0.971 0.964 0.973	0.971 0.964 0.973	0.971 0.964 0.973	0.971 0.964 0.973
Institutions	0.975 0.972 0.983	0.975 0.972 0.982	0.975 0.972 0.982	0.975 0.972 0.982	0.975 0.972 0.982
Infrastructure	0.967 0.955 0.957	0.967 0.955 0.957	0.967 0.955 0.957	0.967 0.955 0.957	0.967 0.955 0.957
Technology and Innovation	0.979 0.977 0.983	0.979 0.977 0.983	0.979 0.977 0.983	0.979 0.977 0.983	0.979 0.977 0.983
People	0.824 0.755 0.968	0.824 0.755 0.777	0.824 0.755 0.764	0.824 0.755 0.796	0.824 0.755 0.763
Prosperity	0.827 0.762 0.894	0.827 0.762 0.894	0.827 0.762 0.896	0.827 0.762 0.896	0.827 0.762 0.896
Biophysical Environment	0.781 0.749 0.775	0.781 0.749 0.716	0.781 0.749 0.716	0.781 0.749 0.781	0.781 0.749 0.716

Table 3. Models' average adjusted R-squares per political regime.

Political Regime	**Model 1.1**	**Model 1.2**	**Model 1.3**	**Model 1.4**	**Model 1.5**	**Model 2.1**	**Model 2.2**	**Model 2.3**	**Model 2.4**	**Model 2.5**
Closed Autocracy	0.419	0.421	0.422	0.422	0.424	0.269	0.335	0.318	0.318	0.382
Electoral Autocracy	0.355	0.357	0.362	0.362	0.362	0.210	0.287	0.293	0.293	0.356
Electoral Democracy	0.344	0.357	0.366	0.359	0.370	0.306	0.355	0.328	0.349	0.369
Liberal Democracy	0.429	0.405	0.437	0.418	0.418	0.405	0.420	0.418	0.432	0.434

Table 4. Model fit and quality indices (political regimes and global).

Classic indices	Political regimes										Global[1]	Global[2]
	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5		
APC	0.284	0.259	0.265	0.260	0.250	0.237	0.222	0.227	0.224	0.220	0.230	0.230
ARS	0.513	0.513	0.521	0.516	0.516	0.444	0.480	0.486	0.487	0.513	0.423	0.439
AARS	0.511	0.511	0.520	0.515	0.514	0.443	0.479	0.484	0.485	0.512	0.418	0.434
AVIF	3.291	3.309	3.288	3.118	3.230	2.139	2.338	2.410	2.327	2.347	2.266	1.963
GoF	0.569	0.569	0.574	0.571	0.571	0.530	0.551	0.554	0.555	0.570	0.504	0.513
SPR	0.889	0.850	0.900	0.850	0.857	0.889	0.900	0.900	0.900	0.905	0.857	0.857

Note: Average path coefficient (APC), P<0.001; Average R-squared (ARS), P<0.001; Average adjusted R-squared (AARS), P<0.001; Average block VIF (AVIF), acceptable if <= 5, ideally <= 3.3; Average full collinearity VIF (AFVIF), acceptable if <= 5, ideally <= 3.3; Tenenhaus GoF (GoF), small >= 0.1, medium >= 0.25, large >= 0.36; Simpson's paradox ratio (SPR), acceptable if >= 0.7, ideally = 1; Global[1]= First set of model configurations; Global[2]= Second set of model configurations.

4. Results

Table 5 shows the constructs' intercorrelations.

Table 5. Correlation matrix.

	Governance	Institutions	Infrastructure	Technology and Innovation	People	Biophysical Environment
Institutions	0.629***					
Infrastructure	0.651***	0.826***				
Technology and Innovation	0.666***	0.805***	0.855***			
People	0.523***	0.419***	0.420***	0.473***		
Biophysical Environment	0.323***	0.204***	0.284***	0.351***	0.211***	
Prosperity	0.802***	0.682***	0.724***	0.740***	0.583***	0.296***

Note: Significance level: ***p< 0.001.

Below, we present the main findings, comparing the four political regimes. Thereafter, we provide the global results.

Political regime results

The 10 model configurations studied were analyzed with PLS-SEM. Tables 6, 7, 8, 9, and 10 show the results for Models 1.1, 1.2, 1.3, 1.4, and 1.5, respectively.

Model 1.1's results in Table 1 suggest that democratic regimes have more robust governance and technology and innovation-related path coefficients than autocracies. Most governance-related relationships in closed autocracies were non-significant. Effects were strongest for autocracies in institutions and infrastructure-related relationships. However, institutions' relationships with people and the biophysical environment were either non-significant or negative in the four political regimes. These relationships were similar in Models 1.1, 1.2, 1.3, 1.4, and 1.5. Therefore, these findings will not be further referred to in the results for Models 1.2, 1.3, 1.4, and 1.5. The strongest biophysical environment-related relationships were more numerous in autocratic than in democratic regimes. Strong and positive relationships were observed across the four political regimes for institutions > infrastructure and infrastructure > technology and innovation. Conversely, the relationship of institutions > people was non-significant in the four regimes. Out of 18 relationships studied in Model 1.1, eight and nine relationships were most robust and positive in autocracies and democracies, respectively.

Model 1.2 is similar to Model 1.1, but it adds the relationships People > Biophysical Environment and Prosperity > Biophysical Environment. Autocracies and democracies had the same number of strongest relationships involving the biophysical environment. Likewise, the relationship Institutions > People was non-significant in the two democratic regimes and electoral autocracies and negative in closed autocracies. Out of the 20 relationships in Model 1.2, eight and

Table 6. Political regime results (Model 1.1).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.035 0.035/0.001	0.301*** 0.301/0.091^	0.411*** 0.411/0.169^^	0.467*** 0.467/0.218^^
Governance → Infrastructure	-0.182* -0.150/0.022^	0.115* 0.335/0.112^	0.447*** 0.556/0.309^^	0.203*** 0.488/0.239^^
Governance → Technology and Innovation	-0.172* -0.187/0.035^	0.158** 0.418/0.175^^	-0.042 0.374/0.140^	0.181*** 0.540/0.291^^
Governance → People	0.093 0.013/0.000	0.154** 0.222/0.049^	0.596*** 0.549/0.301^^	0.232*** 0.420/0.177^^
Governance → Biophysical Environment	0.028 -0.038/0.001	0.357*** 0.455/0.207^^	-0.113* -0.096/0.009	0.293*** 0.241/0.058^
Governance → Prosperity	0.076 0.124/0.015	0.525*** 0.582/0.338^^	0.585*** 0.657/0.431^^^	0.216*** 0.604/0.365^^^
Institutions → Infrastructure	0.915*** 0.915/0.832^^^	0.730*** 0.730/0.559^^^	0.265*** 0.265/0.119^	0.610*** 0.610/0.430^^^
Institutions → Technology and Innovation	0.615*** 0.843/0.704^^^	0.282*** 0.664/0.485^^^	0.060 0.246/0.088^	0.293*** 0.570/0.398^^^
Institutions → People	-0.130 0.264/0.070^	-0.025 0.099/0.016	-0.077 -0.074/0.012	0.013 0.201/0.071^
Institutions → Biophysical Environment	-0.052 0.039/0.001	-0.292*** 0.095/0.021^	-0.320*** -0.217/0.048^	-0.248*** -0.184/0.006
Institutions → Prosperity	0.759*** 0.759/0.578^^^	0.239*** 0.247/0.099^	-0.226*** -0.134/0.021^	0.294*** 0.561/0.404^^^
Infrastructure → Technology and Innovation	0.250** 0.250/0.208^^	0.523*** 0.523/0.414^^^	0.705*** 0.705/0.500^^^	0.454*** 0.454/0.341^^
Infrastructure → People	0.218** 0.275/0.077^	0.021 0.107/0.020	-0.134** -0.023/0.006	-0.049 0.124/0.045^
Infrastructure → Biophysical Environment	-0.812*** -0.565/0.022^	0.456*** 0.498/0.207^	-0.053 0.282/0.022^	-0.031 0.035/0.002
Infrastructure → Prosperity	0.387*** 0.282/0.202^^	0.160** 0.074/0.029^	0.159*** 0.303/0.160^^	0.020 0.224/0.149^
Technology and Innovation → People	0.231** 0.231/0.066^	0.164** 0.164/0.037^	0.158*** 0.158/0.041^	0.382*** 0.382/0.183^^
Technology and Innovation → Biophysical Environment	0.990*** 0.990/0.261^^	0.080 0.080/0.030^	0.475*** 0.475/0.133^	0.146** 0.146/0.016
Technology and Innovation → Prosperity	-0.421*** -0.421/0.220^^	-0.165** -0.165/0.059^	0.204*** 0.204/0.093^	0.447*** 0.447/0.350^^^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 7. Political regime results (Model 1.2).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.035 0.035/0.001	0.301*** 0.301/0.091^	0.411*** 0.411/0.169^^	0.467*** 0.467/0.218^^
Governance → Infrastructure	-0.182* -0.150/0.022^	0.115* 0.335/0.112^	0.447*** 0.556/0.309^^	0.203*** 0.488/0.239^^
Governance → Technology and Innovation	-0.172* -0.187/0.035^	0.158** 0.418/0.175^^	-0.042 0.374/0.140^	0.181*** 0.540/0.291^^
Governance → People	0.093 0.013/0.000	0.154** 0.222/0.049^	0.596*** 0.549/0.301^^	0.232*** 0.420/0.177^^
Governance → Biophysical Environment	0.004 -0.038/0.001	0.266*** 0.455/0.207^^	-0.382*** -0.096/0.009	0.274*** 0.241/0.058^
Governance → Prosperity	0.076 0.124/0.015	0.525*** 0.582/0.338^^	0.585*** 0.657/0.431^^^	0.216*** 0.604/0.365^^^
Institutions → Infrastructure	0.915*** 0.915/0.832^^^	0.730*** 0.730/0.559^^^	0.265*** 0.265/0.119^	0.610*** 0.610/0.430^^^
Institutions → Technology and Innovation	0.615*** 0.843/0.704^^^	0.282*** 0.664/0.485^^^	0.060 0.246/0.088^	0.293*** 0.570/0.398^^^
Institutions → People	-0.130 0.264/0.070^	-0.025 0.099/0.016	-0.077 -0.074/0.012	0.013 0.201/0.071^
Institutions → Biophysical Environment	-0.141 0.039/0.001	-0.338*** 0.095/0.021^	-0.249*** -0.217/0.048^	-0.281*** -0.184/0.006
Institutions → Prosperity	0.759*** 0.759/0.578^^^	0.239*** 0.247/0.099^	-0.226*** -0.134/0.021^	0.294*** 0.561/0.404^^^
Infrastructure → Technology and Innovation	0.250** 0.250/0.208^^	0.523*** 0.523/0.414^^^	0.705*** 0.705/0.500^^^	0.454*** 0.454/0.341^^
Infrastructure → People	0.218* 0.275/0.077^	0.021 0.107/0.020	-0.134** -0.023/0.006	-0.049 0.124/0.045^
Infrastructure → Biophysical Environment	-0.898*** -0.565/0.022^	0.427*** 0.498/0.207^	-0.062 0.282/0.022^	-0.034 0.035/0.002
Infrastructure → Prosperity	0.387*** 0.282/0.202^^	0.160** 0.074/0.029^	0.159*** 0.303/0.160^^	0.020 0.224/0.149^
Technology and Innovation → People	0.231** 0.231/0.066^	0.164** 0.164/0.037^	0.158*** 0.158/0.041^	0.382*** 0.382/0.183^^
Technology and Innovation → Biophysical Environment	1.016*** 0.990/0.261^^	0.119* 0.080/0.030^	0.392*** 0.475/0.133^	0.104* 0.146/0.016
Technology and Innovation → Prosperity	-0.421*** -0.421/0.220^^	-0.165** -0.165/0.059^	0.204*** 0.204/0.093^	0.447*** 0.447/0.350^^
People → Biophysical Environment	0.144 0.144/0.024^	-0.050 -0.050/0.006	0.215*** 0.215/0.042^	-0.023 -0.023/0.002
Prosperity → Biophysical Environment	0.141 0.141/0.008	0.187*** 0.187/0.075^	0.240*** 0.240/0.055^	0.113* 0.113/0.013

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 8. Political regime results (Model 1.3).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.035 0.035/0.001	0.301*** 0.301/0.091^	0.411*** 0.411/0.169^^	0.467*** 0.467/0.218^^
Governance → Infrastructure	-0.182* -0.150/0.022^	0.115* 0.335/0.112^	0.447*** 0.556/0.309^^	0.203*** 0.488/0.239^^
Governance → Technology and Innovation	-0.172* -0.187/0.035^	0.158** 0.418/0.175^^	-0.042 0.374/0.140^	0.181*** 0.540/0.291^^
Governance → People	0.101 0.013/0.000	0.021 0.222/0.049^	0.359*** 0.549/0.301^^	0.059 0.420/0.177^^
Governance → Biophysical Environment	0.028 -0.038/0.001	0.357*** 0.455/0.207^^	-0.113* -0.096/0.009	0.293*** 0.241/0.058^
Governance → Prosperity	0.076 0.124/0.015	0.525*** 0.582/0.338^^	0.585*** 0.657/0.431^^^	0.216*** 0.604/0.365^^^
Institutions → Infrastructure	0.915*** 0.915/0.832^^^	0.730*** 0.730/0.559^^^	0.265*** 0.265/0.119^	0.610*** 0.610/0.430^^^
Institutions → Technology and Innovation	0.615*** 0.843/0.704^^^	0.282*** 0.664/0.485^^^	0.060 0.246/0.088^	0.293*** 0.570/0.398^^^
Institutions → People	0.014 0.264/0.070^	-0.116* 0.099/0.016	0.075 -0.074/0.012	-0.230*** 0.201/0.071^
Institutions → Biophysical Environment	-0.052 0.039/0.001	-0.292*** 0.095/0.021^	-0.320*** -0.217/0.048^	-0.248*** -0.184/0.006
Institutions → Prosperity	0.759*** 0.759/0.578^^^	0.239*** 0.247/0.099^	-0.226*** -0.134/0.021^	0.294*** 0.561/0.404^^^
Infrastructure → Technology and Innovation	0.250** 0.250/0.208^^	0.523*** 0.523/0.414^^^	0.705*** 0.705/0.500^^^	0.454*** 0.454/0.341^^
Infrastructure → People	0.435*** 0.275/0.077^	0.004 0.107/0.020	-0.195*** -0.023/0.006	-0.066 0.124/0.045^
Infrastructure → Biophysical Environment	-0.812*** -0.565/0.022^	0.456*** 0.498/0.207^^	-0.053 0.282/0.022^	-0.031 0.035/0.002
Infrastructure → Prosperity	0.387*** 0.282/0.202^^	0.160** 0.074/0.029^	0.159*** 0.303/0.160^^	0.020 0.224/0.149^
Technology and Innovation → People	-0.025 0.231/0.066^	0.218*** 0.164/0.037^	-0.010 0.158/0.041^	0.018 0.382/0.183^^
Technology and Innovation → Biophysical Environment	0.990*** 0.990/0.261^^	0.080 0.080/0.030^	0.475*** 0.475/0.133^	0.146** 0.146/0.016
Technology and Innovation → Prosperity	-0.421*** -0.421/0.220^^	-0.165** -0.165/0.059^	0.204*** 0.204/0.093^	0.447*** 0.447/0.350^^
Biophysical Environment → People	0.183* 0.183/0.031^	-0.067 -0.067/0.008	0.166*** 0.166/0.033^	-0.013 -0.013/0.001
Prosperity → People	-0.176* -0.176/0.024^	0.297*** 0.297/0.094^	0.437*** 0.437/0.269^^	0.818*** 0.818/0.537^^^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 9. Political regime results (Model 1.4).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.035 0.035/0.001	0.301*** 0.301/0.091^	0.411*** 0.411/0.169^^	0.467*** 0.467/0.218^^
Governance → Infrastructure	-0.182* -0.150/0.022^	0.115* 0.335/0.112^	0.447*** 0.556/0.309^^	0.203*** 0.488/0.239^^
Governance → Technology and Innovation	-0.172* -0.187/0.035^^	0.158** 0.418/0.175^^	-0.042 0.374/0.140^	0.181*** 0.540/0.291^^
Governance → People	0.093 0.013/0.000	0.154** 0.222/0.049^	0.596*** 0.549/0.301^^	0.232*** 0.420/0.177^^
Governance → Biophysical Environment	0.028 -0.038/0.001	0.357*** 0.455/0.207^^	-0.113* -0.096/0.009	0.293*** 0.241/0.058^
Governance → Prosperity	0.081 0.124/0.015	0.441*** 0.582/0.338^^	0.417*** 0.657/0.431^^^	0.132** 0.604/0.365^^^
Institutions → Infrastructure	0.915*** 0.915/0.832^^^	0.730*** 0.730/0.559^^^	0.265*** 0.265/0.119^	0.610*** 0.610/0.430^^^
Institutions → Technology and Innovation	0.615*** 0.843/0.704^^^	0.282*** 0.664/0.485^^^	0.060 0.246/0.088^	0.293*** 0.570/0.398^^^
Institutions → People	-0.130 0.264/0.070^	-0.025 0.099/0.016	-0.077 -0.074/0.012	0.013 0.201/0.071^
Institutions → Biophysical Environment	-0.052 0.039/0.001	-0.292*** 0.095/0.021^	-0.320*** -0.217/0.048^	-0.248*** -0.184/0.006
Institutions → Prosperity	0.754*** 0.759/0.578^^^	0.289*** 0.247/0.099^	-0.161*** -0.134/0.021^	0.296*** 0.561/0.404^^^
Infrastructure → Technology and Innovation	0.250** 0.250/0.208^^	0.523*** 0.523/0.414^^^	0.705*** 0.705/0.500^^^	0.454*** 0.454/0.341^^
Infrastructure → People	0.218* 0.275/0.077^	0.021 0.107/0.020	-0.134** -0.023/0.006	-0.049 0.124/0.045^
Infrastructure → Biophysical Environment	-0.812*** -0.565/0.022^	0.456*** 0.498/0.207^^	-0.053 0.282/0.022^	-0.031 0.035/0.002
Infrastructure → Prosperity	0.461*** 0.282/0.202^^	0.086 0.074/0.029^	0.207*** 0.303/0.160^^	0.037 0.224/0.149^
Technology and Innovation → People	0.231** 0.231/0.066^	0.164** 0.164/0.037^	0.158*** 0.158/0.041^	0.382*** 0.382/0.183^^
Technology and Innovation → Biophysical Environment	0.990*** 0.990/0.261^^	0.080 0.080/0.030^	0.475*** 0.475/0.133^	0.146** 0.146/0.016
Technology and Innovation → Prosperity	-0.476*** -0.421/0.220^^	-0.207*** -0.165/0.059^	0.094* 0.204/0.093^	0.318*** 0.447/0.350^^
People → Prosperity	-0.070 -0.070/0.009	0.186*** 0.186/0.059^	0.306*** 0.306/0.188^^	0.328*** 0.328/0.215^^
Biophysical Environment → Prosperity	0.071 0.071/0.004	0.155** 0.155/0.062^	0.130** 0.130/0.030^	0.027 0.027/0.003

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 10. Political regime results (Model 1.5).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.035 0.035/0.001	0.301*** 0.301/0.091^	0.411*** 0.411/0.169^^	0.467*** 0.467/0.218
Governance → Infrastructure	-0.182* -0.150/0.022^	0.115* 0.335/0.112^	0.447*** 0.556/0.309^^	0.203*** 0.488/0.239
Governance → Technology and Innovation	-0.172* -0.187/0.035^^	0.158** 0.418/0.175^^	-0.042 0.374/0.140^	0.181*** 0.540/0.291
Governance → People	0.093 0.013/0.000	0.154** 0.222/0.049^	0.596*** 0.549/0.301^^	0.232*** 0.420/0.177
Governance → Biophysical Environment	0.004 -0.038/0.001	0.266*** 0.455/0.207^^	-0.382*** -0.096/0.009	0.274*** 0.241/0.058
Governance → Prosperity	0.082 0.124/0.015	0.497*** 0.582/0.338^^	0.379*** 0.657/0.431^^^	0.140** 0.604/0.365
Institutions → Infrastructure	0.915*** 0.915/0.832^^^	0.730*** 0.730/0.559^^^	0.265*** 0.265/0.119^	0.610*** 0.610/0.430
Institutions → Technology and Innovation	0.615*** 0.843/0.704^^^	0.282*** 0.664/0.485^^^	0.060 0.246/0.088^	0.293*** 0.570/0.398
Institutions → People	-0.130 0.264/0.070^	-0.025 0.099/0.016	-0.077 -0.074/0.012	0.013 0.201/0.071
Institutions → Biophysical Environment	-0.141 0.039/0.001	-0.338*** 0.095/0.021^	-0.249*** -0.217/0.048^	-0.281*** -0.184/0.006
Institutions → Prosperity	0.751*** 0.759/0.578^^^	0.244*** 0.247/0.099^	-0.200*** -0.134/0.021^	0.289*** 0.561/0.404
Infrastructure → Technology and Innovation	0.250** 0.250/0.208^^	0.523*** 0.523/0.414^^^	0.705*** 0.705/0.500^^^	0.454*** 0.454/0.341
Infrastructure → People	0.218* 0.275/0.077^	0.021 0.107/0.020	-0.134** -0.023/0.006	-0.049 0.124/0.045
Infrastructure → Biophysical Environment	-0.898*** -0.565/0.022^	0.427*** 0.498/0.207^^	-0.062 0.282/0.022^	-0.034 0.035/0.002
Infrastructure → Prosperity	0.401*** 0.282/0.202^^	0.156** 0.074/0.029^	0.206*** 0.303/0.160^^	0.037 0.224/0.149
Technology and Innovation → People	0.231** 0.231/0.066^	0.164** 0.164/0.037^	0.158*** 0.158/0.041^	0.382*** 0.382/0.183
Technology and Innovation → Biophysical Environment	1.016*** 0.990/0.261^^	0.119* 0.080/0.030^	0.392*** 0.475/0.133^	0.104* 0.146/0.016
Technology and Innovation → Prosperity	-0.407*** -0.421/0.220^^	-0.195*** -0.165/0.059^	0.150** 0.204/0.093^	0.321*** 0.447/0.350
People → Biophysical Environment	0.144 0.135/0.023^	-0.050 -0.016/0.002	0.215*** 0.298/0.059^	-0.023 0.014/0.001
Prosperity → Biophysical Environment	0.141 0.141/0.008	0.187*** 0.187/0.075^	0.240*** 0.240/0.055^	0.113* 0.113/0.013
People → Prosperity	-0.061 -0.061/0.008	0.183*** 0.183/0.058^	0.345*** 0.345/0.212^^	0.328*** 0.328/0.215

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

eleven relationships were most robust in autocracies and democracies, respectively. One relationship (Institutions > Biophysical Environment) had negative relationships in all four political regimes.

Model 1.3 is similar to Model 1.2, but the relationships People > Biophysical Environment and Prosperity > Biophysical Environment are absent. Model 1.3 adds the relationships Biophysical Environment > People and Prosperity > People. Regarding the relationships involving the biophysical environment, four out of five were stronger in autocratic regimes than in democracies. Likewise, the relationship Institutions > People was non-significant in closed autocracies and electoral democratic regimes and negative in electoral autocracies and liberal democracies. Out of 17 positive relationships studied in Model 1.3, eight and nine were most robust and positive in autocracies and democracies, respectively.

Model 1.4 is similar to Model 1.3, but the relationships Biophysical Environment > People and Prosperity > People are absent. Model 1.4 adds the relationships People > Prosperity and Biophysical Environment > Prosperity. Regarding the relationships involving the biophysical environment, four out of five were stronger in autocratic regimes than in democracies. The relationship Institutions > Biophysical Environment was either non-significant or negative in all political regimes. Likewise, the relationship Institutions > People was non-significant in electoral autocracies and democratic regimes and negative in closed autocracies. The relationship People > Prosperity was more robust in democracies than in autocracies, whereas the relationship Biophysical Environment > Prosperity was similar in autocracies and democracies. Out of the 20 positive relationships in Model 1.4, eleven and nine relationships were most robust and positive in autocracies and democracies, respectively.

Model 1.5 is similar to Model 1.4, but the relationship Biophysical Environment > Prosperity was absent. Model 1.5 adds the relationships People > Biophysical Environment and Prosperity > Biophysical Environment. Regarding the relationships involving the biophysical environment, three out of six were strongest in autocratic regimes, and three were strongest in democracies. The relationship Institutions > Biophysical Environment was negative in all political regimes. The relationship People > Biophysical Environment was non-significant in electoral autocracies and liberal democracies and positive and weak in closed autocracies and electoral democracies. Likewise, the relationship Institutions > People was non-significant in electoral autocracies and democratic regimes and negative in closed autocracies. The relationship People > Prosperity was most robust in democracies than in autocracies. The relationship Prosperity > Biophysical Environment was similar in autocracies and democracies. Out of 22 positive relationships in Model 1.5, nine and thirteen relationships were most robust in autocracies and democracies, respectively.

Tables 11, 12, 13, 14, and 15 show the results for Models 2.1, 2.2, 2.3, 2.4, and 2.5, respectively. In Models 2.1, 2.2, 2.3, 2.4, and 2.5, governance remains the first antecedent as in Models 1.1, 1.2, 1.3, 1.4, and 1.5. In Models 2.1, 2.2, 2.3, 2.4, and 2.5, prosperity, people, and the biophysical environment are mediators, and institutions, infrastructure, and technology and innovation are mediators and outcomes (see Figures 1 and 2).

In Model 2.1, four of the six governance relationships were strongest and positive in electoral democracies. Electoral autocracies have weak, moderate, and strong governance-related relationships. Autocracies and democracies have the same number of most robust relationships involving people and the biophysical environment. The relationship People > Institutions was non-significant in electoral autocracies and electoral democracies, positive and weak in closed autocracies, and negative and weak in liberal democracies. Four out of six prosperity-related relationships were most robust in democratic regimes. Out of 18 positive relationships studied in

Model 2.1, eight and ten were most robust and positive in autocracies and democracies, respectively.

Model 2.2 added the relationships Institutions > Technology and Innovation and Infrastructure > Technology and Innovation to those in Model 2.1. In Model 2.2, electoral democracies and electoral autocracies had the same number of strongest governance-related relationships. Autocracies and democracies have the same number of strongest relationships involving people and the biophysical environment. Fifteen out of 20 relationships involving the biophysical environment were either negative or non-significant. The relationship People > Institutions was non-significant for electoral autocracies and electoral democracies, positive and weak for closed autocracies, and negative and weak for liberal democracies. Four out of six prosperity-related relationships were strongest in democratic regimes. The relationships Institutions > Technology and Innovation and Infrastructure > Technology and Innovation were stronger in autocracies than in democracies. Out of 19 positive relationships studied in Model 2.2, ten and nine relationships were most robust and positive in autocracies and democracies, respectively.

Model 2.3 replaced the relationship Infrastructure > Technology and Innovation, which appears in Model 2.2, with the relationship Infrastructure > Institutions. In addition, the relationship Institutions > Technology and Innovation, which appeared in Model 2.2, is replaced by the relationship Technology and Innovation >Institutions. In Model 2.3, four out of six governance relationships were most robust and positive in electoral democracies, and the other two were strongest in electoral autocracies. Autocracies and democracies have the same number of strongest relationships involving people and the biophysical environment. The relationship People > Institutions was non-significant or negative in all political regimes. The relationships involving people were either non-significant or negative in 11 out of 24 cases. Similarly, 14 out of 24 relationships involving the biophysical environment were either negative or non-significant. In contrast, only four out of 24 relationships involving prosperity were either non-significant or negative. Five out of six prosperity-related relationships were strongest in democratic regimes. The relationships Infrastructure > Institutions and Technology and Innovation > Institutions were stronger in autocracies than in democracies. Out of 18 positive relationships studied in Model 2.3, eight and 10 relationships were most robust and positive in autocracies and democracies, respectively.

Model 2.4 replaced the relationship Infrastructure > Institutions, considered in Model 2.3, with the relationship Institutions > Infrastructure. Similarly, the relationship Technology and Innovation > Infrastructure was added to Model 2.4 instead of the relationship Technology and Innovation > Institutions which was considered in Model 2.3. In Model 2.4, four out of six governance relationships were most robust and positive in electoral democracies, and the other two were strongest in electoral autocracies. Autocracies and democracies had two and three strongest relationships involving people and the biophysical environment, respectively. However, the relationship People > Institutions was only positive in closed autocracies and non-significant or negative in the other political regimes. Relationships involving people were either non-significant or negative in 12 out of 24 cases. Similarly, 14 out of 24 relationships involving the biophysical environment were either non-significant or negative. In contrast, most relationships involving prosperity were moderate or strong. Five out of six prosperity-related relationships were strongest in democratic regimes. The relationship Institutions > Infrastructure was slightly more robust in autocracies than in democracies, while the opposite occurred with the relationship Technology and Innovation > Infrastructure. Out of 20 positive relationships studied in Model 2.4, eight and nine relationships were most robust in autocracies and democracies, respectively.

Table 11. Political regime results (Model 2.1).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	-0.058 0.035/0.001	0.084 0.301/0.091^	0.473*** 0.411/0.169^^	0.092 0.467/0.218^^
Governance → Infrastructure	-0.242 -0.150/0.022^	0.062 0.335/0.112^	0.454*** 0.556/0.309^^	0.154*** 0.488/0.239^^
Governance → Technology and Innovation	-0.247* -0.187/0.035^^	0.239*** 0.418/0.175^^	0.280*** 0.374/0.140^	0.107 0.540/0.291^^
Governance → People	0.013 0.013/0.000	0.222*** 0.222/0.049^	0.549*** 0.549/0.301^^	0.420*** 0.420/0.177^^
Governance → Biophysical Environment	-0.030 -0.038/0.001	0.338*** 0.455/0.207^^	-0.484*** -0.096/0.009	0.264*** 0.241/0.058^
Governance → Prosperity	0.122 0.124/0.015^	0.538*** 0.582/0.338^^^	0.456*** 0.657/0.431^^^	0.399*** 0.604/0.365^^^
People → Institutions	0.155 0.263/0.070^^^	0.031 0.095/0.015	0.010 -0.088/0.014	-0.208*** 0.191/0.067^
People → Infrastructure	0.192 0.280/0.078^	0.066 0.114/0.021^	-0.194*** -0.044/0.012	-0.142** 0.188/0.067^
People → Technology and Innovation	0.174 0.289/0.083^	0.118 0.141/0.032^	-0.124** 0.076/0.019	-0.066 0.307/0.147^
People → Biophysical Environment	0.178 0.167/0.028^^	-0.021 0.020/0.002	0.203*** 0.357/0.070^	0.035 0.004/0.000
People → Prosperity	0.132 0.132/0.018	0.197*** 0.197/0.062^	0.365*** 0.365/0.224^^	0.489*** 0.489/0.321^^
Biophysical Environment → Institution	0.053 0.053/0.002	0.053 0.053/0.012	-0.148** -0.148/0.033^	-0.129** -0.129/0.004
Biophysical Environment → Infrastructure	-0.038 -0.038/0.001	0.294*** 0.294/0.122^	0.084 0.084/0.007	-0.056 -0.056/0.003
Biophysical Environment → Technology and Innovation	0.257** 0.257/0.068^	0.217*** 0.217/0.082^	0.267*** 0.267/0.075^	-0.002 -0.002/0.000
Prosperity → Institutions	0.752*** 0.747/0.569^^^	0.319*** 0.331/0.132^	-0.125** -0.187/0.030^	0.817*** 0.825/0.595^^^
Prosperity → Infrastructure	0.717*** 0.720/0.514^^^	0.214*** 0.276/0.107^	0.329*** 0.365/0.192^^	0.675*** 0.678/0.453^^^
Prosperity → Technology and Innovation	0.544*** 0.524/0.273^^	0.093* 0.139/0.049^	0.286*** 0.398/0.181^^	0.762*** 0.762/0.597^^^
Prosperity → Biophysical Environment	-0.078 -0.078/0.005	0.210*** 0.210/0.084^	0.420*** 0.420/0.096^	-0.063 -0.063/0.008

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 12. Political regime results (Model 2.2).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	-0.058 0.035/0.001	0.084 0.301/0.091^	0.473*** 0.411/0.169^^	0.092 0.467/0.218 ^^
Governance → Infrastructure	-0.242 -0.150/0.022^	0.062 0.335/0.112^^	0.454*** 0.556/0.309^^	0.154 0.488/0.239^^
Governance → Technology and Innovation	-0.104 -0.187/0.035^	0.181*** 0.418/0.175^^	-0.067 0.374/0.140^	0.041 0.540/0.291^^
Governance → People	0.013 0.013/0.000	0.222*** 0.222/0.049^	0.549*** 0.549/0.301^^	0.420*** 0.420/0.177^^
Governance → Biophysical Environment	-0.030 -0.038/0.001	0.338*** 0.455/0.207^^	-0.484*** -0.096/0.009	0.264*** 0.241/0.058^
Governance → Prosperity	0.122 0.124/0.015	0.538*** 0.582/0.338^^	0.456*** 0.657/0.431^^^	0.399*** 0.604/0.365^^^
People → Institutions	0.155 0.263/0.070^	0.031 0.095/0.015	0.010 -0.088/0.014	-0.208*** 0.191/0.067^
People → Infrastructure	0.192 0.280/0.078^	0.066 0.114/0.021^	-0.194*** -0.044/0.012^	-0.142** 0.188/0.067^
People → Technology and Innovation	-0.005 0.289/0.083^	0.075 0.141/0.032^	-0.008 0.076/0.019^	0.010 0.307/0.147^^
People → Biophysical Environment	0.178 0.167/0.028^	-0.021 0.020/0.002	0.203*** 0.357/0.070^	0.035 0.004/0.000
People → Prosperity	0.132 0.132/0.018	0.197*** 0.197/0.062^	0.365*** 0.365/0.224^^	0.489*** 0.489/0.321^^
Biophysical Environment → Institution	0.053 0.053/0.002	0.053 0.053/0.012^^^	-0.148** -0.148/0.033^	-0.129** -0.129/0.004
Biophysical Environment → Infrastructure	-0.038 -0.038/0.001	0.294*** 0.294/0.122^	0.084 0.084/0.007	-0.056 -0.056/0.003
Biophysical Environment → Technology and Innovation	0.243** 0.257/0.068^	0.054 0.217/0.082^	0.238*** 0.267/0.075^	0.033 -0.002/0.000
Prosperity → Institutions	0.752*** 0.747/0.569^^^	0.319*** 0.331/0.132^	-0.125** -0.187/0.030^	0.817*** 0.825/0.595^^^
Prosperity → Infrastructure	0.717*** 0.720/0.514^^^	0.214*** 0.276/0.107^^	0.329*** 0.365/0.192^^	0.675*** 0.678/0.453^^^
Prosperity → Technology and Innovation	-0.224** 0.524/0.273^^	-0.114 0.139/0.049^	0.105 0.398/0.181^^	0.424*** 0.762/0.597^^^
Prosperity → Biophysical Environment	-0.078 -0.078/0.005	0.210*** 0.210/0.084^	0.420*** 0.420/0.096^	-0.063 -0.063/0.008
Institutions → Technology and Innovation	0.592*** 0.592/0.495^^^	0.317*** 0.317/0.232^^	0.151 0.151/0.054^	0.118** 0.118/0.083^
Infrastructure → Technology and Innovation	0.451*** 0.451/0.376^^^	0.497*** 0.497/0.393^^^	0.606 0.606/0.429^^^	0.357*** 0.357/0.268^^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 13. Political regime results (Model 2.3).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	0.146 0.035/0.001	-0.032 0.301/0.091	0.288*** 0.411/0.169^	0.028 0.467/0.218^^
Governance → Infrastructure	-0.242 -0.150/0.022^	0.062 0.335/0.112^	0.454*** 0.556/0.309^^	0.154*** 0.488/0.239^^
Governance → Technology and Innovation	-0.247** -0.187/0.035^	0.239*** 0.418/0.175^^	0.280*** 0.374/0.140^	0.107 0.540/0.291^^
Governance → People	0.013 0.013/0.000	0.222*** 0.222/0.049^	0.549*** 0.549/0.301^^	0.420*** 0.420/0.177^^
Governance → Biophysical Environment	-0.030 -0.038/0.001	0.338*** 0.455/0.207^^	-0.484*** -0.096/0.009	0.264*** 0.241/0.058^
Governance → Prosperity	0.122 0.124/0.015	0.538*** 0.582/0.338^^	0.456*** 0.657/0.431^^^	0.399*** 0.604/0.365^^^
People → Institutions	0.002 0.263/0.070^	-0.045 0.095/0.015^	0.090 -0.088/0.014	-0.154*** 0.191/0.067^
People → Infrastructure	0.192 0.280/0.078^	0.066 0.114/0.021^	-0.194*** -0.044/0.012	-0.142** 0.188/0.067^
People → Technology and Innovation	0.174 0.289/0.083^	0.118 0.141/0.032^	-0.124** 0.076/0.019	-0.066 0.307/0.147^
People → Biophysical Environment	0.178 0.167/0.028^	-0.021 0.020/0.002	0.203*** 0.357/0.070^	0.035 0.004/0.000
People → Prosperity	0.132 0.132/0.018	0.197*** 0.197/0.062^	0.365*** 0.365/0.224^^	0.489*** 0.489/0.321^^
Biophysical Environment → Institutions	-0.020 0.053/0.002	-0.172*** 0.053/0.012	-0.232*** -0.148/0.033^	-0.111 -0.129/0.004
Biophysical Environment → Infrastructure	-0.038 -0.038/0.001	0.294*** 0.294/0.122^	0.084 0.084/0.007	-0.056 -0.056/0.003
Biophysical Environment → Technology and Innovation	0.257** 0.257/0.068^	0.217*** 0.217/0.082^	0.267*** 0.267/0.075^	-0.002 -0.002/0.000
Prosperity → Institutions	0.214 0.747/0.569^^^	0.178*** 0.331/0.132^	-0.278*** -0.187/0.030^	0.495*** 0.825/0.595^^^
Prosperity → Infrastructure	0.717*** 0.720/0.514^^^	0.214*** 0.276/0.107^	0.329*** 0.365/0.192^	0.675*** 0.678/0.453^^^
Prosperity → Technology and Innovation	0.544*** 0.524/0.273^^	0.093* 0.139/0.049^	0.286*** 0.398/0.181^	0.762*** 0.762/0.597^^^
Prosperity → Biophysical Environment	-0.078 -0.078/0.005	0.210*** 0.210/0.084^	0.420*** 0.420/0.096^	-0.063 -0.063/0.008
Infrastructure → Institutions	0.479*** 0.479/0.436^^^	0.505*** 0.505/0.386^^^	0.263*** 0.263/0.118^	0.311*** 0.311/0.219^^
Technology and Innovation → Institutions	0.356*** 0.356/0.298^^	0.355*** 0.355/0.259^^	0.232*** 0.232/0.083^	0.148** 0.148/0.103^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 14. Political regime results (Model 2.4).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	-0.058 0.035/0.001	0.084 0.301/0.091^	0.473*** 0.411/0.169^	0.092 0.467/0.218^^
Governance → Infrastructure	-0.136 -0.150/0.022^	-0.079 0.335/0.112^	0.240*** 0.556/0.309^^	0.075 0.488/0.239^^
Governance → Technology and Innovation	-0.247** -0.187/0.035^	0.239*** 0.418/0.175^^	0.280*** 0.374/0.140^	0.107 0.540/0.291^^
Governance → People	0.013 0.013/0.000	0.222*** 0.222/0.049^	0.549*** 0.549/0.301^^	0.420*** 0.420/0.177^^
Governance → Biophysical Environment	-0.030 -0.038/0.001	0.338*** 0.455/0.207^^	-0.484*** -0.096/0.009^	0.264*** 0.241/0.058^
Governance → Prosperity	0.122 0.124/0.015	0.538*** 0.582/0.338^^	0.456*** 0.657/0.431^^^	0.399*** 0.604/0.365^^^
People → Institutions	0.155 0.263/0.070^	0.031 0.095/0.015	0.010 -0.088/0.014	-0.208*** 0.191/0.067^
People → Infrastructure	0.055 0.280/0.078^	0.001 0.114/0.021^	-0.131** -0.044/0.012	-0.046 0.188/0.067^
People → Technology and Innovation	0.174 0.289/0.083^	0.118 0.141/0.032^	-0.124** 0.076/0.019	-0.066 0.307/0.147^
People → Biophysical Environment	0.178 0.167/0.028^	-0.021 0.020/0.002	0.203*** 0.357/0.070^	0.035 0.004/0.000
People → Prosperity	0.132 0.132/0.018	0.197*** 0.197/0.062^	0.365*** 0.365/0.224^^	0.489*** 0.489/0.321^^
Biophysical Environment → Institution	0.053 0.053/0.002	0.053 0.053/0.012	-0.148** -0.148/0.033^	-0.129** -0.129/0.004
Biophysical Environment → Infrastructure	-0.145 -0.038/0.001	0.175*** 0.294/0.122^	-0.032 0.084/0.007	-0.014 -0.056/0.003
Biophysical Environment → Technology and Innovation	0.257** 0.257/0.068^	0.217*** 0.217/0.082^	0.267*** 0.267/0.075^	-0.002 -0.002/0.000
Prosperity → Institutions	0.752*** 0.747/0.569^^^	0.319*** 0.331/0.132^	-0.125** -0.187/0.030^	0.817*** 0.825/0.595^^^
Prosperity → Infrastructure	0.147 0.720/0.514^^^	0.043 0.276/0.107^	0.199*** 0.365/0.192^^	0.064 0.678/0.453^^^
Prosperity → Technology and Innovation	0.544*** 0.524/0.273^^	0.093 0.139/0.049^	0.286*** 0.398/0.181^^	0.762*** 0.762/0.597^^^
Prosperity → Biophysical Environment	-0.078 -0.078/0.005	0.210*** 0.210/0.084^	0.420*** 0.420/0.096^	-0.063 -0.063/0.008
Institutions → Infrastructure	0.538*** 0.538/0.489^^^	0.406*** 0.406/0.311^^	0.147** 0.147/0.066^	0.319*** 0.319/0.225^^
Technology and Innovation → Infrastructure	0.305*** 0.305/0.254^^	0.447*** 0.447/0.354^^^	0.519*** 0.519/0.368^^^	0.459*** 0.459/0.344^^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Table 15. Political regime results (Model 2.5).

Relationships	Closed Autocracy	Electoral Autocracy	Electoral Democracy	Liberal Democracy
	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size	Path Coefficients Total Effects / Total Effect Size
Governance → Institutions	-0.058 0.035/0.001	0.084 0301/0.091^	0.473*** 0.411/0.169^^	0.092 0.467/0.218^^
Governance → Infrastructure	-0.194 -0.150/0.022^	0.003 0.335/0.112^	0.299*** 0.556/0.309^^	0.113 0.488/0.239^^
Governance → Technology and Innovation	-0.104 -0.187/0.035^	0.181*** 0.418/0.175^^	-0.067 0.374/0.140^	0.041 0.540/0.291^^
Governance → People	0.013 0.013/0.000	0.222*** 0.222/0.049^	0.549*** 0.549/0.301^^	0.420*** 0.420/0.177^^
Governance → Biophysical Environment	-0.030 -0.038/0.001	0.338*** 0.455/0.207^^	-0.484*** -0.096/0.009	0.264*** 0.241/0.058^
Governance → Prosperity	0.122 0.124/0.015	0.538*** 0.582/0.338^^	0.456*** 0.657/0.431^^^	0.399*** 0.604/0.365^^^
People → Institutions	0.155 0.263/0.070^	0.031 0.095/0.015	0.010 -0.088/0.014	-0.208*** 0.191/0.067^
People → Infrastructure	0.062 0.280/0.078^	0.045 0.114/0.021^	-0.198*** -0.044/0.012	-0.049 0.188/0.067^
People → Technology and Innovation	-0.005 0.289/0.083^	0.075 0.141/0.032^	-0.008 0.076/0.019	0.010 0.307/0.147^
People → Biophysical Environment	0.178 0.167/0.028^	-0.021 0.020/0.002	0.203*** 0.357/0.070^	0.035 0.004/0.000
People → Prosperity	0.132 0.132/0.018	0.197*** 0.197/0.062^	0.365*** 0.365/0.224^^	0.489*** 0.489/0.321^^
Biophysical Environment → Institution	0.053 0.053/0.002	0.053 0.053/0.012	-0.148** -0.148/0.033^	-0.129 -0.129/0.004
Biophysical Environment → Infrastructure	-0.082 -0.038/0.001	0.256*** 0.294/0.122^^	0.133** 0.084/0.007	0.001 -0.056/0.003
Biophysical Environment → Technology and Innovation	0.243 0.257/0.068^	0.054 0.217/0.082^	0.238*** 0.267/0.075^	0.033 -0.002/0.000
Prosperity → Institutions	0.752*** 0.747/0.569^^^	0.319*** 0.331/0.132^	-0.125** -0.187/0.030^	0.817*** 0.825/0.595^^^
Prosperity → Infrastructure	0.091 0.720/0.514^^^	-0.011 0.276/0.107^	0.370*** 0.365/0.192^^	0.310*** 0.678/0.453^^^
Prosperity → Technology and Innovation	-0.224** 0.524/0.273^^	-0.114 0.139/0.049^	0.105 0.398/0.181^^	0.424*** 0.762/0.597^^^
Prosperity → Biophysical Environment	-0.078 -0.078/0.005	0.210*** 0.210/0.084^	0.420*** 0.420/0.096^	-0.063 -0.063/0.008
Institutions → Technology and Innovation	0.592*** 0.968/0.809^^^	0.317*** 0.667/0.487^^^	0.151** 0.350/0.126^	0.118** 0.278/0.194^^
Infrastructure → Technology and Innovation	0.451*** 0.451/0.376^^^	0.497*** 0.497/0.393^^^	0.606*** 0.606/0.429^^^	0.357*** 0.357/0.268^^
Institutions → Infrastructure	0.833*** 0.833/0.757^^^	0.704*** 0.704/0.539^^^	0.329*** 0.329/0.147^	0.446*** 0.446/0.315^^

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size.

Model 2.5 is similar to Model 2.4. It adds the relationship Institutions > Technology and Innovation and considers the relationship Infrastructure > Technology and Innovation instead of the relationship Technology and Innovation > Infrastructure, which appears in Model 2.4. In Model 2.5, electoral democracies and electoral autocracies had the same number of governance-related strongest relationships. The number of most robust relationships involving people was equal for autocracies and democracies. Most robust relationships involving the biophysical environment were four and two for autocracies and democracies, respectively. Relationships involving people were either non-significant or negative in 11 out of 24 cases. Likewise, 14 out of 24 relationships involving the biophysical environment were either negative or non-significant. Seven out of 24 relationships involving prosperity were either non-significant or negative. Five out of six prosperity-related relationships were strongest in democratic regimes. The relationships Institutions > Infrastructure and Institutions > Technology and Innovation were more robust in autocracies than in democracies, while the opposite occurred with the relationship Infrastructure > Technology and Innovation. Out of 21 positive relationships studied in Model 2.5, eleven and ten relationships were most robust and positive in autocracies and democracies, respectively.

Global results

Table 16 shows the global results for Models 1.1, 1.2, 1.3, 1.4, and 1.5. Governance relates strongly with institutions and prosperity, moderately with people, and weakly with infrastructure and technology and innovation. All governance relationships were positive. Institutions' relationships were strong with infrastructure, weak to moderate with technology and innovation, insignificant with people and prosperity, and negative with the biophysical environment. Technology and innovation's relationships with the biophysical environment, people, and prosperity were strong, weak/moderate, and weak/moderate, respectively. All technology and innovation relationships were positive. Infrastructure relationships with technology and innovation, prosperity and people, and the biophysical environment were strong, weak, and non-significant, respectively. Biophysical environment relationships with governance, institutions, technology and innovation, and infrastructure were weak, negative, strong, and non-significant, respectively. The weakest relationships were those involving either the biophysical environment or people.

Table 17 shows the global results for Models 2.1, 2.2, 2.3, 2.4, and 2.5. Governance relationships with prosperity and people were strong, whereas those with institutions, infrastructure, technology and innovation, and the biophysical environment were weak. Biophysical environment relationships with technology and innovation, infrastructure, and institutions were weak, very weak, and insignificant, respectively. Prosperity relationships with infrastructure, technology and innovation, institutions, and people were strong. In contrast, the relationship Prosperity > Biophysical Environment was very weak. People relationships with institutions, infrastructure, technology and innovation, and the biophysical environment were not significant. In contrast, the relationships Governance > People and Prosperity > People were strong and positive.

Global results for the two model sets examined show that most governance relationships' total effects and effect sizes were moderate or strong; most biophysical environment relationships had total effects and effect sizes of no practical significance; and most prosperity relationships' total effects and effect sizes were strong.

Table 16. Global results (Models 1.1 – 1.5).

Relationships	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Governance → Institutions	0.629*** 0.574 to 0.684 0.629/0.396^^^	0.629*** 0.574 to 0.684 0.629/0.396^^^	0.629*** 0.574 to 0.684 0.629/0.396^^^	0.629*** 0.574 to 0.684 0.629/0.396^^^	0.629*** 0.574 to 0.684 0.629/0.396^^^
Governance → Infrastructure	0.217*** 0.160 to 0.274 0.651/0.424^^^	0.217*** 0.160 to 0.274 0.651/0.424^^^	0.217*** 0.160 to 0.274 0.651/0.424^^^	0.217*** 0.160 to 0.274 0.651/0.424^^^	0.217*** 0.160 to 0.274 0.651/0.424^^^
Governance → Technology and Innovation	0.147*** 0.090 to 0.205 0.666/0.443^^^	0.147*** 0.090 to 0.205 0.666/0.443^^^	0.147*** 0.090 to 0.205 0.666/0.443^^^	0.147*** 0.090 to 0.205 0.666/0.443^^^	0.147*** 0.090 to 0.205 0.666/0.443^^^
Governance → People	0.379*** 0.323 to 0.435 0.523/0.274^^	0.379*** 0.323 to 0.435 0.523/0.274^^	0.144*** 0.086 to 0.201 0.523/0.274^^	0.379*** 0.323 to 0.435 0.523/0.274^^	0.379*** 0.323 to 0.435 0.075 / 0.274^^
Governance → Biophysical Environment	0.204*** 0.147 to 0.261 0.323/0.104^^	0.209*** 0.152 to 0.266 0.323/0.104^^	0.204*** 0.147 to 0.261 0.323/0.104^^	0.204*** 0.147 to 0.261 0.323/0.104^^	0.209*** 0.152 to 0.266 0.037 / 0.104^^
Governance → Prosperity	0.526*** 0.470 to 0.581 0.802/0.644^^	0.526*** 0.470 to 0.581 0.802/0.644^^	0.526*** 0.470 to 0.581 0.802/0.644^^	0.462*** 0.406 to 0.518 0.802/0.644^^	0.460*** 0.405 to 0.516 0.274 / 0.644^^
Institutions → Infrastructure	0.690*** 0.635 to 0.745 0.690/0.570^^^	0.690*** 0.635 to 0.745 0.690/0.570^^^	0.690*** 0.635 to 0.745 0.690/0.570^^^	0.690*** 0.635 to 0.745 0.690/0.570^^^	0.690*** 0.635 to 0.745 0.690/0.570^^^
Institutions → Technology and Innovation	0.269*** 0.213 to 0.326 0.639/0.515^^^	0.269*** 0.213 to 0.326 0.639/0.515^^^	0.269*** 0.213 to 0.326 0.639/0.515^^^	0.269*** 0.213 to 0.326 0.639/0.515^^^	0.269*** 0.213 to 0.326 0.639/0.515^^^
Institutions → People	0.036 -0.022 to 0.094 0.148/0.062^	0.036 -0.022 to 0.094 0.148/0.062^	0.020 -0.038 to 0.078 0.148/0.062^	0.036 -0.022 to 0.094 0.148/0.062^	0.036 -0.022 to 0.094 0.148 / 0.062^

Relationships	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Institutions → Biophysical Environment	-0.287*** -0.344 to -0.231 0.002/0.000	-0.287*** -0.344 to -0.231 0.002/0.000	-0.287*** -0.344 to -0.231 0.002/0.000	-0.287*** -0.344 to -0.231 0.002/0.000	-0.287*** -0.344 to -0.230 0.002/0.000
Institutions → Prosperity	0.047 -0.011 to 0.105 0.294/0.201^^	0.047 -0.011 to 0.105 0.294/0.201^^	0.047 -0.011 to 0.105 0.294/0.201^^	0.039 -0.019 to 0.096 0.294/0.201^^	0.041 -0.017 to 0.099 0.294/0.201^^
Technology and Innovation → People	0.255*** 0.198 to 0.311 0.255/0.120^^	0.255*** 0.198 to 0.311 0.255/0.120^^	0.150*** 0.093 to 0.208 0.255/0.120^^	0.255*** 0.198 to 0.311 0.255/0.120^^	0.255*** 0.198 to 0.311 0.255/0.120^^
Technology and Innovation → Biophysical Environment	0.427*** 0.371 to 0.483 0.427/0.150^^^	0.427*** 0.371 to 0.483 0.427/0.150^^^	0.427*** 0.371 to 0.483 0.427/0.150^^^	0.427*** 0.371 to 0.483 0.427/0.150^^^	0.427*** 0.371 to 0.483 0.427/0.150^^
Technology and Innovation → Prosperity	0.219*** 0.162 to 0.276 0.219/0.162^^	0.219*** 0.162 to 0.276 0.219/0.162^^	0.219*** 0.162 to 0.276 0.219/0.162^^	0.178*** 0.121 to 0.236 0.219/0.162^^	0.175*** 0.118 to 0.232 0.219/0.162^^
Infrastructure → Technology and Innovation	0.536*** 0.481 to 0.592 0.536/0.458^^^	0.536*** 0.481 to 0.592 0.536/0.458^^^	0.536*** 0.481 to 0.592 0.536/0.458^^^	0.536*** 0.481 to 0.592 0.536/0.458^^^	0.536*** 0.481 to 0.592 0.536/0.458^^^
Infrastructure → People	-0.074*** -0.131 to -0.016 0.063/0.026^	-0.074*** -0.131 to -0.016 0.063/0.026^	-0.143*** -0.200 to -0.085 0.063/0.026^	-0.074*** -0.131 to -0.016 0.063/0.026^	-0.074*** -0.131 to -0.016 0.063/0.026^
Infrastructure → Biophysical Environment	0.029 -0.035 to 0.081 0.253/0.072^^	0.029 -0.035 to 0.081 0.253/0.072^^	0.023 -0.035 to 0.081 0.253/0.072^^	0.023 -0.035 to 0.081 0.253/0.072^^	0.029 -0.029 to 0.087 0.253/0.072^^
Infrastructure → Prosperity	0.155*** 0.098 to 0.213 0.273/0.197^^^	0.155*** 0.098 to 0.213 0.273/0.197^^^	0.155*** 0.098 to 0.213 0.273/0.197^^^	0.168*** 0.111 to 0.225 0.273/0.197^^	0.168*** 0.111 to 0.225 0.273/0.197^

Relationships	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Biophysical Environment → People	N/A	N/A	0.018 -0.040 to 0.076 0.018 / 0.004	N/A	N/A
Prosperity → People	N/A	N/A	0.441*** 0.385 to 0.497 0.441 / 0.257^^	N/A	N/A
People → Biophysical Environment	N/A	0.023 -0.035 to 0.081 0.253/0.072^^	N/A	N/A	0.023 -0.035 to 0.081 0.019 / 0.004
People → Prosperity	N/A	N/A	N/A	0.172*** 0.115 to 0.229 0.172 / 0.100^	0.172*** 0.115 to 0.229 0.172 / 0.100^
Prosperity → Biophysical Environment	N/A	-0.026 -0.084 to 0.031 0.253/0.072^^	N/A	N/A	-0.026 -0.084 to 0.031 -0.026 / 0.008
Biophysical Environment → Prosperity	N/A	N/A	N/A	-0.008 -0.066 to 0.050 -0.008 / 0.002	N/A

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size. CI: Confidence interval. N/A: This relationship does not exist in the referred model.

Table 17. Global results (Models 2.1 – 2.5).

Relationships	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Governance → Institutions	0.232*** 0.175 to 0.289 0.629. /0.396^^^	0.232*** 0.175 to 0.289 0.629/0.396^^^	0.087** 0.030 to 0.145 0.629/0.396^^^	0.232*** 0.175 to 0.289 0.629. /0.396^^^	0.232*** 0.175 to 0.289 0.629. /0.396^^^
Governance → Infrastructure	0.187*** 0.130 to 0.244 0.651/0.424^^^	0.187*** 0.130 to 0.244 0.651/0.424^^^	0.187*** 0.130 to 0.244 0.651/0.424^^^	0.026 -0.032 to 0.084 0.651/0.424^^^	0.044 -0.014 to 0.102 0.651/0.424^^^
Governance → Technology and Innovation	0.166*** 0.109 to 0.223 0.666/0.443^^^	0.017 -0.041 to 0.075 0.666/0.443^^^	0.166*** 0.109 to 0.223 0.666/0.443^^^	0.166*** 0.109 to 0.223 0.666/0.443^^^	0.017 -0.041 to 0.075 0.666/0.443^^^
Governance → Biophysical Environment	0.233*** 0.176 to 0.290 0.323/0.104^	0.233*** 0.176 to 0.290 0.323/0.104^	0.233*** 0.176 to 0.290 0.323/0.104^	0.233*** 0.176 to 0.290 0.323/0.104^	0.233*** 0.176 to 0.290 0.323/0.104^
Governance → Prosperity	0.684*** 0.629 to 0.739 0.802/0.644^^^	0.684*** 0.629 to 0.739 0.802/0.644^^^	0.684*** 0.629 to 0.739 0.802/0.644^^^	0.684*** 0.629 to 0.739 0.802/0.644^^^	0.684*** 0.629 to 0.739 0.802/0.644^^^
Governance → People	0.523*** 0.468 to 0.579 0.523/0.274^^	0.523*** 0.468 to 0.579 0.523/0.274^^	0.523*** 0.468 to 0.579 0.523/0.274^^	0.523*** 0.468 to 0.579 0.523/0.274^^	0.523*** 0.468 to 0.579 0.523/0.274^^
Biophysical Environment → Institution	-0.020 -0.078 to 0.038 -0.020/0.004	-0.020 -0.078 to 0.038 -0.020/0.004	-0.092*** -0.150 to -0.035 -0.020/0.004	-0.020 -0.078 to 0.038 -0.020/0.004	-0.020 -0.078 to 0.038 -0.020/0.004
Biophysical Environment → Infrastructure	0.060* 0.002 to 0.118 0.060/0.017^	0.060* 0.002 to 0.118 0.060/0.017^	0.060* 0.002 to 0.118 0.060/0.017^	0.007 -0.051 to 0.065 0.060/0.017^	0.072** 0.014 to 0.130 -0.060/0.017^
Biophysical Environment → Technology and Innovation	0.128*** 0.071 to 0.186 0.128/0.045^	0.105*** 0.048 to 0.163 0.128/0.045^	0.128*** 0.071 to 0.186 0.128/0.045^	0.128*** 0.071 to 0.186 0.128/0.045^	0.105*** 0.048 to 0.163 -0.128/0.045^

Relationships	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Prosperity → Institutions	0.495*** 0.439 to 0.551 0.493/0.337^^^	0.495*** 0.439 to 0551 0.493/0.337^^^	0.041 -0.016 to 0.099 0.493/0.337^^^	0.495*** 0.439 to 0.551 0.493/0.337^^^	0.495*** 0.439 to 0.551 0.493/0.337^^^
Prosperity → Infrastructure	0.569*** 0.514 to 0.624 0.574/0.415^^^	0.569*** 0.514 to 0.624 0.574/0.415^^^	0.569*** 0.514 to 0.624 0.574/0.415^^^	0.138*** 0.081 to 0.195 0.574/0.415^^^	0.264*** 0.207 to 0.320 0.574/0.415^^^
Prosperity → Technology and Innovation	0.544*** 0.489 to 0.600 0.555/0.411^^^	0.147*** 0.089 to 0.204 0.555/0.411^^^	0.544*** 0.489 to 0.600 0.555/0.411^^^	0.544*** 0.489 to 0.600 0.555/0.411^^^	0.147*** 0.089 to 0.204 0.555/0.411^^^
Prosperity → Biophysical Environment	0.086*** 0.028 to 0.143 0.086/0.025^	0.086*** 0.028 to 0.143 0.086/0.025^	0.086*** 0.028 to 0.143 0.086/0.025^	0.086*** 0.028 to 0.143 0.086/0.025^	0.086*** 0.028 to 0.143 0.086/0.025^
Prosperity → People	0.459*** 0.403 to 0.515	0.459*** 0.403 to 0.515	0.459*** 0.403 to 0.515	0.459*** 0.403 to 0.515	0.459*** 0.403 to 0.515
People → Institutions	0.013 -0.045 to 0.070 0.123/0.051^	0.013 -0.045 to 0.070 0.123/0.051^	0.008 -0.050 to 0.066 0.123/0.051^	0.013 -0.045 to 0.070 0.123/0.051^	0.013 -0.045 to 0.070 0.123/0.051^
People → Infrastructure	-0.022 -0.080 to 0.036 0.110/0.046^	-0.022 -0.080 to 0.036 0.110/0.046^	-0.022 -0.080 to 0.036 0.110/0.046^	-0.046 -0.103 to 0.012 0.110/0.046^	-0.030 -0.087 to 0.028 0.110/0.046^
People → Technology and Innovation	0.041 -0.016 to 0.099 0.172/0.081^	0.048 -0.010 to 0.106 0.172/0.081^	0.041 -0.016 to 0.099 0.172/0.081^	0.041 -0.016 to 0.099 0.172/0.081^	0.048 -0.010 to 0.106 0.172/0.081^
People → Biophysical Environment	0.039 -0.019 to 0.097 0.058/0.012	0.039 -0.019 to 0.097 0.058/0.012	0.039 -0.019 to 0.097 0.058/0.012	0.039 -0.019 to 0.097 0.058/0.012	0.039 -0.019 to 0.097 0.058/0.012

Relationships	Model 2.1	Model 2.2	Model 2.3	Model 2.4	Model 2.5
	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size	Path Coefficients CI Total Effects / Total Effect Size
Institutions → Technology and Innovation	N/A	0.267*** 0.210 to 0.324 0.267/0.215^^	N/A	N/A	0.267*** 0.210 to 0.324 0.555/0.447^^^
Infrastructure → Technology and Innovation	N/A	0.467*** 0.411 to 0.523 0.467/0.399^^^	N/A	N/A	0.467*** 0.411 to 0.523 0.467/0.399^^^
Infrastructure → Institution	N/A	N/A	0.466*** 0.410 to 0.521 0.466/0.385^^^	N/A	N/A
Technology and Innovation → Institutions	N/A	N/A	0.347*** 0.291 to 0.403 0.347/0.279^^	N/A	N/A
Institutions → Infrastructure	N/A	N/A	N/A	0.358*** 0.302 to 0.414 0.358/0.296^^	0.616*** 0.561 to 0.672 0.616/0.509^^^
Technology and Innovation → Infrastructure	N/A	N/A	N/A	0.466*** 0.410 to 0.522 0.466/0.398^^^	N/A

Notes: Significance level: *p < 0.05, **p <0.01, and ***p< 0.001. Effect sizes: ^ 0.02 < e < 0.15 = Low effect size; ^^ 0.15 < e < 0.35 = Medium effect size; and ^^^ e > 0.35 = Strong effect size. CI: Confidence interval. N/A: This relationship does not exist in the referred model.

Results summary

Governance relationships tended to be slightly more robust and positive in democracies than autocracies, particularly in electoral democracies. On the other hand, many governance relationships in closed autocracies were non-significant or negative. Relationships involving institutions and infrastructure were slightly more robust in autocracies than democracies. In contrast, relationships involving prosperity and technology and innovation were stronger in democracies than autocracies. The strength of relationships related to people was about the same in democracies and autocracies. The number of strongest relationships involving the biophysical environment was slightly higher in autocracies than in democracies. The biophysical environment and people had many relationships that were either non-significant or, a few, negative.

Democracies' relationships were slightly stronger and more positive than those of autocracies, but relationship differences between these two major macro-political regimes were not as marked as expected. From 198 relationships examined in the two model sets, democracies had about 50% and autocracies 46% of the strongest relationships. Out of 101 relationships in which democracies had the strongest path coefficients, 60 were obtained in electoral democracies and 41 in liberal democracies. Electoral democracies were remarkably stronger than liberal democracies in Model Set 2, which considers the biophysical environment, people, and prosperity as immediate mediators to governance. Similarly, out of 88 relationships in which autocracies had the strongest path coefficients, 55 were obtained in closed autocracies and 33 in electoral autocracies.

Since the development expectation is for constructs to relate positively, looking at negative or non-significant path coefficients in Model Set 1, autocracies had 81 and democracies 71 negative or non-significant path coefficients out of 396 relationships. Likewise, in Model Set 2, autocracies had 83 and democracies had 85 negative or non-significant path coefficients out of 396 relationships.

Similarly, closed autocracies were stronger than electoral autocracies (34 vs. 13) in Model Set 1, which considers institutions, infrastructure, and technology and innovation as immediate mediators to governance. Some relationships were either non-significant or negative in all four political regimes. A few relationships involving the biophysical environment were negative in all regimes. Please note that negative or non-significant relationships are not counted among the complete set of "strongest" relationships. However, if a minimum of negative or non-significant relationships is considered desirable, then in Model Set 1, electoral autocracies perform better than closed autocracies: 28 vs. 53 negative or non-significant relationships, respectively, whereas negative or non-significant relationships in electoral democracies and liberal democracies were 41 and 30, respectively. In Model Set 2, the number of negative or non-significant relationships was 47, 36, 36, and 49 for closed autocracies, electoral autocracies, electoral democracies, and liberal democracies, respectively. Considering the 10 model configurations, there were 164 vs. 156 negative or non-significant relationships for autocracies and democracies, respectively, out of 792 relationships. Overall, there was only a slight advantage for democracies over autocracies.

Suppose Model Set 2, encompassing Models 2.1, 2.2, 2.3, 2.4, and 2.5, were to be considered as giving slightly higher priority to the three basic sustainability dimensions. In that case, results suggest that electoral democracies produce the most favorable results for sustainability among the four political regimes studied.

In both model sets, moderate/strong, weak, and non-significant path coefficients were about 33% each. Although only about 33% of path coefficients were strong, most relationships had medium to strong total effects and effect sizes, reflecting positive indirect effects. However,

relationships with weak or insignificant path coefficients, although they may have small effect sizes, do not have meaningful, practical applications.

Governance and prosperity relationships were strong at the global level, and those related to people and the biophysical environment were weakest. Global results had more positive, stronger, and less non-significant or negative relationships than the political regimes' findings. Results for people and the biophysical environment were weak at both the political regime level and the global level.

Findings show no clear advantage of one political regime over another, which prompts the question of why the regime with the most advanced democracy, liberal democracy, did not dominate the set of 10 models examined. We address this central question, among others, in the discussion.

V. Discussion

The general expectation was that all models' constructs would have a positive influence on themselves and that such synergies would manifest to a higher degree in liberal democracies. However, construct effects on development indicators are context dependent. Such contextuality will apply both at the construct and model levels. For instance, research has shown that infrastructure, technology, and foreign direct investment results may be positive, negative, or have no effects depending on specific conditions (Chomitz et al. 2007; Maliszewski and Perrings 2012; Buckley and Casson 1976; Dasgupta 2009; De Vita and Kyaw 2009; Acemoglu and Dell 2009; Acemoglu and Johnson 2023). Likewise, findings reaffirm that slight configuration changes may change model results. Results indicate substantial variability in the constructs' effects derived from model configuration differences. The expression "development is development" implies that results may vary depending on both countries' specific conditions and the model configurations examined.

Our two contrasting sets of model configurations (Model 1 and Model 2) resulted in more drastic results variations than the slight model configurations variations within each model set. The set of model configurations examined is just a minor sample of a potentially huge set of plausible model configurations.

The set of models researched highlights the context's importance. Most development intervention failures may be attributed to their out-of-context operationalization, notably needing more representation of the interests of those affected by development interventions. Furthermore, our findings illustrate the scale effects. For example, most governance relationships, total effects, and effect sizes were strong at the global level, whereas at the political regime level, such effects were consistently non-significant or negative for closed autocracies. Overall, global results were stronger and more positive than results at the political regime level. These results align with the need to further integrate different levels in sustainability studies (Dizdaroglu 2015), notably to include more micro-level studies together with meso- and macro-level models. Thus, more research work is needed incorporating city, regional, national, and global levels as well as different perspectives within and between levels. Micro-level studies are bound to show a higher degree of variability.

Not significant or negative results may be explained by construct measurement. Constructs may be missing items, and thus, constructs may not fully have the content they should have. Nonetheless, examining the indicators for the biophysical environment and people, the two

constructs with the highest number of weak or no significant relationships, their construct content, as reflected by their sets of indicators, should be acceptable (see Appendix Table A1). For example, the biophysical environment includes a comprehensive biophysical assessment encompassing cropland yields, forestland, grazing land, built-up land, and fishing grounds (see Appendix Table A1 for details). The biophysical environment's results suggest that weak or not significant relationships indicate environmental degradation and/or that integrating the biophysical environment with other crucial development constructs studied is still at an early stage and that far more needs to be done regarding sustainability transitions. The models' findings concerning the biophysical environment align with data from the Global Footprint Network (2022), showing that 85% and 74% of autocratic and democratic countries, respectively, have ecological deficits. Likewise, Intergovernmental Panel on Climate Change (IPCC) studies have repeatedly shown that progress to avoid undesirable climate change tipping points has been slow and insufficient (Pörtner et al. 2021; IPCC 2023). In the case of the people construct, it primarily includes low-level poverty and education indicators. Consequently, it may be expected that most countries will acceptably perform on such indicators. Education has been positively related to health, peace, prosperity, and life satisfaction (Trask-Kerr et al. 2019; Stryzhak 2020; Raghupathi and Raghupathi 2020; Danesh 2008; Clarke-Habibi 2005; Khan et al. 2023; Chepkuto et al. 2014; Mohammadi Mehr et al. 2019; Meeks and Murrell 2001).

In addition, while the names of indicators may suggest reasonable construct content, the actual indicators' values within the constructs may reflect the indicators' disparities and inconsistencies, which may result in weak or non-significant relationships. Furthermore, there may be missing variables which may lead to weak or not significant relationships, and/or the functional relationships used may not correctly depict the relationships of the realities of different sets of observers (e.g., linearity, additivity, invariance, independence, and homogeneity assumptions).

In addition, country differences within regime clusters or indicators' values within the constructs may create canceling out effects resulting in weak or insignificant path coefficients. For example, just within the democracy continuum, there may be autocratization from democracy to autocracy, democratic erosion, defective democracy, democratic "recession," and democratic breakdown ((Kaufman and Haggard 2019; Wolf 2023).

Data covered 11 years; however, development investments may be discontinuous, interactions among investments may vary, and responses to such investments may take different time periods to materialize (Rodrik 2008). Thus, there may be differences in response times within and between countries, resulting in different outcomes. Given the complex relationships involved in development, constructs' interactions may create positive, negative, or canceling-out effects.

Technology and innovation and prosperity indicators may strongly reflect the degree of socioeconomic development (Cimoli et al. 2009; Dutta et al. 2018; Fagerberg et al. 2005). As a result, democracies, particularly liberal democracies, tend to have the strongest path coefficients in relationships involving technology and innovation and prosperity.

Political regimes may be one of the most important constructs in sustainability conversations. At the country level, and by aggregation, at the global level, political regimes reflect and are reflected in development indicators. As countries evolve from closed autocracies to electoral autocracies to electoral democracies and, finally, become liberal democracies, the democratic quality of the regime increases. Historically, autocracies have been replaced by democracies (Coppedge et al. 2019). However, in the last decades, some countries have suffered a "democratic decline" (Kaufman and Haggard 2019), that is, democracies backsliding to more autocratic/authoritarian regimes. Countries backsliding may be the extreme case of disappointment

with democracy which seems to characterize many democratic countries (Haggard and Kaufman 2021; Waldner and Lust 2018; Rickett 2022; Rüland 2021; Bakke and Sitter 2022). In several countries, searches for different candidates and parties have led to the same disappointment because the governance system needs to be restructured. Development deficits agree with the post-modern critique of "progress" (Lyotard 1984, Erturk et al. 2004).

Changes within and between political regime categories are likely related to different emphases given to different development constructs. For instance, within liberal democracies, alternating conservative and progressive governments may cancel out or minimize certain development policy effects. The four political regime categories used in our analyses may not sufficiently distinguish specific time, space, and political regime type effects. For example, most liberal democracies still have crucial socio-ecological development deficits, which may create disappointment with democracy. Nonetheless, within such a regime, citizens may differentiate between the trust given to ideal democratic norms and values (e.g., upheld) and the trust given to political parties and parliaments (e.g., withdrawn) (Obura et al. 2023). Trust given to the political regime is vital for the regime's effectiveness (Craig et al. 1990; Huang et al. 2022; Sprinz 2005), which, in turn, may be reflected in development constructs (e.g., a higher and more efficient degree of positive construct interactions).

Citizen perceptions' variability about political regimes

The yet unachieved ideal type of liberal democracy - including, among others, freely voted, open, and accountable governments; institutional checks on legislative, judicial, and executive powers; protection of civil liberties; a more socially desirable wealth distribution, the existence of an "acceptable" degree of social justice, following of "proper" norms among governments relationships with oppositions and citizens (Kaufman and Haggard 2019) - may be perceived differently by different social agents. Moreover, different degrees of political awareness and ideologies and different degrees of belonging to different social groups, at times promoted by politicians and social media, have exacerbated societal fragmentation, which may increase the variability of citizens' perceptions within a given political regime. Increased societal fragmentation decreases progress toward the ideal type of liberal democracy, mainly in the socio-economic realm, and it may further relegate attention to environmental issues (e.g., the COVID-19 pandemic, the war in Ukraine, and the danger of an economic recession seem to have pushed back or delayed attention and resources to sustainability issues).

At different scales and times, observers may differ in what they observe and the meaning they attribute to their observations. Thus, all narratives are biased. For example, China's regime has been criticized as autocratic (Bader 2015). At the same time, the high political trust given by Chinese citizens to their regime has puzzled analysts for years (Wang 2005a, 2005b; Chen 2017).

Moreover, different observers may see differently. For instance, examining just two indicators of the governance construct, the rule of law and regulatory quality, some citizens may question the political economy of the referred laws and regulations (e.g., which interests they reflect and/or whom they favor); others may take the data uncritically. Academics, forecasters, and analysts have been frequently surprised by how people observe and interpret development issues. Observer variability may explain some of the autocracies' strong relationships found in this study. All these differences, and the multiplicity and complexity of development, may suggest the need to create a specific common ground between different observers collaboratively and to jointly, genuinely further approximate liberal democracy's ideal type. It seems clear that most people want the ideal

and values embodied in liberal democracy (Diamond 2020, 1996). However, many people believe they have yet to achieve them. Perhaps, they may have been waiting for too long to achieve such operationalization of liberal democracy and, in not obtaining it, became disappointed and continued their search by looking for and trying other alternatives. Thus, the issue is not so much to doubt the theoretical advantages of liberal democracy. The question is that, for many citizens, its promises have not yet been fulfilled.

Liberal democracy may be viewed as a fantasy (Zizek 2006) or as an empty macro signifier, as is sustainable development (Zizek 2006; Wilkinson 2010). For example, citizen participation is narrowly focused on voting, but even voting may be restricted. There is a perceived lack of representation of ordinary citizens. Exclusion drives out inclusion by career politicians, lobbying, and wealthy and influential social actors. Similarly, there is a perceived lack of power or ability of citizens to be involved and influence legislative work and society's institutions. Concerning sustainable development, the contribution of fossil fuels-based energy to climate change has been known for decades, but not enough change has taken place to decarbonize the socio-ecological system to avoid reaching climate change tipping points. Currently, achieving the 1.5 degree centigrade goal has been replaced by politicians referring to 4 degrees centigrade as a "more realistic" goal. The surrendering may continue. At the global and other levels, justice deficits remain. It is clear which countries contributed the most to the climate change problem, but no responsibility is taken seriously, and effective international solidarity is low. Similarly, nationally determined agreements, policies, and sustainable development plans keep changing and most of them remain just on paper. Consumers may be aware of the centrality of consumption on environmental damage, but their behaviors are mainly driven by individualism and present economic considerations. We keep creating myths (fantasies) to avoid seriously considering our realities. The complicatedness manifested in the set of models examined in this study hints at the "nightmarish" universe with no firm ontological foundation, referred to by Zizek (2006, 5) and cited by Davidson (2012). It seems that Davidson (2012) provides the theoretical solution to these two fantasies, liberal democracy and sustainability, by considering them together; that is, the challenge is to "effectively generate a politics that traverses the current fantasy of sustainability" by "pair(ing) gentrifying and traumatic elements" (Davidson 2012, 24), that is, seriously confronting our problems. Theoretically, while social organizing may constitute the ultimate solution, the social organizing required is probably more difficult to achieve than biophysical sustainability. Thus, full sustainability, in which substantive democratic social organizing takes place, will be rather difficult to achieve. However, we must genuinely continuously approximate it.

VI. Theoretical implications

This research aims to contrast closed autocracies, electoral autocracies, electoral democracies, and liberal democracies on the relationships between governance and the biophysical environment, people, prosperity, institutions, infrastructure, and technology and innovation.

This study makes three theoretical contributions. First, it is an attempt to approximate sustainable development complicatedness by relating, in a set of 10 model configurations, closed autocracies, electoral autocracies, electoral democracies, and liberal democracies with governance, the biophysical environment, people, prosperity, institutions, infrastructure, and technology and innovation. The study interrelates four political regimes, governance, three crucial global

competitiveness constructs, and the three sustainability dimensions in terms of the constructs prosperity (economic), the biophysical environment (environmental), and people (social). The research assumes that all constructs studied reflect social organizing as well as states of socio-ecological development. The analyses use 69 indicators and 11-year data from 117 countries at the political regime and global levels. This study uniquely expands the analysis of the four main political regimes by considering a large data set of indicators and model configurations. It goes well beyond the usual constituents of liberal democracy. It highlights the centrality of people's organizing in terms of political regime and governance as well as the diversity of construct effects stemming from both model configurations and scales (political regime and global). This study illustrates the need to further explore more complicated model configurations as just one tool, among many, in the conversation about sustainability among multiple observers at multiple levels and at multiple times. Future more complicated studies may draw from an array of relevant theories from biophysics to the social sciences and integrate them per collaboratively determined goals.

Second, the expectation was that liberal democracy would have the strongest construct relationships and a better balance among the economic (prosperity), social (people), and environmental (biophysical environment) dimensions than the other political regimes. However, results indicate only a slight advantage of democracies over autocracies. Likewise, electoral democracies had a larger number of strongest relationships than liberal democracies and closed autocracies than electoral autocracies. These results align with recent discussions about democracy's backsliding and societies' fragmentation, perhaps reflecting liberal democracy's unfulfilled promises and the diversity of interests, knowledge, social justice, and collective commitments that have yet to be further incorporated into development efforts.

Since sustainability requires global cooperation, it is necessary to operationalize the principles of liberal democracy at the global level, in addition to the national level, since principles similar to those of a liberal democracy are essential for achieving the integrations required globally (Obura et al. 2023; Meng et al. 2023; Laksa 2014). Changes in rules and norms ought to be co-determined participatively. Thus, the challenge is to co-construct a fairer and more democratic and egalitarian governance system both nationally and globally.

Furthermore, considering the late deglobalization and/or the decoupling of the global system, theoretically and pragmatically, liberal democracy may need to be integrated, and perhaps reconciled, with nationalism and globalism and especially with more substantive/participative forms of democracy.

Third, findings consistently show deficits in the biophysical environment and people constructs, that is, the environmental and social sustainability dimensions. Deficits in the social dimension are reflected in the weak results for the people construct as well as, more generally, in the lack of a more evident advantage of liberal democracy over the other political regimes studied. The weak results for the biophysical environment reflect the need for proper consideration, most of the time, of environmental issues, the relatively recent incorporation of the environmental dimension as crucial in development efforts, as well as the dominance, historically, of the economic dimension. Furthermore, the social and environmental deficits also align with calls for further integrating the three sustainability dimensions (Elkington and Rowlands 1999; Hák et al. 2012). At the same time, the economic dimension (prosperity) continues to be central to sustainable development. The different model sets studied repeatedly suggest that the critical challenge is to achieve proper social organizing through political regimes, governance, and institutions, to better integrate sustainable development components. The research efforts to tackle such challenges may produce interesting integrations drawing from, among others, complexity

theory, agency theory, power theory, stewardship theory, stakeholder theory, resource-dependence theory, and institutional theory.

VII. Practical implications

The findings reaffirm the need for practitioners to consider the local/micro-specific level, reflecting the context and integrating it with a set of plausible interactions with the meso (regional) and macro (global) levels.

Practitioners, policymakers, and politicians ought to be knowledgeable about sustainable development's potential complexities, and, as a result, they need to consider formulating and implementing policies with multiple development components and their dynamic interactions. Significantly, they need to pay attention to the social and environmental dimensions.

Governments and practitioners must collaboratively integrate into their decision-making about sustainable development the interests and perspectives of multiple observers, not just the most powerful. The genuine operationalization of substantive democracy will help minimize the deficits of liberal democracy, which seem to reflect, by and large, the shortcomings of national elites externalized to the remainder of society.

VIII. Limitations and future research

Considering the vast multiplicity potential of model configurations which may be derived from, among others, different perspectives, numbers, and types of constructs, scales, and time steps, the set of 10 model configurations studied is a very small sample of the set of possibilities. Future studies may examine more complicated models. In particular, models conceptualized collaboratively and that look locally but also consider the meso and macro levels may be more interesting and useful.

Our analyses apply only to the 11-year data set used. Data are cross-sectional, and functional relationships are correlation-based. Future studies may use additional data, better functional relationships, dynamic evolving models, as well as other interesting model conceptualizations. The ingenious use of artificial intelligence may open new opportunities and produce new insights.

Pragmatically and with a sense of urgency given the current socio-ecological deficits, model considerations such as those discussed above may be secondary to the obvious: increasing environmental and social deficits and the need to seriously consider social justice and power asymmetries together with prosperity. Given the late increase in group thinking and societal fragmentation, the required options seem increasingly difficult. It seems paradoxical, as Baumann (2013) suggested, that we are retrenching to the individual and group level when what is required is more collaboration, openness, and genuine consideration of others.

IX. Conclusion

Positive relationships among governance, institutions, infrastructure, technology and innovation, prosperity, people, and the biophysical environment were slightly stronger in democracies than autocracies. However, such relationships were stronger in electoral democracies than in liberal

democracies as well as in closed autocracies than in electoral autocracies. Relationships involving people and the biophysical environment were the weakest. Socio-ecological deficits seem to reflect a lack of operationalization of the ideal of liberal democracy.

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Appendix

Table A1. Constructs and indicators.

Governance	1. Control of corruption: Percentile rank 2. Government effectiveness: Percentile rank 3. Political stability and absence of violence/terrorism: Percentile rank 4. Regulatory quality: Percentile rank 5. Rule of law: Percentile rank 6. Voice and accountability: Percentile rank
Institutions	1. Property rights, 1-7 (best) 2. Intellectual property protection, 1-7 (best) 3. Diversion of public funds, 1-7 (best) 4. Public trust in politicians, 1-7 (best) 5. Judicial independence, 1-7 (best) 6. Favoritism in decisions of government officials, 1-7 (best) 7. Wastefulness of government spending, 1-7 (best) 8. Burden of government regulation, 1-7 (best) 9. Transparency of government policymaking, 1-7 (best) 10. Business costs of terrorism, 1-7 (best) 11. Business costs of crime and violence, 1-7 (best) 12. Organized crime, 1-7 (best) 13. Reliability of police services, 1-7 (best) 14. Ethical behavior of firms, 1-7 (best) 15. Strength of auditing and reporting standards, 1-7 (best) 16. Efficacy of corporate boards, 1-7 (best) 17. Protection of minority shareholders' interests, 1-7 (best)
Infrastructure	1. Quality of overall infrastructure, 1-7 (best) 2. Quality of roads, 1-7 (best) 3. Quality of port infrastructure, 1-7 (best) 4. Quality of air transport infrastructure, 1-7 (best)
Economic Performance	1. GDPPC 2. Monetary freedom 3. Trade freedom 4. Investment freedom 5. Financial freedom
Technology and Innovation	1. Availability of latest technologies, 1-7 (best) 2. Firm-level technology absorption, 1-7 (best) 3. FDI and technology transfer, 1-7 (best) 4. Fixed broadband internet subscriptions/1000 pop. 5. Local supplier quantity, 1-7 (best) 6. Local supplier quality, 1-7 (best) 7. State of cluster development, 1-7 (best) 8. Nature of competitive advantage, 1-7 (best) 9. Production process sophistication, 1-7 (best) 10. Control of international distribution, 1-7 (best) 11. Extent of marketing, 1-7 (best)

	12. Value chain breadth, 1-7 (best) 13. Capacity for innovation, 1-7 (best) 14. Quality of scientific research institutions, 1-7 (best) 15. Company spending on R&D, 1-7 (best) 16. University-industry collaboration in R&D, 1-7 (best) 17. Governmentt procurement of advanced tech products, 1-7 (best) 18. Availability of scientists and engineers, 1-7 (best)
Biophysical Environment	1. Crop yield factor 2. Forest yield factor 3. Grazing yield factor 4. Infrastructure yield factor 5. Inland fishing yield factor 6. Marine fishing yield factor
People	1. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of the population) 2. Poverty headcount ratio at national poverty lines (% of the population) 3. Maternal mortality ratio (modeled estimate, per 100,000 live births) 4. Educational attainments, at least completed upper secondary, population 25+, total (%) (cumulative) 5. Educational attainment, at least completed post-secondary, population 25+, total (%) (cumulative) 6. Educational attainment, at least completed lower secondary, population 25+, total (%) (cumulative) 7. Women Business and the Law Index Score (scale 1-100)
Prosperity	1. GDP per capita growth (annual %) 2. Unemployment, total (% of the total labor force) (modeled ILO estimate) 3. Research and development expenditure (% of GDP) 4. Individuals using the Internet (% of the population) 5. Adjusted net savings, excluding particulate emission damage (% of GNI) 6. PM2.5 air pollution, mean annual exposure (micrograms per cubic meter) 7. GDPPC 8. Monetary freedom 9. Trade freedom 10. Investment freedom 11. Financial freedom

Table A2. Main features of political regimes.

Closed Autocracy	**Electoral Autocracy**	**Electoral Democracy**	**Liberal Democracy**
No free and fair elections and minimally fulfilled Dahl's institutional prerequisites.		Free and fair elections and minimally fulfilled Dahl's institutional prerequisites.	
Absence of multiparty elections for the chief executives.	Multiparty elections for the chief executives.	Absence of rule of law and liberal principles.	Liberal principles and rule of law are satisfied.

Source: Dahl (1998).

Table A3. The Worldwide Governance Indicators (WGI).

Governance dimensions	Definitions
Control of corruption	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including petty and grand forms of corruption and 'capture' of the state by elites and private interests.
Government effectiveness	Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Political stability and absence of violence/terrorism	Political stability is the durability and integrity of a current government regime. This is determined based on the amount of violence and terrorism expressed in the nation and by citizens associated with the state.
Regulatory quality	Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
The rule of law	A principle of governance in which all persons, institutions, and entities, public and private, including the State itself, are accountable to publicly promulgated laws, equally enforced and independently adjudicated, and consistent with international human rights norms and standards.
Voice and accountability	Voice and accountability capture perceptions of the extent to which a country's citizens can participate in selecting their government, as well as their freedom of expression, freedom of association, and free media.

Source: Worldwide Governance Indicators (2010).