



ENERGY EFFICIENCY SOLUTIONS: A SUSTAINABLE WAY TO REINFORCE INSTITUTIONAL RESILIENCE IN THE AGE OF FREQUENT CRISES

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Abstract:

Today's societies are confronted to a plethora of novel challenges. The countries are thus mobilizing the available resources and exploring new patterns in order to deal with the current and the potential threats. Political instability, globalization, economic crises, health crises, demographic changes, immigration, terrorism, climate change, fast-technological development, etc. are considered as sources of tremendous impact on societies' regular evolution. Public administration is increasingly compelled to cope with the continuous changes of the modern society which is characterized mainly by the multitude of crises "crisis era". Therefore, public institutions are in a pressing need to boost their capacity to manage the "unexpected", in other words, to develop an "institutional resilience".

There is a consensus that COVID-19 has provided evidence of the fragility of public institutions. In this regard, this paper presents a literature review about capacities that strengthen institutional resilience in times of crisis, and explains how energy efficiency's solutions could lead to a more "resilient public institutions".

Keywords

Energy efficiency, Public institutions, Institutional resilience, COVID-19.

INTRODUCTION

Today's societies are confronted to a plethora of novel challenges. The countries are thus mobilizing the available resources and exploring new patterns in order to deal with the current and the potential threats. Political instability, globalization, economic crises, health crises demographic changes, immigration, terrorism, climate change, fast-technological development, etc. are considered as sources of tremendous impact on societies' regular evolution.

COVID 19 began in late 2019, and in March 2020, the WHO declared this infectious disease to be a "pandemic" due to its global spread (WHO 2020). The pandemic has had a detrimental impact on health systems worldwide, with a ripple effect on all sectors of the economy and all facets of human life (Nicola et al 2020) (Kanda and Kivimaa 2020). In this respect, public institutions are confronted to two significant shocks to which they need to react simultaneously; On the one hand, the challenges faced by the national medical systems, and on the other hand, the social and economic crisis which follow. COVID-19 crisis requires flexibility and the capacity to promptly react to minimize the detrimental consequences. More than ever, public institutions has to exhibit "resilience", or communities, regions and national economies would be severely damaged.

Within this frame, the public administration, which is deemed as "rigid", needs to find the resources to combat the "unpredictability" and to cope with the "permanent changes". Besides, public administration needs to "embrace" both change and innovation in order to evolve during rough times, and eventually, to deliver valuable services to citizens. In this respect, the public administration should reinforce its resilience, a notion which stands in contrast to the "traditional features" of public institutions (Profiroiu and Nastaca 2021).

Based on formalities, hierarchy, rigid norms and inflexible procedures, public administration is currently facing the challenging task of "transforming" its traditional values. Public administration needs to become more agile and more adaptable by taking the path of "resilience" (Profiroiu and Nastaca 2021).

Building a "resilient" public administration is a highly complex process that should take into account the weight of all the various internal and external features and characteristics for the purpose of identifying and implementing the most efficient approaches to develop and strengthen "the resilience of the public administration" (Bruneckiene et al., 2018).

The process of building, developing and strengthening the public administration's resilience is undoubtedly demanding, a process involving miscellaneous stakeholders from the local level to the national level. A transformation of the "traditional" public administration to an adaptable, modern and a well-functioning public administration is a pressing need. Therefore, what are the capacities that strengthen institutional resilience? What are the effects of implementing this capacities on public institutions? And how institutional resilience could be reinforced through the lens of energy efficiency?

RESILIENCE - A THEORETICAL APPROACH

The concept of resilience was initially utilized in physics, it referred to the manner in which a substance responds to external forces without losing its defining characteristics (Peng et al., 2017). Subsequently, "resilience" was used in ecology (Holling 1973).

The concept of resilience is relatively new in management research (Duchek 2020), In this regard, the literature defines various types of resilience, including economic, social, ecological, and engineering resilience.

The most commonly used definition of resilience is: The capacity of a system, to cope with external shocks (Cai et al., 2012; Wojtowicz, 2020), to regain its equilibrium, and to use the available resources to evolve during period of crisis. The concept of resilience is used in relation to "individuals", "private or public organizations", "companies", "institutions", "regions", and "nations".

Resilience is rather a "process" than a "result" (Bene et al., 2014; Martin, 2012; Simmie and Martin, 2010). Resilience could be mistakenly associated to "survival", nevertheless resilience transcends survival to include "what a system does after a shock, namely to "transform" and to "evolve" to a new equilibrium instead of going back to the initial state (Capello et al., 2015; Eraydin, 2015; Foster, 2007; Hill et al., 2008; Lester and Nguyen, 2015; Pachauri and Reisinger, 2007).

Thus, resilience is the combination of three main capacities: The capacity to "absorb the shock", to "adapt to the new circumstances", and to "evolve to a new state of equilibrium" (Holling, 1973). In other words, resilience includes "absorptive", "adaptive", and "transformative capacities". Absorptive and adaptive capacities are

frequently cited in the literature. Over time, scholars started to refer to transformative capacities, the argument behind that is that an intense shock which persists for a long period of time, requires capacities beyond absorptive and adaptive capacities, mainly because irreversible changes take place during this type of shocks, which makes it almost impossible to bounce back to previous practices, and as a result, the transformation becomes a requirement for survival. However, it's noteworthy to mention that the strategy to implement varies based on the intensity of the shock.

In all cases, and regardless of the severity of the shock, the main idea is that resilience is associated with a system's response to a shock, and with its capacity to recover through the use of diverse strategies.

RESILIENCE AND PUBLIC ADMINISTRATION

At first, the studies on public administration were oriented towards concepts such as “efficiency” and “legitimacy”. In this vein, some authors focused on the importance of “efficiency” as a key capacity to develop in public institutions (Hood, 1991, in Duit, 2015). Some others prioritized “legitimacy” as a defining attribute that a public institution should strengthen.

As shocks and crises of different natures have followed one another, namely the two energy crises, the economic crisis of 2007 (Lodge and Hood, 2012; Skertich et al., 2013), climate change (Fünfgeld and McEvoy, 2012) COVID-19 health crisis, the emphasis became more on building a “flexible” and “adaptable” public administration, and the concept of “institutional resilience” started to be studied as scholars and practitioners tried to improve the resilience of a system marked by its “rigidity” in a context of constant changes (Wildavsky, 1988; Boin et al., 2010; Aldrich, 2012; Boin and van Eeten, 2013). Thus, more and more scholars perceive resilience as the “paramount value” for a public institution to develop and to strengthen (Duit, 2015).

Building “institutional resilience” is different from building resilience in the private sector “organizational resilience”, because of the “bureaucratic organization” on which the public institution's system is based on. As a result, public institutions require a different approach regarding resilience (Duit 2015).

Thus, “institutional resilience” has to be based on the importance of establishing nonhierarchical networks that cross the jurisdictions, on the necessity of acquiring multiple types of knowledge from different sources and on the importance of involving different stakeholders in the decision-making process (Duit, 2015). However, other authors suggest that a universal model or a universal policy for institutional resilience doesn't exist.

Regardless of the authors' views on how to implement institutional resilience, the literature commonly emphasizes on the importance of resilience as a core value in public institutions.

CAPACITIES OF INSTITUTIONAL RESILIENCE

Based on a literature review of institutional resilience, we identify the core factors for developing and strengthening resilience in public institution, in order to cope with the potential shocks and to improve public administration's outcomes.

The capacities determining “intuitional resilience” are:

Table: Capacities of institutional resilience and their indicators

Capacities of Institutional Resilience	Quantitative Indicators of capacities	Source
Innovation, adaptability and change management	-The number of initiated and implemented projects. -Innovation expenditures' share. -The number of improved and simplified procedures.	Jucevicius and Galbuogiene, (2012); Bakiji et al., (2013); Tongyue, Pinyi, and Chaolin, (2014); Anttiroiko et al. (2014); Duit, (2015); European Commission, (2018), Bruneckiene, et al., (2018); El Ammar and Profiroiu, (2020).
Learning capacities	-The existence of an internal training policy. -The existence of training courses and programs.	Florida, (2013), Onag et al. (2014); Edwards et al. (2014); Biggs et al., (2015), Duit, (2015).

	-The number of training hours/employee.	
Forecasting and strategic planning	-The existence of long-term strategies. -The use of KPI's. -The existence of evaluation mechanisms. -The attainment of strategic goals.	Camagni and Capello, (2013); Hinte�a et al. (2015); Anto�sova et al. (2017); Keban, (2017); Bruneckiene et al. (2018), Hinte�a et al. (2019).
The use of new technologies	-The existence of Digital platforms that allow communication and the exchange of information with stakeholders.	Bruneckiene et al., (2018), the European Commission (2018); Fulga and Profiroiu (2019); Shkarlet et al. (2020).
Stakeholders' involvement in the decision-making process	-The existence of projects proposed by various stakeholders. -The participation of various stakeholders at meetings and debates organized by public institutions. -The existence of partnerships between public institutions, private actors and non-profit organizations.	Jucevicius and Kinduris (2011); Gaule (2014); Kickbusch and Gleicher (2014); Biggs et al., (2015), Duit (2015), �stth et al., (2018) Bruneckiene et al., (2018).
Leadership, organizational management quality and human resources quality	-The existence of brainstorming sessions. -The existence of employees with high degrees in public institutions. -The existence of recruitment and internal promotion strategies within public institutions.	Camagni and Capello, (2013); Shankar Sankaran et al., (2015); European Commission, (2018); Kakkar, (2019), Pace�sila and Colesca (2019); Hakansso and Bejakovic, (2020), Andrianu (2020).
Transparency	-The number of public information and investment projects displayed on institutions' websites.	Androniceanu, (2011); European Commission, (2018).

Author's own.

EFFECTS OF DEVELOPING AND STRENGTHENING CAPACITIES OF INSTITUTIONAL RESILIENCE

Once these capacities have been developed and reinforced within public institutions, those capacities will have a huge impact on quality of public services, on citizens' well-being and satisfaction, on the climate of trust, and on local and national social and economic development.

-Capacities such as innovation, adaptability and change management, are instrumental in shaping a public institutions that will be "change-oriented". Therefore, they will more likely to embrace change. These capacities could be measured by identifying, the number of initiated and implemented projects, innovation expenditures' share, and the number of improved and simplified procedures (El Ammar and Profiroiu 2020).

-Learning capacities have a huge positive impact on human resources, enabling them to be more efficient and productive, thereby citizens will be more satisfied, willing to interact with public institutions, which will lead to a better climate of trust. Besides, learning capacities lead to an upgrade in public services. Learning capacities could be assessed by determining the existence of internal training policies and training courses and programs, and by counting the number of training hours per employee (Biggs et al., 2015).

-Some capacities have a favorable effect on social and economic development. It's the case of forecasting and strategic planning. In this respect, by developing long-term strategies, public institutions will contribute to a

“resilient economy” by creating business environment that meets the needs of citizens. Those capacities could be gauged by verifying the existence of long-term strategies, the use of KPI’s, and by the attainment of strategic goals (Hințea et al., 2019).

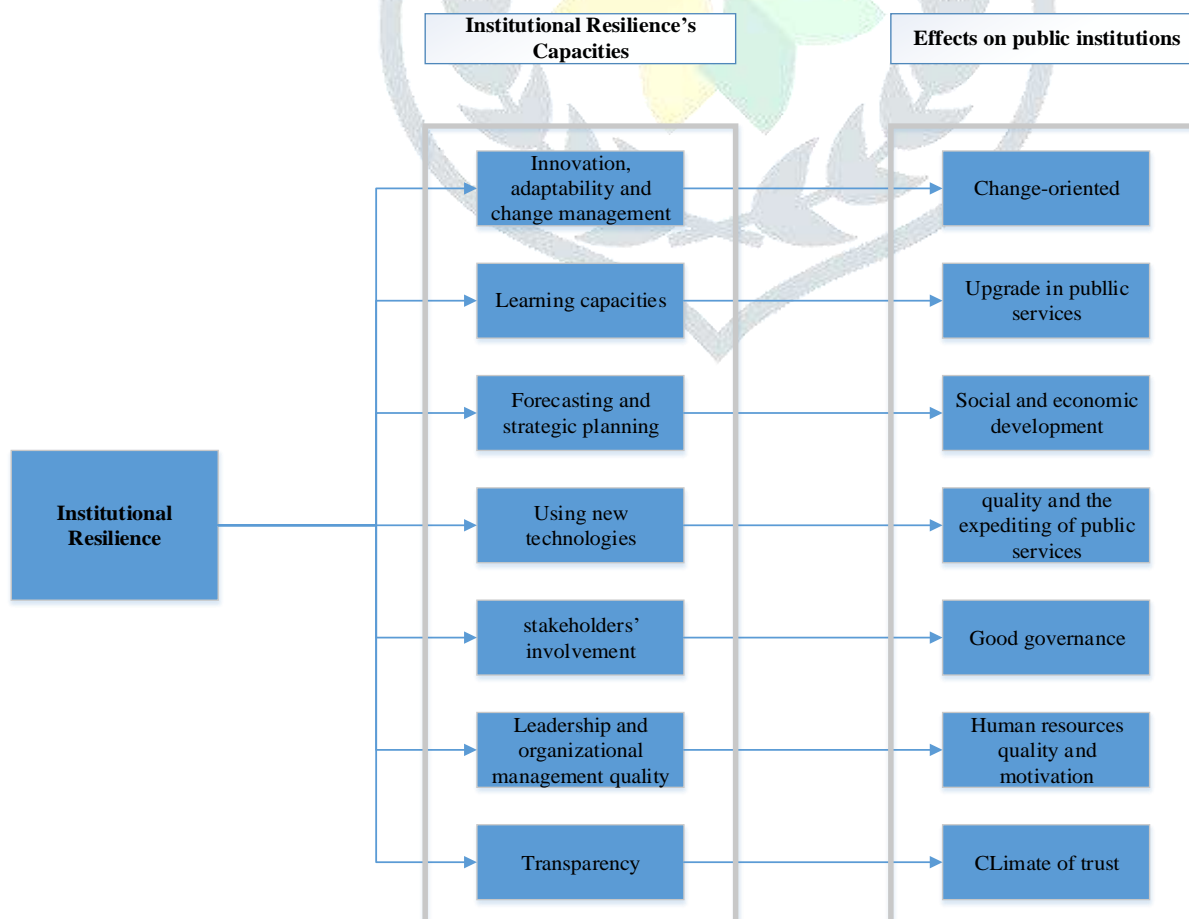
-Improving the capacity of using new technologies supports public institutions in aligning with technological development. These technologies aim to reduce bureaucracy and to increase the quality and the expediting of public services, and ultimately maintaining them in times of crisis. The use of new technologies in public institutions is linked to the existence of digital platforms that allow communication and the exchange of information with stakeholders (Shkarlet et al., 2020).

-Institutional resilience can’t be built without stakeholders’ involvement in the decision-making process. Developing this capacity enables the creation of networks which bring a wide range of knowledge, skills, resources and opportunities together. This capacity prevents various types of shocks due to the emergence of a “multidimensional vision” following the joint effort of stakeholders from different social and economic backgrounds. Stakeholders’ involvement in the decision-making process is then paramount to implement a good governance (Țiclău et al., 2020). To measure stakeholders’ involvement in the decision-making process, we can relate to several indicators such as the existence of projects proposed by various stakeholders, the participation of various stakeholders at meetings and debates organized by public institutions and the existence of partnerships between public institutions, private actors and non-profit organizations (Bruneckiene et al., 2018).

-Human resources’ motivation and performance could be meaningfully improved through capacities such as leadership, organizational management quality and human resources quality. The existence of brainstorming sessions, employees with high degrees in public institutions, and recruitment and promotion strategies within public institutions are key indicators that reveal the level of employees’ qualification and motivation (Hâkansso and Bejaković 2020) (Andrianu 2020).

-Transparency is an important capacity for institutional resilience. This capacity is the key for less corruption, for better climate trust, for a fruitful cooperation, and eventually leads to a more suitable response to potential shocks. The degree of transparency can be valued based on the number of public information and investment projects displayed on institutions’ websites (European Commission 2018).

Figure 1: Intuitional resilience capacities and their effects on public institutions



Author's own.

ENERGY EFFICIENCY: A PATH TO SUSTAINABILITY IN THE AGE OF CRISIS

The concept of energy efficiency refers to a decrease in energy consumption to its minimum level, without generating a decline in production quality, in profitability, and in standard of living (Çengel 2011). In other words, it stands for using less energy to perform the same task. Energy efficiency provides multiple benefits: Economic benefits such as reducing costs, productivity and competitiveness [Palm and Thollander 2020]. Social benefits are related to improving staff health, well-being and motivation [Kamal et al 2019]. And finally, environmental benefits particularly reducing pollution and greenhouse gas emissions [Palm and Thollander 2020].

The two energy crises and the devastating effects of climate change have shown the limits of the greedy use of energy and the overexploitation of natural resources. Besides, with the onset of the current health crisis, several studies estimate that the symptoms of COVID-19 are aggravated by air pollution (Ogen 2020), which generates a global recognition of the vulnerability and unsustainability of the current socio-economic system and its dependence on the environment. In this setting, energy efficiency is now considered the most cost-effective path to sustainability (Oppermann 2020).

HOW ENERGY EFFICIENCY REINFORCES RESILIENCE IN PUBLIC INSTITUTIONS

Energy efficiency can be achieved in public institutions by the following means:

-The establishment of energy audit, which requires collaboration with several stakeholders, namely private companies and energy service companies, because of their expertise in energy efficiency. Energy audits in public institutions can facilitate the establishment of energy management systems, leading to “continuous improvement” of the energy performance of public institutions. It’s of note that energy audits and energy management systems are tools of good energy governance (Xu et al., 2017).

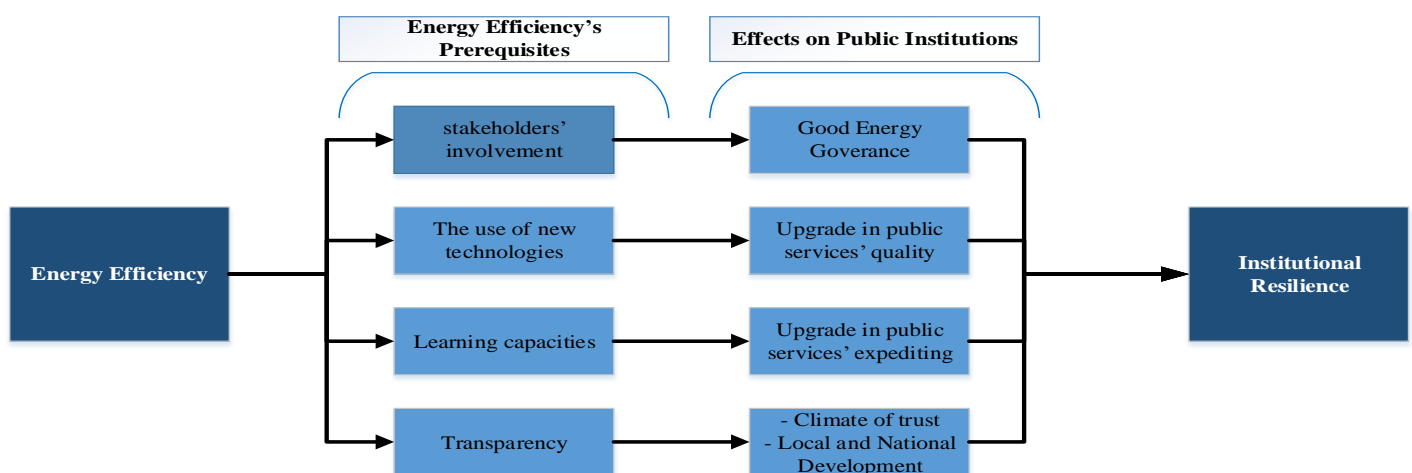
-Energy efficiency can also be achieved in public institutions via the use of energy-saving technologies, including improvement of the thermal performance of buildings, the promotion of the usage of automatic control device, etc. It is noteworthy that the use of energy efficiency’s technologies increase significantly the quality and the expediting of public services (Zekić-Sušac et al., 2020).

-Changing energy-related behaviors is a must for improving energy efficiency in public institutions. To get employees to adopt energy-saving behaviors, public institutions should consider training sessions to increase employee’s learning capacities, and ultimately, produce an upgrade in the quality of public services (Maiorano 2019).

As mentioned above, energy efficiency’s solutions could lead to good governance, and to an upgrade in the quality and the expediting of public services. In addition, energy efficiency could contribute to help build a strong climate of trust and to local and national development.

By being transparent, and by making the measures taken available to the public, public institutions will have more legitimacy, due to their “public commitment” to mitigate climate change, which would undoubtedly create a better climate of trust between public institutions and the citizens. Besides, this transparency would raise public awareness regarding the importance of energy efficiency, which would help establish the concept of energy efficiency in local and national level “mimetic isomorphism”, and thus to set an example and to contribute to a more sustainable future (Xu et al 2017).

Figure 2: From Energy Efficiency to Institutional Resilience



Author's own.

CONCLUSION

Institutional resilience is the overall capacity of a public institution to cope with external shocks, to regain its equilibrium, and to use the available resources to evolve during period of crisis.

Institutional resilience is a complex process which has to be examined from multiple perspectives in order to provide a better understanding of this concept, and eventually respond in a great way to shocks. In this respect, a one dimensional resilience will lead to flawed strategies, thereby to more vulnerable institutions.

For this reason, this manuscript aims to examine this concept through the lens of “energy efficiency”. In this regard, this paper starts by pointing out the capacities that permit public institutions to be more change-oriented, to upgrade the quality and expediting of public services, to improve the quality of their human resources, to implement good governance, to ameliorate the climate of trust, and to contribute to social and economic development. Then, the article explores how energy efficiency meaningfully contributes to the reinforcement of public institutions’ tendency to absorb shocks “absorptive”, to adapt to new circumstances “adaptive”, and to evolve to a new state of equilibrium “transformative”, and ultimately, to be more resilient.

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