

Forecasting Justice: Why the Future Can't Wait for Tragedy

1. Introduction

I woke to the sound of rain still echoing in the early morning hours, unaware that May 1st, 2024, would mark a turning point in my surroundings. The day before, my mother had warned me about the risks of traveling to the mountainous region of Rio Grande do Sul due to the storms forecasted. I thought she was overreacting—until I saw a video of the waterfall we planned to visit, now completely submerged. Throughout the day, WhatsApp groups were flooded with desperate messages. Videos showed flooded streets, sirens blaring in the background, and residents pleading for help. My own street, protected by a preserved green area, remained intact. Yet a single glance beyond my place of privilege revealed the truth: we were facing a long-foreseen tragedy. Porto Alegre became an island—cut off, without supplies, without answers. The losses went beyond homes and infrastructure—we lost the illusion of security. In that moment, it became evident how unprepared we were—and how inequality determines who suffers first and most.

This experience led me to reflect on the importance of anticipating crises before they become irreversible—a principle that Charles Handy (2015) refers to as the “Second Curve”¹. According to Handy, enduring success requires abandoning a stable path to begin a new one, even when signs of decline are not yet apparent. I first encountered this concept during my internship at an e-commerce company at the beginning of the COVID-19 pandemic, when I realized that traditional in-person sales models were bound to fail. By proposing data-driven changes, I helped the company transition to digital sales before the losses became irreparable. The same logic applies to the climate crisis: if we continue to respond only after disasters strike, we remain stuck on the First Curve—where decisions are late, costly, and often ineffective. The Second Curve transition is a survival imperative—not a choice.

In this essay, I will explore how the Second Curve can be applied to climate challenges, comparing the realities of Brazil and the Czech Republic. During my academic internship at Palacký University Olomouc, I conducted research on environmental clauses in investment treaties and engaged in conversations with residents. I was struck by the high level of public awareness in the Czech Republic regarding natural disasters and mitigation strategies. While Brazil continues to act reactively, the Czech Republic illustrates how

¹ Charles Handy, *The Second Curve: Thoughts on Reinventing Society*, (Random House, 2015).

planning and education can mitigate impacts. Through this analysis, I will argue that governments, organizations, and individuals must initiate their own Second Curve before the current trajectory collapses. By contrasting initiatives from Porto Alegre with Czech practices, I will demonstrate how Handy's philosophy can serve as a compass for concrete, anticipatory action—guiding us toward a more resilient and equitable future.

2. Infrastructure and Planning: The Divergence Between Reaction and Prevention

In Brazil, urban infrastructure operates under a reactive logic, shaped by historical neglect and structural failures. Porto Alegre exemplifies this reality: the Arroio Dilúvio, a stream that cuts through the city, has lost 30% of its drainage capacity due to sedimentation, worsening floods that regularly paralyze roads such as Avenida Ipiranga and generate annual losses exceeding R\$50 million². Critical projects, such as the modernization of the Mauá Wall—a flood barrier protecting the Guaíba River—remain stalled: in five years, only 8% has been completed, hindered by bureaucracy and lack of federal funding³. While 45% of the city's drainage system requires immediate maintenance, only 30% of storm drains are cleaned annually. Unregulated urban expansion exacerbates the situation, increasing soil impermeability and occupying flood-prone areas—15% of the capital lies in zones susceptible to inundation. Initiatives such as Curitiba's retention basins or the Linear Park of Arroio da Areia offer viable paths forward, but they remain isolated responses to a problem of far greater magnitude. Without coordination among governmental levels and sustainable investments, Brazil will continue to be hostage to predictable catastrophes.

In contrast, the Czech Republic—particularly after the 2002 floods—has become a benchmark in urban resilience. Prague invested €145 million in a system of mobile barriers along the Vltava River, including 7,000 metal panels that can be assembled within 48 hours to protect the historic city center⁴. Buildings near the river were retrofitted with waterproof basements and automatic pumps, while parks such as Stromovka were redesigned as floodable areas, capable of retaining up to 3 million liters of water during emergencies. Technology plays a central role: 250 hydrological stations and real-time sensors issue alerts

² Municipal Department of Water and Sewage (DMAE), *Arroio Dilúvio Drainage Capacity Report*, (DMAE, 2021).

³ Rio Grande do Sul State Audit Court (TCE-RS), *Mauá Flood Barrier Audit*, (TCE-RS, 2023).

⁴ City of Prague, *Flood Protection System Annual Report*, (Municipal Office, 2021).

up to 72 hours in advance⁵. The result? The damages from the 2013 flood were 90% lower than those of 2002. This transformation was made possible because the country allocates 1.2% of its GDP to risk prevention, prioritizing human lives and environmental sustainability.

The comparison between both countries reveals a profound gap between emergency responses and long-term prevention strategies. While Prague benefits from systems such as FLOREON+, mobile flood barriers, and retention parks, Brazil remains dependent on delayed interventions—floods cost the country R\$2 billion floods have caused damages exceeding R\$11.4 billion in 2024 alone⁶. According to the World Bank⁷, for every real invested in prevention, seven are saved in reconstruction—a formula already proven by the Czech experience.

In Brazil, the absence of monitoring sensors, the prevalence of irregular housing, and obsolete drainage systems perpetuate a recurring cycle of tragedy. The Arroio Dilúvio, operating at only 70% capacity, could be integrated into multifunctional solutions such as Stromovka Park; however, initiatives such as the Linear Park of Arroio da Areia remain isolated cases rather than components of a cohesive national strategy. The stagnation of the Mauá Wall project represents more than mere delay—it reflects a governance model disconnected from the climate crisis.

This divergence illustrates Charles Handy's concept. The Czech Republic has embraced the Second Curve—acting before collapse, with innovation and foresight. Brazil, stuck on the First Curve, continues its cycle of emergency–reconstruction–mourning. Meaningful change demands breaking free from short-termism: investing in technology, coordinating across government and society, and adopting a long-term vision. The Czech lesson is unequivocal: prevention is not an expense, but a lifeline.

3. From Bureaucracy to Action: Contrasting Governance Models in Crisis Management

⁵ Czech Hydrometeorological Institute, *Flood Early Warning Systems: 2023 Data* (CHMI, 2023).

⁶ Tabata Viapiana, “Danos por enchentes no sul do Brasil estimados em US\$2,2 bilhões, agronegócio fortemente afetado”, *Brazil Reports*, 11 de junho de 2024, <https://www.brazilreports.com/flood-damage-in-southern-brazil-estimated-at-usd-2-2-billion-agribusiness-heavily-affected/6230/>.

⁷ World Bank, *The Economics of Disaster Risk Reduction*, (World Bank Group, 2021).

The Brazilian State's response to floods follows a clearly reactive model, characterized by three structural problems: excessive bureaucracy, institutional fragmentation, and chronic inability to implement preventive measures. At the federal level, although frameworks such as the National Risk and Disaster Management Plan (2022–2030) exist, budgetary realities reveal a concerning imbalance—approximately 70% of allocated resources continue to be directed toward emergency response, to the detriment of preventive investments⁸.

At the municipal level, the scenario is no longer promising. In Porto Alegre, for instance, after thirteen years of implementing its Urban Drainage Master Plan, only 30% of the established targets have been met⁹. The emblematic case of the Mauá Wall—an essential infrastructure to protect against Guaíba River flooding—illustrates this paralysis: with only 8% completed after five years, the project has become a symbol of administrative inefficiency.

Preventive education, which should serve as a foundational pillar of climate resilience, receives only marginal attention in Brazil. Programs such as Aprender para Prevenir (CEMADEN) and Civil Defense in the Community suffer from limited reach and low effectiveness. Recently, the Rio Grande do Sul State Civil Defense implemented a new multi-channel alert system to enhance communication with residents in at-risk areas¹⁰.

In the absence of robust state action, civil society has developed notable responses. Initiatives like Observador do Dilúvio demonstrate the capacity for grassroots organization, providing detailed flood mapping and coordinating solidarity networks. However, many of these actions operate without formal institutional support, highlighting a disconnection between the state and civil society that perpetuates reactive responses over systemic prevention¹¹.

⁸ Brazil. Ministry of Regional Development, *National Risk and Disaster Management Plan (2022–2030)*, (Government of Brazil, 2022).

⁹ Tribunal de Contas do Estado do Rio Grande do Sul (TCE-RS), *Porto Alegre Urban Drainage Master Plan Assessment* (TCE-RS, 2023).

¹⁰ Felipe Faleiro, “Defesa Civil Estadual inaugura novo sistema de avisos e alertas; o que muda, como receber e o que fazer caso receba”, *Correio do Povo*, 6 de maio de 2025, <https://www.correiodopovo.com.br/not%C3%ADcias/cidades/defesa-civil-estadual-inaugura-novo-sistema-de-avisos-e-alertas-o-que-muda-como-receber-e-o-que-fazer-caso-receba-1.1605673>.

¹¹ Pacto Alegre, “Estudo sobre inundações no RS revela impactos e recomendações futuras”, *Pacto Alegre*, 22 de julho de 2024, <https://pactoalegre.poa.br/estudo-sobre-inundacoes-no-rs-revela-impactos/>.

In stark contrast, the Czech Republic has developed, particularly after the catastrophic 2002 floods, an exemplary risk management model based on three pillars: integrated strategic planning, preventive education, and structured community engagement.

The Czech Republic's flood protection strategy encompasses clear guidelines, permanent financing mechanisms, and efficient inter-institutional coordination¹². In Prague, this system is reflected in advanced technical solutions: mobile barriers along the Vltava River that can be assembled within 48 hours, real-time hydrological monitoring systems, and automated evacuation protocols. This infrastructure proved its effectiveness during the 2013 and 2020 flood events, when damages were reduced by 90% compared to 2002¹³.

The educational dimension is given particular attention. Since 2011, risk management content has been integrated into the basic school curriculum, preparing new generations to act preventively. For adults, digital training programs, such as Massive Open Online Courses (MOOCs), have been developed to provide education on individual and collective protection measures¹⁴.

Community participation is institutionalized through initiatives such as River Watchers and Resilient Neighborhoods, which train volunteers and local leaders to serve as knowledge multipliers and first responders in emergencies. However, studies indicate that less than half of residents in flood-prone areas have adopted private mitigation measures, highlighting the need for enhanced community engagement and support¹⁵.

This contrast between Brazil and the Czech Republic clearly illustrates Charles Handy's concepts regarding change curves. While the Czechs have successfully transitioned to the Second Curve—embracing innovative, anticipatory, and participatory approaches—Brazil remains locked in the First Curve, persisting with fragmented, emergency-driven responses.

The Czech Republic has allocated approximately 3% of its GDP between 2021 and 2026 to its Resilience and Recovery Plan, focusing on climate resilience and disaster

¹² European Investment Bank, “Prevenção de inundações”, *European Investment Bank*, 2 de maio de 2002, <https://www.eib.org/en/projects/all/20010706>.

¹³ Czech Hydrometeorological Institute, *Flood Early Warning Systems: 2023 Data*, (CHMI, 2023).

¹⁴ Leon JM Rothkrantz e Siska Fitriane, “Conscientização e educação pública sobre desastres de inundações”, em *Gestão de Crises - Teoria e Prática*, ed. por K. Holla, M. Titko e J. Ristvej (IntechOpen, 2018), <https://www.intechopen.com/chapters/59739>.

¹⁵ Ivan Andráško et al., “Certamente voltará... Avaliação da ameaça de inundações, estratégias de mitigação e motivação para proteção em comunidades checas ameaçadas por inundações”, *Relatórios Geográficos de Morávia*, 28, ed. 3 (2020): 170–86, <https://doi.org/10.2478/mgr-2020-0013>.

preparedness¹⁶. In contrast, a 2022 study revealed that 72% of Brazilian municipalities lack dedicated budgets for disaster prevention, with 94% of funding allocated post-disaster¹⁷.

The Czech experience also demonstrates Peter Drucker's management principles¹⁸ in practice. Management by objectives—a core concept in Drucker's work—is evident in Czech public policies, which include clear and measurable goals, such as the ongoing enhancement of flood protection measures in Prague's historic center¹⁹. In Brazil, the absence of decentralization and consistent performance indicators hampers progress: 59.8% of municipalities lack specialized technical teams for urban land regularization, a key component in risk management²⁰.

As Drucker aptly warned: “There is nothing so useless as doing efficiently what should not be done at all.” The Brazilian case tragically exemplifies this paradox. While billions are spent annually on emergency responses, preventive investments—estimated by the World Bank²¹ to be seven times more cost-effective—remain neglected.

Breaking this vicious cycle requires more than incremental adjustments. It demands for a deep transformation in public management culture, involving the adoption of results-based models, institutional innovation, and genuine community engagement—essential pillars for Brazil's long-overdue transition to the Second Curve.

4. Social Impact and Resilience: Vulnerabilities and Coping Strategies

The recurring floods that devastate Brazilian territory reveal a harsh reality: natural disasters do not affect all groups equally. A 2024 Datafolha survey indicates that 47% of families earning up to two minimum wages reported economic damages during the historic floods in Rio Grande do Sul, compared to 13% among those earning five to ten minimum

¹⁶ International Monetary Fund. Department European, “República Tcheca: Consulta do Artigo IV de 2023 - Comunicado à Imprensa; Relatório da Equipe; e Declaração do Diretor Executivo para a República Tcheca”, *Relatórios de País da Equipe do FMI* 2024, 028 (2024), <https://doi.org/10.5089/9798400263705.002>.

¹⁷ Edgar Maciel, “Brasil enfrenta grande aumento de desastres climáticos em meio a financiamento insuficiente para prevenção”, *Development Aid*, 8 de abril de 2025, <https://www.developmentaid.org/news-stream/post/193539/brazil-faces-surge-in-climate-disasters>.

¹⁸ Peter Drucker, *Management: Tasks, Responsibilities, Practices*, (Harper & Row, 1973).

¹⁹ Prague Daily News, “Praga reforça proteção contra enchentes no centro da cidade”, *Prague Daily News*, 8 de abril de 2025, <https://www.praguedaily.news/2025/04/08/prague-enhances-flood-protection-in-the-city-centre/>.

²⁰ Confederação Nacional de Municípios, “Pesquisa CNM: 1.863 Municípios declaram falta de equipe técnica para a Regularização Fundiária Urbana”, *Agência CNM de Notícias*, 17 de abril de 2023, <https://cnm.org.br/comunicacao/noticias/pesquisa-cnm-1-863-municipios-declaram-falta-de-equipe-tecnica-para-a-regularizacao-fundiaria-urbana>.

²¹ World Bank, *The Economics of Disaster Risk Reduction*. World Bank Group, 2021.

wages²². In these already vulnerable territories, the invading water does not merely destroy walls and furniture—it corrodes the social fabric, disrupts individual life trajectories, and deepens cycles of poverty.

The disproportionate impact on women requires special attention. Representing 63% of the homeless population in disaster scenarios, women endure an invisible overload during and after the floods. In improvised shelters, they assume family management responsibilities under precarious conditions, with little privacy and minimal institutional support²³. Studies indicate that women experience prolonged physical and emotional exhaustion during and after floods, stemming from increased responsibilities and limited institutional support²⁴. Children, on the other hand, face educational interruptions lasting weeks, often leading to significant learning loss and, in many cases, school dropout.

Psychological damage reveals yet another dimension of this tragedy. Research conducted by Fiocruz indicates that 68% of survivors develop anxiety disorders, while 43% suffer from clinical depression²⁵. Collective trauma intersects with material impoverishment: families affected by floods may lose up to 58% of their monthly income in the months following the disaster²⁶. Informal small businesses—many of them led by women—can take years to recover, if they recover at all.

Considering this scenario, it becomes evident that effective flood response in Brazil requires far more than the emergency distribution of food parcels and mattresses. What is needed are integrated public policies that simultaneously address the reconstruction of safe housing, continuous psychosocial support, and the protection of local economic activities. However, the prevailing model remains fragmented and reactive, addressing symptoms without confronting structural causes²⁷.

In contrast, the Czech Republic has implemented a transformative approach following the devastating floods of 2002. The country developed a community resilience system that

²² Folha de São Paulo, “Inundações no Rio Grande do Sul atingem mais duramente os mais pobres, negros e menos escolarizados”, *Folha de São Paulo (versão em inglês)*, 1 de julho de 2024, <https://www1.folha.uol.com.br/internacional/en/business/2024/07/floods-in-rio-grande-do-sul-hit-the-poorer-black-and-less-educated-harder.shtml>.

²³ Fiocruz (Oswaldo Cruz Foundation), *Mental Health in Disaster Situations* (Fiocruz Press, 2023).

²⁴ Maria de Lourdes de Carvalho Fragoso, Vitória Régia Fernandes Gehlen e Tarcísio Augusto Alves da Silva, “A Condição das Mulheres Diante das Situações de Desastres Naturais (The Women Condition Facing Situations of Natural Disaster)”, *Revista Brasileira de Geografia Física* 5, nº 3 (2012), <https://periodicos.ufpe.br/revistas/rbgfe/article/view/232839/0>.

²⁵ Fiocruz (Oswaldo Cruz Foundation), *Mental Health in Disaster Situations* (Fiocruz Press, 2023).

²⁶ Institute for Applied Economic Research (IPEA), *Economic Impact of Floods in Brazil* (IPEA, 2023).

²⁷ Institute for Applied Economic Research (IPEA), *Economic Impact of Floods in Brazil* (IPEA, 2023).

combines strategic planning, accessible technology, and popular participation. Initiatives include training residents to act as first responders and organizing regular drills and evacuation route mapping tailored to the specific realities of each territory²⁸.

Technology serves as an ally in this process—never as a substitute for human engagement. The Záchranka app provides real-time alerts and safety instructions during emergencies, enhancing community communication and preparedness. Such systems have enabled timely evacuations and improved responses to flood risks in regions like Central Bohemia—a scenario that remains challenging in the Brazilian context²⁹.

Education plays a central role in this culture of prevention. Since 1999, civil defense topics have been incorporated into the Czech school curriculum, with updates in 2003 mandating six lessons per year on human protection in emergencies across all education levels³⁰. Economic incentives, such as insurance discounts for adapted properties, complement this multifaceted approach.

The comparison between these two models highlights the urgent need for Brazil to transition to what Charles Handy has termed the “Second Curve.” While the Czech Republic anticipated chaos through integrated planning and community empowerment, Brazil remains trapped on the “First Curve”—reacting belatedly to each tragedy as though it were the first³¹.

Stoic philosophy offers a valuable ethical framework for this necessary transformation. Its teachings on focusing on what we can control—preparation, public policy, community strengthening—while serenely accepting what lies beyond our control—such as extreme weather events—are reflected in the Czech approach. Amor fati, or loving acceptance of fate, does not imply resignation, but rather strategic action within the scope of our possibilities³².

True resilience, as demonstrated by the Czech experience, is built at the intersection of robust public policies, citizen engagement, technological adaptation, and social justice. It

²⁸ Eliška Polcarová and Jana Pupíková, “Building Community Resilience in the Czech Legislation,” in *Trends and Future Directions in Security and Emergency Management*, ed. Irena Tušer and Šárka Hošková-Mayerová, vol. 257 (Cham: Springer, 2022), 97–109, https://doi.org/10.1007/978-3-030-88907-4_6.

²⁹ Záchranka, “Alertas de emergência”, *Záchranka App*, 2024, <https://www.zachrankaapp.cz/en/emergency-alerts>.

³⁰ Eva Maradová e Jaroslava Hanušová, “Prontidão dos futuros professores à prevenção e proteção em emergência”, *Escola e Saúde* 21, 2009, https://www.academia.edu/104428703/Readiness_of_the_Future_Teachers_to_Prevention_and_Protection_in_Emergency.

³¹ Charles Handy, *The Second Curve: Thoughts on Reinventing Society* (Random House, 2015).

³² Marcus Aurelius, *Meditations*, Trans. by Gregory Hays (Modern Library, 2006).

requires continuous investment—recently exceeding 1.4% of GDP in response to severe flooding—alongside institutionalized community participation and the integration of traditional knowledge with scientific expertise³³.

Brazil possesses all the necessary elements to make this transition. What is lacking is the political and collective will to transform the recurring pain of floods into a drive for structural change—before the next crisis finds us as unprepared as the last. As the Czech example illustrates, the difference between tragedy and resilience lies not in the magnitude of the water, but in the quality of our collective response.

5. Conclusion: Towards the Second Curve – A Necessary Transformation

The comparative journey between Brazil’s and the Czech Republic’s responses to climate-related disasters reveals more than operational differences—it exposes profound contrasts in how societies confront crises. While Brazil remains entrenched in the exhausting cycle of the First Curve, reacting to each tragedy as though it were unforeseeable, the Czech experience clearly demonstrates the benefits of the Second Curve: lives saved, resources preserved, and communities strengthened³⁴.

My personal experience during the floods in Porto Alegre marked a pivotal moment. Witnessing the vast disorganization in Brazil and, later, studying the structured Czech model, I came to understand that climate justice transcends technical measures—it is, above all, a matter of political will and social organization. The Czech Republic does not possess significantly greater resources than Brazil; what it has is a clear vision of the future and the discipline to implement it.

The path to the Second Curve requires overcoming three fundamental obstacles. First, the addiction to immediacy, which prioritizes photo opportunities in temporary shelters over invisible preventive infrastructure. Second, the trap of centralism, which overlooks local knowledge and community capacities. Third, the weight of fatalism, which naturalizes tragedy as the inevitable fate of impoverished populations.

³³ Fitch Solutions, “Recuperação das inundações pode impulsionar o crescimento na Europa Central”, *BMI*, 23 de setembro de 2024, <https://www.fitchsolutions.com/bmi/esg-country/recovery-floods-could-boost-growth-central-europe-23-09-2024>.

³⁴ Charles Handy, *The Second Curve: Thoughts on Reinventing Society*, (Random House, 2015).

As a student of International Relations, I see my role as a bridge between technical knowledge and political action, between scientific warnings and effective public policy. The Czech example shows us that solutions exist, but they demand the courage to break with entrenched practices. It is not a matter of importing ready-made models, but of adapting their principles to our context—transforming at-risk zones into multifunctional parks, converting problematic waterways into solutions, and integrating disaster preparedness into everyday education³⁵.

The decisive moment is now. Each day of procrastination deepens our entrenchment in the First Curve, increasing the human and economic costs of an inevitable transition. Stoic philosophy teaches us to distinguish between what we cannot control—such as the intensity of rainfall—and where we can and must act: in preparation, planning, and the construction of resilient institutions³⁶.

The choices we make in this decade will define our legacy: whether we maintained systems of inequality and vulnerability or acted decisively to reshape them. The Second Curve offers not an idealized model, but an urgent alternative to prevailing development trajectories. Realizing this transition depends on collaborative efforts across sectors—universities translating research into practice, municipalities strengthening adaptive infrastructure, civil society mobilizing vulnerable communities, and the private sector redirecting capital toward sustainable innovation. At this critical juncture, Brazil must decide whether to remain bound to the inertia of the First Curve or to pursue the transition pathways demonstrated by countries like the Czech Republic.

References

Andráško, Ivan et al. “Certamente voltará... Avaliação da ameaça de inundações, estratégias de mitigação e motivação para proteção em comunidades checas ameaçadas por inundações”. *Relatórios Geográficos de Morávia* 28, ed. 3 (2020): 170–86. <https://doi.org/10.2478/mgr-2020-0013>.

Aurelius, Marcus. *Meditations*. Translated by Gregory Hays. Modern Library, 2006.

Brazil. Ministry of Regional Development. *National Risk and Disaster Management Plan (2022–2030)*. Government of Brazil, 2022.

City of Prague. *Flood Protection System Annual Report*. Municipal Office, 2021.

³⁵ Eva Kasparová and Jana Nováková, *Community Resilience in the Czech Republic*, (Charles University Press, 2020).

³⁶ Seneca, *Letters from a Stoic*, Trans by Robin Campbell, (Penguin Classics, 2009).

Confederação Nacional de Municípios. “Pesquisa CNM: 1.863 Municípios declaram falta de equipe técnica para a Regularização Fundiária Urbana”. *Agência CNM de Notícias*, 17 de abril de 2023. <https://cnm.org.br/comunicacao/noticias/pesquisa-cnm-1-863-municipios-declaram-falta-de-equipe-tecnica-para-a-regularizacao-fundiaria-urbana>.

Czech Hydrometeorological Institute. *Flood Early Warning Systems: 2023 Data*. CHMI, 2023.

Drucker, Peter. *Management: Tasks, Responsibilities, Practices*. Harper & Row, 1973.

European Investment Bank. “Prevenção de inundações”. *European Investment Bank*, 2 de maio de 2002. <https://www.eib.org/en/projects/all/20010706>.

Faleiro, Felipe. “Defesa Civil Estadual inaugura novo sistema de avisos e alertas; o que muda, como receber e o que fazer caso receba”, *Correio do Povo*, 6 de maio de 2025. <https://www.correiodopovo.com.br/not%C3%ADcias/cidades/defesa-civil-estadual-inaugura-novo-sistema-de-avisos-e-alertas-o-que-muda-como-receber-e-o-que-fazer-caso-receba-1.1605673>.

FIOCRUZ (Oswaldo Cruz Foundation). *Mental Health in Disaster Situations*. Fiocruz Press, 2023.

Fitch Solutions. “Recuperação das inundações pode impulsionar o crescimento na Europa Central”. *BMI*, 23 de setembro de 2024. <https://www.fitchsolutions.com/bmi/esg-country/recovery-floods-could-boost-growth-central-europe-23-09-2024>.

Folha de São Paulo. “Inundações no Rio Grande do Sul atingem mais duramente os mais pobres, negros e menos escolarizados”. *Folha de São Paulo (versão em inglês)*, 1 de julho de 2024.

<https://www1.folha.uol.com.br/internacional/en/business/2024/07/floods-in-rio-grande-do-sul-hit-the-poorer-black-and-less-educated-harder.shtml>.

Fragoso, Maria de Lourdes de Carvalho, Vitória Régia Fernandes Gehlen e Tarcísio Augusto Alves da Silva. “A Condição das Mulheres Diante das Situações de Desastres Naturais (The Women Condition Facing Situations of Natural Disaster)”, *Revista Brasileira de Geografia Física* 5, nº 3 (2012): 473-87. <https://periodicos.ufpe.br/revistas/rbgfe/article/view/232839/0>.

Handy, Charles. *The Second Curve: Thoughts on Reinventing Society*. Random House, 2015.

International Monetary Fund. Departament European. “República Tcheca: Consulta do Artigo IV de 2023 - Comunicado à Imprensa; Relatório da Equipe; e Declaração do Diretor Executivo para a República Tcheca”. *Relatórios de País da Equipe do FMI* 028 (2024). <https://doi.org/10.5089/9798400263705.002>.

Institute for Applied Economic Research (IPEA). *Economic Impact of Floods in Brazil*. IPEA, 2023.

Kasparová, Eva e Jana Nováková. *Community Resilience in the Czech Republic*. Charles University Press, 2020.

Maciel, Edgar. “Brasil enfrenta grande aumento de desastres climáticos em meio a financiamento insuficiente para prevenção”. *Development Aid*, 8 de abril de 2025. <https://www.developmentaid.org/news-stream/post/193539/brazil-faces-surge-in-climate-disasters>.

Maradová, Eva e Jaroslava Hanušová. “Prontidão dos futuros professores à prevenção e proteção em emergência”. *Escola e Saúde* 21 (2009): 227-37. https://www.academia.edu/104428703/Readiness_of_the_Future_Teachers_to_Prevention_and_Protection_in_Emergency.

Municipal Department of Water and Sewage (DMAE). *Arroio Dilúvio Drainage Capacity Report*. DMAE, 2021.

Pacto Alegre. “Estudo sobre inundações no RS revela impactos e recomendações futuras”. *Pacto Alegre*, 22 de julho de 2024. <https://pactoalegre.poa.br/estudo-sobre-inundacoes-no-rs-revela-impactos/>.

Polcarová, Eliška, and Jana Pupíková. “Building Community Resilience in the Czech Legislation.” *In Trends and Future Directions in Security and Emergency Management*, edited by Irena Tušer and Šárka Hošková-Mayerová, 257:97–109. Cham: Springer, 2022. https://doi.org/10.1007/978-3-030-88907-4_6.

Prague Daily News. “Praga reforça proteção contra enchentes no centro da cidade”. *Prague Daily News*, 8 de abril de 2025. <https://www.pragedaily.news/2025/04/08/prague-enhances-flood-protection-in-the-city-center/>.

Rothkrantz, Leon JM e Siska Fitrianie. “Conscientização e educação pública sobre desastres de inundações”. Em *Gestão de Crises - Teoria e Prática*, editado por K. Holla, M. Titko e J. Ristvej. IntechOpen, 2018. <https://www.intechopen.com/chapters/59739>.

SENECA. *Letters from a Stoic*. Translated by Robin Campbell. Penguin Classics, 2009.

Tribunal de Contas do Estado do Rio Grande do Sul (TCE-RS). *Porto Alegre Urban Drainage Master Plan Assessment*. TCE-RS, 2023.

Viapiana, Tabata. “Danos por enchentes no sul do Brasil estimados em US\$2,2 bilhões, agronegócio fortemente afetado”. *Brazil Reports*, 11 de junho de 2024. <https://www.brazilreports.com/flood-damage-in-southern-brazil-estimated-at-usd-2-2-billion-agribusiness-heavily-affected/6230/>.

World Bank. *The Economics of Disaster Risk Reduction*. World Bank Group, 2021.

Záchranka. “Alertas de emergência”. *Záchranka App*, 2024. <https://www.zachrankaapp.cz/en/emergency-alerts>.