POLICY REPORT · REFORM PROPOSAL

The Regenerative Municipality

How municipalities can free up capacity without weakening legal safeguards, working conditions, or trust

REFORM PROPOSAL FOR KL — LOCAL GOVERNMENT DENMARK

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English translation of the Danish report *Den Regenerative Kommune*.

Editorial Note

This report is a public Green Papers policy report. It translates the methodological line developed in *Municipal Work as Nature*, *The Correction Loop*, *Penguin Dashboard*, *Regenerative Reciprocity*, and *Eve & Adam, and the Penguins* into a concrete Danish reform proposal addressed to KL and the municipal sector. [K17] [K20] [K21] [K22]

AI disclosure: The report has been developed and edited in dialogue with AI language systems under the Sophia Lumen Protocol. Lars A. Engberg has curated and edited the text and bears responsibility for the report's substantive claims, omissions, interpretations, and recommendations.

The report is not a peer-reviewed article and does not present validated effect measurements. The economic calculations are model-based sensitivity examples. Its purpose is to define a testable reform architecture for Danish municipalities: friction economics, G1/G2/G3 gain discipline, digital repair architecture, AI guardrails, precise democratic sensing, and a 12-month pilot track.

Source basis: See Appendix D for source basis and source keys.

Executive Summary

The Danish welfare state does not only face a financing problem. It also faces a capacity problem. Municipalities spend significant resources on friction: rework, handover losses, unclear letters, complaints, meetings without decisions, digital system inertia, legal defensiveness, sickness absence, and weak connections between lived experience, political prioritisation, and actual operations.

This report does not propose a new total model for municipal governance. It proposes a bounded methodological and pilot track through which KL and a smaller number of municipalities can test whether concrete friction items can be measured, reduced, and converted into better capacity without harvesting gains prematurely.

The report proposes that KL make friction a municipal economic category — and test how tied-up capacity can be freed without weakening legal safeguards, working conditions, citizens' access to help, or the local ecological foundation.

The report proposes a municipal reform track for KL under the title **The Regenerative Municipality**.

The report's three tracks — friction economics, digital legal safeguards, and regenerative capacity governance — are not three separate reforms. They are three sides of the same problem: municipalities lack methods for seeing where capacity is tied up, where responsibility becomes unclear, and where people, relationships, and ecological foundations are consumed without appearing clearly in the budget.

A regenerative municipality is a municipality that systematically measures, protects, and rebuilds the capacities on which its welfare provision, democracy, and local ecological foundation depend. The term "regenerative" is not used here as branding, but as a governance concept: a municipality is regenerative to the extent that it rebuilds the capacities it depends on.

In a municipal context, regenerative therefore does not mean "green profile" or "new value narrative". It means that the municipality measures and governs according to whether operations, digitalisation, economics, and political decisions rebuild or erode the capacity on which future welfare depends.

The report's central thesis is:

> *The regenerative municipality does not improve its economy by squeezing more output out of the same people. It improves its economy by identifying, reducing, and reinvesting the capacity that is currently tied up in friction, ambiguity, control, rework, escalation, and ecological neglect.*

The reform track is built on four moves:

1. **Friction economics** — a method for identifying, calculating, and reducing hidden capacity costs in municipal operations.
2. **G1/G2/G3 accounting** — a responsible gain logic that distinguishes between freed-up capacity, avoided costs, and political robustness.
3. **Digital repair architecture** — AI and data may be used to make the system's friction and responsibility visible, not for hidden scoring or profiling of citizens.
4. **Precise democratic sensing** — citizens', employees', and local actors' concrete experiences must be able to enter political and administrative learning without being reduced to anecdotes or misused as control. In Spiralweb terminology, this may be called pixel-precise democratic intelligence.

This is not a proposal for a new large IT system. It is a proposal for a municipal reform programme that can begin pragmatically: 90-day pilots, existing data, clear guardrails, a small number of indicators, and a limited number of municipalities.

The report also contains a concrete 90-day pilot format showing how municipalities can test friction economics in one field of work without major IT procurement or a new governance regime.

The report recommends five decisions. They are formulated as a low-risk entry point: they do not commit KL or the municipalities to a new permanent governance regime, but open an empirical, time-limited test track.

KL is recommended to:

1. recognise friction as a municipal capacity-economic category,
2. establish a 12-month Friction Economics Laboratory,
3. select 5–10 municipalities for pilot testing,
4. adopt temporary municipal AI guardrails for pilot processes,
5. publish the first Municipal Friction Report within 12 months.

The report's economic point is sober: if only 0.25% of the total municipal service economy can be freed as gross capacity, this corresponds nationally to approximately DKK 811 million annually. The calculation is based on the Danish Ministry of Finance's statement of municipalities' budgeted service expenditure for 2025 at DKK 324.3 billion. [K1] This is not the same as cash savings. It is a mix of capacity, avoided costs, and robustness.

Therefore, friction gains must never be booked directly as savings without first being distributed across G1, G2, and G3. Otherwise the reform repeats the extractive logic it was meant to correct.

The report's digital point is equally sober: the digital welfare state already exists. The question is not whether municipalities should use AI. The question is whether AI should be developed as a control architecture or a repair architecture. Municipal AI should never independently make significant decisions about citizens or deliver unchallengeable assessments with legal or materially significant practical effect. Nor may AI score or profile citizens without individual, human, reasoned, and challengeable assessment.

AI can, however, be used for textual clarity, pattern recognition, friction analysis, and learning under clear legal and democratic frameworks.

The report's political point is that representative democracy should not be replaced. It should be given better sensory organs. The task of politicians becomes to translate visible complexity into legitimate prioritisation — and to protect the decision architecture in which citizens, employees, AI systems, administrations, and political bodies each have their proper role.

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1. Front Door: What the Report Asks KL to Do

This report does not ask KL to endorse a complete paradigm shift from day one. It asks KL to open a low-risk, empirical reform track.

1.0 Briefing: The Proposal in Brief

Problem: Municipalities do not only face a financing problem. They also face a capacity problem. Significant capacity is tied up in friction: rework, handover losses, unclear letters, complaints, meetings without decisions, digital system inertia, and legal defensiveness.

Proposal: KL establishes a 12-month Friction Economics Laboratory in which 5–10 municipalities test whether friction can be measured and reduced without weakening legal safeguards, working conditions, trust, or citizens' access to help.

Economic logic: Friction gains should not automatically be booked as savings. They should be distributed across G1, G2, and G3: freed-up capacity, avoided costs, and political robustness.

Digital logic: AI must not be used as a hidden control or scoring architecture. AI can be used as repair architecture: textual clarity, pattern recognition, friction analysis, and learning under human responsibility.

First yes: KL only needs to say yes to a bounded methodological and pilot track. Not to a new permanent governance regime.

Why now: Municipalities face economic pressure, growing digitalisation, legal-safeguard debates, and increasing expectations concerning AI at the same time. If KL does not establish a shared municipal framework, development risks becoming fragmented, vendor-driven, and uneven across municipalities.

1.0.1 The First Yes

The first yes requested by the report is not a yes to a new permanent governance regime. It is a yes to examine three questions empirically:

1. Where is municipal capacity currently tied up in unnecessary friction?
2. Which friction items can be reduced without weakening legal safeguards, working conditions, or trust?
3. How can gains be distributed responsibly between capacity, avoided costs, and political robustness?

If the answer after 12 months is weak, the track can be stopped. If the answer is strong, KL will have a new basis for municipal reform, digital legal safeguards, and economic negotiations with central government.

The report can form the basis for dialogue with KL, a shorter briefing note, and subsequent pilot clarification.

1.1 Five Concrete Decisions

KL is then invited to decide on the following five points:

Decision	Purpose	Time horizon
1. Recognise friction as a municipal capacity category	Make hidden capacity costs governable	0–3 months
2. Establish a Friction Economics Laboratory	Gather method, pilots, and learning	3–6 months
3. Select 5–10 pilot municipalities	Test in realistic operations	6–12 months
4. Adopt temporary AI guardrails	Protect legal safeguards and trust	Before pilot start
5. Publish the first Municipal Friction Report	Document learning, figures, and rights status	Within 12 months

1.2 First Low-Risk Step

KL can begin without major IT procurement, without a central reform package, and without committing municipalities to a new permanent governance regime.

A first step could be:

1. Set up a small working group on friction economics.
2. Choose three existing municipal problem fields.
3. Create a shared definition of G1/G2/G3.
4. Test one 90-day pilot without major new IT procurement.
5. Publish a short learning note.
6. Then decide whether the programme should be expanded.

MONDAY MORNING

KL can begin without establishing a new governance regime. A first practical step could be:

1. Appoint one internal lead for friction economics.
2. Invite 5–10 municipalities to an exploratory workshop.
3. Select three test fields: repeat contacts, handovers, and letters/next steps.
4. Adopt temporary AI guardrails for the pilot phase.
5. Decide the format for the first learning note after 90 days.

1.3 Three Levels of Ambition

The report distinguishes between three levels of ambition.

Level	Content	What KL needs to say yes to
Level 1 — Minimum	G1/G2/G3, 90-day pilot, clearer letters, fewer repeat contacts, no independent AI decisions with legal or materially significant practical effect, right to stop	A practical friction experiment
Level 2 — Extended	Dashboard, critical-friend panel, citizen observations under protocol, AI system register, annual friction report	A municipal learning programme
Level 3 — Transformative	13×13 democratic sensing, municipal capacity balance, ecological commons accounts, digital legal-safeguards package	A new municipal reform architecture

KL can begin at Level 1 without having to buy the whole of Level 3. This is crucial for implementability.

1.4 What the Report Does Not Claim

To avoid misunderstandings, three boundaries are specified:

1. The report does not claim that friction economics replaces the need for sufficient financing.
2. The report does not claim that AI can or should make municipal administrative decisions.
3. The report does not claim that citizens' precise experiences replace representative political responsibility.

Rather, the report claims that municipalities lack a shared language and a shared method for identifying, testing, and reducing hidden capacity binding — without weakening legal safeguards, working conditions, trust, or the ecological foundation.

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2. The Diagnosis: Municipalities Have a Capacity Crisis

Municipalities are the concrete surface of the welfare state.

It is in the municipality that the state meets the child's schooling, the older person's body, the unemployed person's self-respect, the family's crisis, the young person's distress, the water on the road, the employee's judgement, the citizen's anger, and the local politician's responsibility.

The municipality is therefore not merely an administrative unit. It is where society's abstract decisions become lived practice.

When the Danish Parliament adopts reforms, when ministries issue guidance, when economic agreements set frameworks, when digitalisation is introduced, and when new documentation requirements arise, it lands in the municipality as operations, meetings, letters, tasks, forms, cases, shifts in responsibility, citizen contact, and time consumption.

It is therefore not sufficient to describe the situation of municipalities as "financial pressure". It is more precise to say that municipalities stand in a cross-pressure between life, law, economy, expectation, and capacity.

This cross-pressure is not a rhetorical claim. It is an operating condition.

The capacity crisis is not only organisational. It is also physical and ecological. When rainwater, local heat stress and heat-island effects, green areas, biodiversity, and local operations are not linked early enough, municipal friction arises in the form of damage, acute expenditure, citizen complaints, and lost local robustness.

2.1 Where Friction Actually Lives

Municipal friction rarely lives in one place. It lives in the transitions:

— between citizen and public authority,
— between frontline and management,
— between administrations,
— between professional judgement and law,
— between political intention and administrative practice,
— between digital system and human judgement,
— between budget year and long-term consequences,
— between local experience and central decision.

Friction appears as:

— repeat contacts,
— rework,
— meetings without decisions,
— handover losses,
— unclear letters,
— complaints,
— escalations,
— sickness absence,
— turnover,
— citizen fatigue,
— political firefighting.

Municipal reform must therefore begin where the pressure can actually be felt:

— in the handover between two departments,
— in the letter the citizen does not understand,
— in the meeting that does not make a decision,
— in the employee who becomes the buffer for the system's ambiguity,
— in relatives who have to coordinate on behalf of elder care,
— in the child who moves between agencies without anyone holding the whole,
— in the soil, water, and local nature that do not have a budget line until the damage has already happened,
— in the politician who must take responsibility on the basis of data that are too slow, too coarse, or too defensive.

2.2 From Welfare as Service to Welfare as Capacity

The classical welfare state is often understood through services:

— number of home-care hours,
— number of daycare places,
— number of cases,
— number of conversations,
— number of administrative decisions,
— number of activation programmes,
— number of teaching hours,
— number of treatment pathways.

These figures are necessary. But they are insufficient.

A service can have been delivered and still be part of a red field. A conversation can have taken place and still have increased the citizen's mistrust. A letter can be legally correct and still be practically incomprehensible. An IT system can have been implemented and still have increased friction. A budget can have been respected while also consuming the human capacity meant to carry next year's operations.

Therefore welfare must also be understood as capacity:

— capacity to understand,
— capacity to act,
— capacity to receive help,
— capacity to exercise judgement,
— capacity to cooperate,
— capacity to correct errors,
— capacity to hold relationships,
— capacity to protect the ecological foundation,
— capacity to preserve democratic trust.

A welfare state that produces services while eroding capacity is not productive in any durable sense. It consumes its own foundation.

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3. Earlier Coordination Research: The Horizontal Pillar as Prior Work

This chapter is included not as self-referential background, but because the problem identified in the horizontal pillar — that horizontal interventions are often carried by vertical budgets, sector responsibilities, and hidden coordination costs — remains a central municipal reform problem.

The reform track proposed in this report does not arise from nowhere.

Already in the SBi report *The Horizontal Pillar: A Strategic Development Perspective for Coordinating Area-Based Initiatives in the City of Copenhagen*, a central municipal problem became clear: area-based and holistic interventions require coordination across sectors, but municipal organisation, economics, and responsibility are often structured vertically. [K18]

The Horizontal Pillar pointed to the need for:

— better overview,
— better coherence between local initiatives,
— stronger cross-sectoral cooperation practice,
— clearer synergy between area-based initiatives and the administrations' operations,
— shared data and knowledge exchange,
— strategic templates,
— shared agreements,
— more qualified political dialogue with citizens and residential areas.

In the language of 2008, the problem was a coordination and governance problem. In the language of this report, it is also a friction-economic problem.

3.1 The Hidden Price of Horizontal Coordination

Holistic interventions often create value, but they also create derived resource requirements:

— additional coordination,
— additional meetings,
— additional negotiation,
— additional data work,
— additional management attention,
— additional boundary work between sector logics.

When these requirements are not accounted for as part of the intervention's real economy, a classic friction error occurs: the project appears inexpensive while operations carry the hidden costs.

This is a central lesson for KL:

> *Municipal innovation must not be financed by hiding coordination costs in operations.*

If municipalities are to work regeneratively, they must be able to see both the direct costs of an intervention and its derived friction economics.

3.2 From Horizontal Pillar to Regenerative Municipality

The Horizontal Pillar attempted to connect:

> *project ↔ area ↔ municipality*

The regenerative municipality expands the connection:

> *field ↔ citizen ↔ employee ↔ data ↔ dashboard ↔ political prioritisation ↔ responsibility track ↔ social and ecological learning*

The mechanism is the same:

> *Make local experiences legible, connected, and decision-relevant without destroying their local embeddedness.*

What is new is that AI-supported pattern recognition, digital dashboards, responsibility tracks, and citizens' precise observations now make it possible to work with this connection at a different scale.

3.3 Methodological Lineage: From Green Economics to Friction Economics

The regenerative municipality stands in a longer Danish and international methodological history.

In the late 1980s, Andelsselskabet EVA raised the question of the relationship between money and life as a critical friend to ADAM, the Danish Ministry of Finance's macroeconomic model. [K14] The question was not merely whether the environment could be priced. The question was whether economic models and public accounts could see the life conditions on which they themselves depended.

Jesper Jespersen's formulation about "putting a price on skylark song" captures this double problem precisely. The broader green-economic line is unfolded in Jespersen and Brendstrup's introduction to green economics. [K15] [K16] Society must be able to value nature, life, trust, and relational capacity without reducing them to simple market prices. If they are not made institutionally visible, they disappear from decisions. If they are priced too narrowly, they are reduced to commodities.

This report brings that methodological problem into municipal operations. The question is not only how municipalities can save money. The question is how municipalities can see the capacities that do not appear clearly in the budget, but on which welfare actually depends: employees' judgement, citizens' understanding, local community trust, the robustness of the ecological foundation, and the system's ability to correct its own errors.

Methodologically, friction economics is therefore, in this report's interpretation, a continuation of green economics, bottom-up methodology, and metagovernance in a municipal reform context. It attempts to make hidden capacity costs visible without killing the local complexity that makes them intelligible.

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4. Friction Economics: The Hidden Municipal Budget Item

Friction is capacity tied up without creating welfare.

Friction is not the same as necessary work. Municipal work requires time, care, professional competence, legal safeguards, and documentation. Much of this is necessary. Friction arises where capacity is tied up in ambiguity, repetition, mistrust, defence, responsibility fog, or system design, without improving the situation of the citizen, the employee, democracy, or common life.

A particularly important form is relational friction: the unregistered cost of mistrust, ambiguity, and weak chains of responsibility between people, departments, systems, and institutions.

4.1 The Negative Spiral of Friction

When friction is not seen, it accelerates:

> *ambiguity → repeat contact → rework → meeting → documentation → fatigue → error → complaint → control → more ambiguity*

Or organisationally:

> *cross-pressure → responsibility fog → defensive documentation → weaker judgement → citizen frustration → employee strain → more steering → even lower trust*

This spiral is both human and economic. It ties up time, attention, relationships, and money.

When relational friction grows, the municipality spends more energy protecting itself from itself: extra documentation, parallel control, more meetings, more handovers, legal defensiveness, and escalations. This may look like responsibility, but often functions as capacity leakage.

4.2 The Positive Spiral of Friction Reduction

When friction is made visible and reduced correctly, the positive spiral can accelerate quickly:

> *clarity → fewer repeat contacts → fewer handovers → better judgement → fewer errors → less stress → more trust → better capacity → better operations*

This is the report's most important economic point:

> *Positive spirals can accelerate just as quickly as negative ones when people receive real solutions that reduce friction in practice.*

Friction economics should therefore not be understood as a savings exercise. It should be understood as a method for freeing tied-up capacity and reinvesting it in better and more robust operations.

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5. G1/G2/G3: Responsible Gain Logic

The report uses a three-part gain model. G stands for gain: G1 is freed-up capacity, G2 is avoided costs, and G3 is robustness and political room for manoeuvre. The point is that friction gains must not be translated directly into cash savings.

G1/G2/G3 is the report's economic engine.

It solves a classic reform problem: economists and politicians often want to turn all gains into cash savings, while professionals know that many gains first appear as calm, clarity, lower risk, and better operations.

Why Classic Business Cases Fail

Classic business cases often translate time savings directly into budget savings. This creates unrealistic gain requirements and can worsen operations if freed-up capacity is harvested before the field has stabilised. The G1/G2/G3 model therefore introduces a gain discipline in which capacity, avoided damage, and robustness are kept separate from cash realisation.

The most important error in public-sector efficiency programmes occurs when freed-up capacity is harvested before the system has stabilised. If 30 minutes are freed in the frontline, that does not necessarily mean that the municipality can reduce the budget by 30 minutes. It may mean that the employee can make better decisions, the citizen experiences fewer errors, complaints decrease, and the next case does not escalate. Only once this stabilisation has been documented can possible cash realisation be assessed.

The report's economic discipline is therefore:

> *Friction gains must never be booked directly as savings without first being distributed across G1, G2, and G3. Otherwise the reform repeats the extractive logic it was meant to correct.*

5.1 Gain Type 1: Freed-Up Capacity (G1)

Time, judgement, and attention are freed, but do not necessarily become cash savings.

Examples:

- fewer repeat contacts,
- fewer meetings,
- less rework,
- shorter clarification loops,
- better handover,
- more calm for the core task.

5.2 Gain Type 2: Avoided Costs (G2)

Friction is reduced before it becomes costly damage.

Examples:

- fewer complaints,
- fewer appeal cases,
- fewer escalations,
- lower sickness absence,
- lower turnover,
- fewer errors,
- less legal and managerial firefighting.

5.3 Gain Type 3: Political Room for Manoeuvre and Robustness (G3)

The municipality becomes better able to act, prioritise, and learn.

Examples:

— fewer crisis cases,
— higher trust,
— better political decision basis,
— better citizen dialogue,
— greater possibility for small pilot processes,
— less reform fatigue,
— better ability to absorb new requirements.

G3 is not a soft gain. It is the municipality's option value: the ability to act without everything immediately becoming fire, defence, or conflict.

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6. Economic Orders of Magnitude and Calculation Examples

All calculations in Chapter 6 are model calculations. They show orders of magnitude and sensitivity. They do not document realised effects. The purpose is to show that even small friction changes can be economically relevant enough to merit empirical testing.

6.1 Methodological Reservation

The calculation examples in the report are not documented effect measurements. They are illustrative sensitivity calculations showing how small friction changes need to be before they become economically relevant.

In this report, DKK 324.3 billion is used as the model figure for municipalities' budgeted service expenditure in 2025, based on the Danish Ministry of Finance's budget statement "Municipalities' and regions' budgets for 2025 have been calculated" from 17 January 2025. The same statement gives municipal capital investments of DKK 20.8 billion in 2025. [K1] The economic agreement for 2025 gives a total municipal service framework of DKK 323.6 billion plus adjustments, an increase in the starting point of DKK 3.4 billion, and an administrative reduction of DKK 242 million. [K2] KL's own account of the economic agreement similarly uses DKK 3.4 billion, DKK 323.6 billion, and DKK 242 million as key points. [K3]

Model parameters such as an internal hourly value of DKK 450, DKK 2,500 per sickness absence day, DKK 100,000 per turnover process, and DKK 2.7 billion for a model municipality are explicit model assumptions. In pilot design, they must be replaced by municipality-specific wage, overhead, sickness absence, personnel, and case data.

Municipality-specific calculations require baseline, sector delimitation, time measurement, case types, wage costs, overhead, existing quality data, legal requirements, post-measurement, and a clear distinction between capacity, avoided cost, and cash realisation.

The calculation examples should therefore not be read as savings promises. They should be read as an invitation to measure precisely.

6.2 National Service Economy

If the total municipal service economy is set at DKK 324.3 billion annually as a model figure, even small friction reductions yield significant gross values. The table is a sensitivity calculation, not an effect measurement.

Friction reduction in municipal service	Annual gross value
0.05%	approx. DKK 162 million
0.10%	approx. DKK 324 million
0.25%	approx. DKK 811 million
0.50%	approx. DKK 1.62 billion
1.00%	approx. DKK 3.24 billion

These amounts should not be read as direct savings potentials. They should be read as orders of magnitude for tied-up capacity.

A responsible gain distribution could be:

Gain type	Typical realisation
G1 — freed-up capacity	50–70%
G2 — avoided costs	20–35%
G3 — room for manoeuvre / robustness	10–20%
Direct budget reduction	often only 0–25% of the gross value, depending on sector, baseline, and stabilisation need

This means that if a municipality finds DKK 10 million in friction value, it should not immediately book DKK 10 million as savings. It should ask:

— how much must be reinvested in stabilisation?
— how much is avoided risk?
— how much can actually be freed as cash without turning the field red again?

6.3 Medium-Sized Municipality: Model Account

For a model municipality with around 50,000 citizens and approximately DKK 2.7 billion in service economy, the order of magnitude can be illustrated as follows:

Friction reduction	Annual gross value
0.05%	DKK 1.35 million
0.10%	DKK 2.7 million
0.25%	DKK 6.75 million
0.50%	DKK 13.5 million
1.00%	DKK 27 million

A 90-day pilot should not promise DKK 27 million. It should show whether concrete friction items can be documented and reduced enough for a 0.1–0.25% case to become plausible.

6.4 Repeat Contacts

Assumptions:

Parameter	Assumption
Annual citizen pathways in selected area	50,000
Average repeat contacts per pathway	1.4
Time per repeat contact	12 minutes
Internal hourly value	DKK 450
Reduction through clearer next steps	20%

Baseline:

> *50,000 × 1.4 × 12 minutes = 840,000 minutes = 14,000 hours. 14,000 hours × DKK 450 = DKK 6.3 million in tied-up capacity.*

After 20% reduction:

> *2,800 hours are freed = DKK 1.26 million in G1 capacity.*

6.5 Handovers

Assumptions:

Parameter	Assumption
Annual cases in selected pathway type	10,000
Handovers per case	2
Time loss per handover	20 minutes
Internal hourly value	DKK 450
Reduction through handover stop	25%

Baseline:

> *10,000 × 2 × 20 minutes = 400,000 minutes = 6,667 hours. 6,667 hours × DKK 450 = approx. DKK 3.0 million in tied-up capacity.*

After 25% reduction:

> *1,667 hours are freed = approx. DKK 750,000 in G1 capacity.*

The total value may be higher if handover stops also reduce repeat contacts, complaints, errors, and case extension.

6.6 Meeting Inflation

Assumptions:

Parameter	Assumption
Affected employees/managers	200
Reduced meeting time	30 minutes per week
Active weeks	40
Hourly value	DKK 450

Calculation:

> *200 × 0.5 hours × 40 = 4,000 hours. 4,000 hours × DKK 450 = DKK 1.8 million per year.*

6.7 Documentation, Letters, and Administrative Decisions

Assumptions:

Parameter	Assumption
Administrative decision / letter pathways per year	8,000
Share creating additional clarification	25%
Time per additional clarification	25 minutes
Reduction through clearer text	35%
Hourly value	DKK 450

Baseline:

> *8,000 × 25% × 25 minutes = 50,000 minutes = 833 hours. 833 hours × DKK 450 = approx. DKK 375,000.*

After 35% reduction:

> *292 hours are freed = approx. DKK 131,000 in G1.*

If clearer letters also reduce complaints, reconsideration, or appeal cases, the G2 potential becomes significantly higher.

6.8 Sensitive Cases

Assumptions:

Parameter	Assumption
Sensitive cases per year	300
Share escalating	8%
Escalations	24
Internal cost per escalation	DKK 40,000
Reduction through repair protocol	25%

Baseline:

> *24 × DKK 40,000 = DKK 960,000.*

After 25% reduction:

> *6 escalations avoided = DKK 240,000 in G2.*

If individual heavy cases are avoided, the total gain may be much larger.

6.9 Sickness Absence and Turnover

Assumptions:

Parameter	Assumption
Affected employees in pilot area	300
Absence reduction	0.5 day per employee/year
Value per absence day	DKK 2,500
Reduced turnover	3 fewer exit processes
Cost per exit/recruitment/training	DKK 100,000

Absence:

> *300 × 0.5 × DKK 2,500 = DKK 375,000.*

Turnover:

> *3 × DKK 100,000 = DKK 300,000.*

Total value: DKK 675,000 per year.

6.10 Ecological Commons: Example of Local Water and Operational Friction

The regenerative municipality must also include the ecological foundation. Otherwise, it becomes merely a social-administrative efficiency model.

A first ecological pilot account can begin with local water and operational friction.

Example:

Parameter	Assumption
Repeated local water/operational incidents per year	20
Average internal handling cost	DKK 25,000
Minor facility or infrastructure damage / urgent repair per incident	DKK 50,000
Share preventable through local observation and prioritisation	20%

Baseline:

> *20 × (DKK 25,000 + DKK 50,000) = DKK 1.5 million.*

After 20% prevention:

> *4 incidents avoided = approx. DKK 300,000 in G2.*

This is a simple example. The larger economic relevance lies in the fact that citizen observations, the local knowledge of operational staff, and municipal data can detect small repeated damage before it becomes major infrastructure need, insurance cases, dissatisfaction, ecological degradation, or political conflict.

6.11 Combined Pilot Account

Item	Conservative annual value
Fewer repeat contacts	DKK 1.26 million
Fewer handover losses	DKK 0.75 million
Less meeting inflation	DKK 1.80 million
Clearer letters/documentation	DKK 0.13 million
Fewer complaints/escalations	DKK 0.50 million
Lower absence/turnover	DKK 0.68 million
Prevented water/operational incidents	DKK 0.30 million
Total friction value	**approx. DKK 5.42 million/year**

Responsible accounting:

Gain type	Share	Amount
G1 — capacity	55%	approx. DKK 2.98 million
G2 — avoided cost	35%	approx. DKK 1.90 million
G3 — robustness	10%	approx. DKK 0.54 million
Possible direct cash saving	0–20%	DKK 0–1.08 million

Note: Section 6.2 gives a general interval of 0–25% for possible direct budget reduction. This combined pilot account uses a more conservative 0–20% interval because the example assumes that operations, legal safeguards, and working conditions must be stabilised before any cash realisation is considered.

Correct conclusion:

The pilot municipality cannot promise DKK 5.42 million as a cash-box gain. It can make it plausible that around DKK 5 million in capacity and avoided costs is tied up in concrete friction items, and that part of this can be freed, stabilised, and possibly realised as cash over time.

The figures should not be used to promise savings, but to decide whether the friction is large enough, concrete enough, and repeated enough to merit organisational action.

7. The Regenerative Municipality: Economy as Life Capacity

A regenerative municipality is a municipality that systematically measures, protects, and rebuilds the capacities on which its welfare provision, democracy, and local ecological foundation depend.

It is not defined by having a green image, a digital strategy, or an efficiency plan. It is defined by whether its economy, politics, and operations are measured according to whether they preserve or erode the capacities that make welfare possible.

7.1 Four Capacities

The regenerative municipality works with four capacities:

Capacity	Question	Typical indicators
Organisational capacity	Can employees and managers act without exhaustion?	absence, turnover, meetings per decision, time from question to action
Citizen access capacity	Can the citizen understand, use, and influence the system?	waiting time, repeat contacts, re-contact rate, complaints, experienced clarity
Ecological capacity	Are local nature, water, and the physical environment holding?	water, soil, biodiversity, local heat stress and heat-island effects, local damage, maintenance
Democratic/relational capacity	Can disagreement, experience, and responsibility be carried legitimately?	participation, safety, conflict level, relational quality

These four capacities should not replace the municipality's existing economy. They should correct its blind spots.

7.2 Productivity Without Capacity Preservation Is Extraction

A municipality can produce many services while simultaneously eroding the people, relationships, and ecological foundations that must carry next year's services.

This can look productive in the short term:

- more cases completed,
- more conversations held,
- more targets met,
- more digital self-service flows,
- lower administrative unit cost.

But if the result is simultaneously higher sickness absence, higher turnover, more repeat contacts, more citizen anxiety, more complaints, more legal defensiveness, lower trust, and ecological degradation, this is not real productivity. It is capacity extraction.

The regenerative municipality therefore introduces a new productivity rule:

> *An activity is not productive if it creates output by consuming the capacities that make future output possible.*

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8. Pilot Model: 90 Days Without Major IT Procurement

KL and the municipalities should not start with a national system. They should start with bounded pilots.

The pilot model must be deliberately designed without major IT procurement. If the first move becomes system procurement, the report's main point disappears: municipalities must first understand the friction before they automate or digitalise the solution.

8.1 Phase 0 — Political Mandate and Guardrails

Duration: 2–4 weeks.

Content:

— municipal council or relevant committee approves the pilot,
— purpose is defined,
— AI guardrails are adopted,
— right to stop is placed,
— citizen and employee information is prepared,
— data minimisation is established,
— critical-friend function is established.

8.2 Phase 1 — Baseline Without Extra Bureaucracy

Duration: 4 weeks.

Measure only data that already exists or can be registered easily:

— repeat contacts,
— handovers,
— meetings per decision,
— complaints,
— case duration,
— rework,
— absence,
— experienced clarity,
— the citizen's next step.

Rule:

> *The baseline must not cost more capacity than it can potentially free up.*

8.3 Phase 2 — Intervention

Duration: 8–12 weeks.

Possible interventions:

— clearer letters,
— handover stops,
— responsibility map,
— latest concrete friction point before the case stalled,
— AI-supported summarisation,
— the citizen's next step,
— green/yellow/red field reading,
— short weekly correction loop,
— smaller meeting format,
— friction log in selected cases.

8.4 Phase 3 — Friction Account and Correction Loop

Duration: 2–4 weeks.

Output:

— G1: freed-up capacity,
— G2: avoided costs,
— G3: robustness and legitimacy,
— rights status,
— errors and bias,
— learning points,
— decision on stopping, adjusting, or scaling,
— documented correction loop in case of error, harm, misalignment, or unexpected red operations.

8.5 Pilot Areas

Suitable first areas:

1. Citizen contacts and repeat contacts.
2. Handover between departments.
3. Letters, administrative decisions, and next steps.
4. Sensitive cases with escalation risk.
5. Transitions in elder care.
6. School absence and well-being.
7. Local water/nature/operations.
8. Employment pathways with many actors.

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9. Digital Repair Architecture and AI Guardrails

Brief distinction: AI may be used to make the system more legible to people. AI must not be used to make citizens more profileable for the system.

Denmark is already a digital welfare state. Citizens' access to services, communication, rights, control, and contact with public authorities is increasingly digitally mediated.

The question is therefore not whether AI and digital governance are coming. The question is what direction they will take.

There are two basic models:

1. **Digital control architecture** — AI and data are used to make citizens more legible, governable, and profileable for the system.
2. **Digital repair architecture** — AI and data are used to make the system's friction, responsibility, chains of help, and errors more legible to citizens, employees, and politicians.

9.1 Legal Framework: Operationalisation, Not Replacement

The digital legal-safeguards package should not replace GDPR, administrative law, the Danish Access to Public Administration Files Act, data-protection law, or the EU AI Act. It should make their principles operational in municipal practice.

GDPR already provides principles of purpose limitation, data minimisation, transparency, access rights, and protection against certain automated individual decisions, especially in Articles 5, 12–15, and 22. Article 22 is particularly relevant because it concerns decisions based solely on automated processing, including profiling, where the decision has legal or similarly significant effects. [K4]

The EU AI Act introduces risk-based regulation of AI systems, including stricter requirements for high-risk systems. Article 6 and Annex III are particularly relevant for systems used in rights-near or welfare-related contexts, including systems that may affect access to benefits, services, education, employment, or significant public decisions. [K5]

This report's proposal is a municipal operationalisation of these principles. The point is not that legal safeguards are completely absent. The point is that they are often missing as concrete governance practice in municipal digitalisation and AI programmes. Guidance from the Danish Data Protection Agency and the Danish Agency for Digital Government similarly emphasises the need for early data-protection considerations, clear guidelines, organisational frameworks, testing, and validation when public authorities use AI. [K6] [K7]

9.2 The Orwell Test

The practical difference between Orwellian surveillance and repair architecture does not lie in stated intentions. It lies in the architecture.

Control architecture	Repair architecture
Makes the citizen legible to the state	Makes the system legible to the citizen
Red citizen	Red field
Data is taken	Data is given under protocol or processed with clear legal authority
AI as authority	AI as decision support under human responsibility
Hidden scoring	Public audit
Sanction as first response	Stop, relief, and repair
Power is centralised	Responsibility is made visible and challengeable
Criticism becomes risk signal	Criticism becomes correction signal

The strongest distinction is:

> *Control architecture makes the human being transparent to the system. Repair architecture makes the system transparent to the human being.*

9.3 Municipal AI Principles

Municipal AI should be based on the following principles:

1. The human being is an actor. AI is not.
2. AI must not independently make or effectively decide significant cases about citizens where the result has legal or similarly significant practical effect.
3. AI must not be used for hidden or unchallengeable citizen scoring where a risk profile gains administrative significance without individual, human, reasoned, and challengeable assessment.
4. AI must not be used for hidden profiling.
5. AI must not be used as employee performance control.
6. AI may support pattern recognition, textual clarity, friction analysis, and learning.
7. Red status means field repair, not blame.
8. A human bearer of responsibility must always be named.
9. Right to stop, audit, and correction must be built in.
10. Data must be purpose-bound, minimal, and reversible.

9.4 Clarification: Ban on Algorithmic Citizen Scoring

The report does not propose banning professional needs assessment, individual assessment, or legitimate prioritisation.

The report proposes banning algorithmic citizen scoring as a municipal governance principle in the core areas of the welfare state.

This means:

> *Ban algorithmic citizen scoring where a citizen is assigned a risk profile, priority, degree of suspicion, or behavioural category that gains administrative significance without individual, human, reasoned, and challengeable assessment.*

This is a central distinction. Municipalities must be able to prioritise. They must be able to assess needs. They must be able to act on risk. But this must not happen through hidden or unchallengeable profiles.

9.5 Correction Loop: Correction as Regulatory Infrastructure

Spiralweb's *The Correction Loop* protocol adds an important principle: correction is not error, defeat, or extra feedback. Correction is regulatory infrastructure. [K19]

Correction loop means that error, harm, misalignment, or secondary harm is not treated as defeat, but as regulatory information. When a citizen, employee, professional, critical friend, or oversight function documents significant misalignment, the system must be able to pause, be reread, be corrected, and reopen under human responsibility.

This is particularly important in relation to AI, because the system can have functional agency — it can recognise patterns, structure, recommend, and trigger actions — without having moral responsibility. Responsibility must therefore never be placed in the model, the vendor design, or the automation chain. It must be traceable back to a human and institutional bearer of responsibility.

Municipal AI governance should therefore always be able to identify the last decisive impulse in a decision chain: did it come from a professional, a manager, a model output, an interface choice, an automation rule, a vendor configuration, or a political decision?

9.6 Critical Friend as Institutional Function

A critical friend is:

— close enough to practice to understand it,
— independent enough to ask difficult questions,
— loyal enough to want the field to do well,
— precise enough not to accept smooth language,
— committed enough to require correction.

The critical-friend function must ask:

— Is this AI reading true enough?
— Who becomes invisible in the pattern?
— Who is burdened by this classification?
— Is red status directed at the field or the person?
— Does the system create more clarity or more armour?
— Can the citizen understand and challenge it?
— Can the employee stop it?
— Can politicians take responsibility without hiding behind the dashboard?

A critical friend is not decoration. It is democratic safety infrastructure.

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10. Digital Legal-Safeguards Package for the Welfare State

This chapter is not legal advice and does not propose that KL alone can establish new subjective rights. It is a municipal practice framework for operationalising the legal-safeguard, data-protection, and administrative-law principles that are already relevant in digital welfare administration.

The digital welfare state requires new near-constitutional principles.

The Danish Constitution already protects core liberties. But the modern welfare state produces a new situation: citizens' access to rights, benefits, services, and communication increasingly depends on digital systems, data sharing, algorithmic prioritisation, and automated decision support.

This does not necessarily require an immediate constitutional amendment. But it does require a digital legal-safeguards package with near-constitutional principles that can be implemented in municipal practice, legislation, guidance, vendor requirements, and political oversight. The Danish Parliamentary Ombudsman has similarly pointed out that poorly considered public IT systems can harm citizens' legal safeguards, and that the public authority itself is responsible for ensuring that systems meet administrative-law requirements. [K9]

10.1 The Right Not to Be Reduced to a Profile

No citizen in the welfare state may be reduced to an algorithmic risk profile, benefit profile, behavioural profile, or probability profile that has independent legal or administrative significance.

Principle:

> *The citizen is never their profile.*

10.2 The Right to Human Decision

No significant public decision may be made by AI or automated scoring alone if the decision has legal or similarly significant practical effect for the citizen.

Every significant decision must have:

— named human bearer of responsibility,
— understandable reasoning,
— access to objection,
— right to manual reassessment,
— insight into which data types and model outputs were included,
— rapid error correction.

10.3 The Right to System Transparency

The citizen must not only be able to see the decision. The citizen must be able to see the system.

This means the right to know:

— which data was used,
— which systems processed the data,
— which public authority is responsible,
— what purpose the data use had,
— which legal basis was used,
— whether data entered into a model or scoring,
— how errors are corrected,
— how the system is audited.

10.4 The Right to Purpose Peace

Purpose Peace is used here as a field term: a practical welfare-state extension of the GDPR principle of purpose limitation. Data collected for help must not, without new, clear legal authority and proportionality, be used for control, punishment, profiling, or future risk assessment.

Purpose peace means:

- health data must not slide into social control,
- school data must not become a lifelong risk profile,
- benefit data must not become a general suspicion machine,
- citizen observations must not be used for case decisions about the citizen themselves without separate legal authority,
- employees' friction data must not be used as performance control.

10.5 The Right to Analogue or Assisted Access

Digital access must not become a condition for welfare.

The citizen must be able to access central public services through:

- physical access,
- telephone access,
- personal assistance,
- legally secure power of attorney,
- exemption from digital requirements where needed,
- no weaker rights through analogue access.

10.6 The Right Not to Be Behaviour-Monitored

Public authorities should not use AI for emotion recognition, loyalty classification, behavioural prediction, manipulative nudging, or psychological risk profiling of citizens in ordinary welfare contexts. This follows from GDPR's data-protection principles and the EU AI Act's intensified attention to high-risk and prohibited AI practices. [K4] [K5]

Principle:

> *AI may help read the field's friction. AI must not read the citizen's inner life for the state.*

10.7 The Right to Collective Audit

Individual complaints are necessary, but not enough. Algorithmic harms are often discovered as patterns.

When such patterns are discovered, a correction phase should be triggered: temporary pause, documentation of harm, hearing of affected parties, assessment of the chain of responsibility, decision on correction, and public learning in an appropriate form.

Therefore, there must be:

- independent algorithmic oversight,
- citizen panels,
- critical-friend panels,
- public AI/model registration,
- annual digital legal-safeguards reports,
- access for relevant supervisory authorities to technical audit,
- whistleblower protection for employees.

10.8 The Right to Stop, Correction, and Reversibility

All digital welfare systems must be stoppable, correctable, and reversible.

Right to stop is not enough on its own. There must also be a right to correction: a right that errors, biases, unsuitable model outputs, incomprehensible digital flows, and systemic misalignment are actually investigated and corrected.

If a system proves harmful, discriminatory, or uncontrollable, it must be possible to:

— suspend it immediately,
— roll it back,
— revise it,
— remove it from the decision chain,
— review it for previous harms,
— compensate affected citizens.

This is a municipal kill switch — but also a municipal correction loop. The system must not only be able to be turned off. It must be able to learn without hiding harm.

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11. Precise Democratic Sensing and Citizens' Experiences

Representative democracy is not obsolete. But it has become too coarse-grained in its encounter with complex, rapidly changing, and locally differentiated problems.

Citizens' experiences are concrete. They exist in specific rooms, relationships, times, bodily experiences, workflows, and local contexts. The political process often translates them into consultation responses, complaints, statistics, survey measurements, or individual cases.

Much is lost in this translation:

— the local context,
— the relational meaning,
— the precise friction point,
— the practical solution,
— the early warning,
— the decision-relevant micro-knowledge.

This report calls this precise democratic sensing: citizens' and employees' concrete experiences are made decision-relevant at the level where the experience actually exists. In Spiralweb terminology, this may also be called pixel-precise democratic intelligence.

11.1 What Does Precise or Pixel-Precise Decision Mean?

Precise or pixel-precise decision does not mean that all citizens should vote on everything.

It means that decisions can be made, informed, or corrected at the lowest precise level where the experience, consequence, and responsibility actually exist.

Pixel-precision does not mean that the municipality should collect more data about citizens' lives. It means that experiences must be describable at the level where they actually arise, without immediately being pressed into coarse categories. An observation from a schoolyard, a care home, a handover, a local water incident, or an unclear letter may be small in scope but large in decision value if it is properly connected to patterns, responsibility, and action.

Examples:

— The older citizen knows where the handover fails.
— The relative knows when insecurity arises.
— The teacher knows where the rhythm of the school day breaks down.
— The pupil knows where the schoolyard feels unsafe.
— The caseworker knows where responsibility fog arises.
— Operational staff know where the water collects every year.
— Citizens know where local nature, local heat stress and heat-island effects, traffic, and loneliness are felt.

If these observations can be given under protocol, pattern-recognised, corrected, aggregated, and made decision-relevant, citizens do not merely become input providers. They become co-interpreters of reality's precise places.

11.2 Five Levels of the Citizen Role

To avoid misunderstandings, the citizen role must be clearly divided. The table distinguishes between observation, qualification, local prioritisation, political decision, and audit. Precise democratic sensing is therefore not direct digital democracy, but a method for making concrete experience decision-relevant without dissolving political responsibility.

Level	Citizen role	Decision status
Observation	Citizen describes concrete experience	Input
Qualification	Citizen/steward helps understand pattern	Advisory
Local prioritisation	Bounded choice within political mandate	Co-decision
Political decision	Municipal council/committee prioritises	Formal responsibility
Audit	Citizens/critical friends can challenge practice	Correction right

This model protects representative democracy. It does not replace politicians' responsibility. It makes clearer where citizens' experience can enter with legitimate weight.

11.3 The Politician's Task

The politician's role does not become smaller. It becomes deeper.

Politicians should no longer pretend to be able to know everything centrally. They must guarantee the legitimate decision architecture.

This means that they must:

— define which decisions can be decentralised,
— protect weak voices against majority patterns,
— ensure protocol, rights, and data minimisation,
— decide distributional conflicts when local decisions collide,
— ensure that local decisions do not harm the whole,
— protect long-term concerns against short-term local optimisation,
— keep AI, dashboard, and administration under democratic responsibility,
— ensure that citizens' precise experiences actually have effect.

The politician's new basic task can be formulated as follows:

> *The task of politicians is to translate visible complexity into legitimate prioritisation.*

But there is a deeper layer:

> *The task of politicians is to keep the common democratic nervous system regulated, correctable, and responsible enough that society can sense reality without panicking.*

11.4 Democratic Friction Binds Legitimacy

Economically, friction binds capacity. Democratically, friction binds legitimacy.

When the citizen's experience cannot find its way into the system's attention, the negative spiral arises:

> *lived experience → not heard → mistrust → protest or withdrawal → greater distance → more technocratic governance → even less trust*

When experience can be given, read, corrected, and lead to perceptible action, a positive spiral arises:

> *precise experience → shared reading → legitimate prioritisation → perceptible change → more trust → more participation → better experience*

This is not only democratic idealism. It is social economics. Mistrust is expensive. Citizen fatigue is expensive. Complaints are expensive. Unclear decisions are expensive. Symbolic politics is expensive. Technocratic blindness is expensive.

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12. Ecological Commons as Municipal Capacity

The regenerative municipality must not be reduced to organisational efficiency. It must also include the local life-support systems on which the municipality's well-being and economy depend.

In this report, ecological commons are not included as separate nature policy, but as municipal capacity economics: water, heat, soil, biodiversity, and local operations directly affect the municipality's expenditure, well-being, risks, and capacity to act.

Note on local heat load and heat-island effects in Denmark: Heat-island effects are not a Danish problem on the same scale as in southern European metropolitan areas, but they are a real and planning-relevant phenomenon in dense Danish urban areas with many hard surfaces and limited greenery. Copenhagen's Climate Adaptation Plan explicitly recommends that urban redevelopment take the urban heat-island effect into account, especially in densely built areas with few green spaces and many hard surfaces. [K11]

The University of Copenhagen / Videntjenesten also describes how land use in Copenhagen affects surface temperature, and how low vegetation and sealed surfaces contribute to urban heat-island effects. [K12] In this report, the term is therefore used precisely: not as a general national main risk, but as a local municipal capacity risk around schools, care homes, daycare institutions, dense residential areas, and heavily paved urban spaces.

The municipality is directly involved in:

- rainwater,
- watercourses,
- green areas,
- schoolyards,
- roads and surfacing,
- local heat load and heat-island effects,
- local biodiversity,
- land maintenance,
- climate adaptation,
- health and local environmental quality.

The shared natural foundation — ecological commons — is not only nature policy. It is municipal capacity economics.

The point is not that all municipal nature concerns must be integrated into the same account from day one, but that repeated local nature and operational signals must be readable as capacity risks before they become expensive damage.

12.1 Examples of Ecological Friction

Ecological friction arises when local nature and operational conditions are not detected, connected, or prioritised in time.

Examples:

- repeated local flooding,
- blocked ditches or drains,
- local heat load and heat-island effects around institutions,
- schoolyards without shade,
- green areas requiring expensive restoration after neglect,
- biodiversity loss that reduces local robustness,
- rainwater management that is only seen as acute expenditure,
- citizen contacts that are not connected to operational data.

12.2 Ecological Capacity Accounting

A first ecological capacity account can be based on a small number of indicators:

Area	Friction signal	Possible economic effect
Water	repeated minor flooding	urgent operations, damage, complaints
Heat	local heat load and heat-island effects at schools/care homes	health burden, lower well-being
Green areas	maintenance backlog	more expensive restoration
Biodiversity	low robustness	higher maintenance, lower learning value
Citizen input	repeated contacts about the same place	early warning or mistrust

Ecological commons should not become yet another heavy measurement system. They should enter as field reading, where local observations, operational knowledge, and municipal data meet.

12.3 Connection to Schools, Health, and Well-Being

Ecological commons are also social infrastructure.

A schoolyard with shade, biodiversity, calm, and water management is not only a nature intervention. It can affect children's well-being, play, learning, heat exposure, and community.

A well-maintained green area is not only park operations. It can affect safety, loneliness, physical activity, local identity, and democratic pride.

Municipal nature and climate interventions should therefore not only be assessed as capital expenditure or operations. They should also be assessed as capacity investments.

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13. Decision Infrastructure: Sensing, Dashboard, Audit, and Responsibility Track

The regenerative municipality does not only require new principles. It requires new decision infrastructure.

The report proposes a simple chain:

> *citizen and employee sensing → pattern recognition → dashboard → critical correction → political prioritisation → responsibility track → learning*

13.1 Democratic Sensing

Democratic sensing means that the municipality can systematically receive and process precise observations from citizens, employees, and local actors without reducing them to anecdotes or using them for control.

At a minimum level, this can begin with:

— the citizen's next step,
— experienced clarity,
— repeated friction points,
— local operational incidents,
— employee observations about responsibility fog,
— relatives' observations about handover.

At a more advanced level, this can develop into broader 13×13-inspired municipal sensing, where water, soil, body, technology, governance, learning, health, care, meaning, and the future can be read in relation to one another.

13.2 Dashboard as Shared Reading Surface

The dashboard is not the truth. It is a reading surface.

Its primary function is not to rank municipalities, departments, or people. Its function is to make friction, responsibility fog, and correction needs visible enough for people to act more wisely.

It should show:

— where the field is green,
— where the field is yellow,
— where the field is red,
— where data is missing,
— where there is disagreement,
— where correction is necessary,
— where responsibility is unclear.

Red does not mean guilt. Red means that the field requires stop, relief, repair, or human assessment.

If red becomes a person status, the model has been misused.

13.3 Responsibility Track

The municipality must be able to preserve traces without building a total archive of citizens' lives.

A responsibility track should document:

— what was observed,
— which friction was identified,
— who held responsibility,
— what was decided,
— which correction was made,
— what learning arose,
— what happened after the decision.

The responsibility track must be proportionate, purpose-bound, and data-minimised.

13.4 The Negative and the Regenerative Chain

Negative chain:

> *data → AI → dashboard → decision → control*

Regenerative chain:

> *sensing → pattern → shared reading → critical correction → responsible decision → learning*

The difference is not technical. It is legal, democratic, and ethical.

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14. Perspective: The Reform Task of the Parties and the False Oppositions

The Danish political system is often organised around familiar oppositions:

- economic responsibility versus welfare,
- efficiency versus care,
- digitalisation versus closeness,
- green transition versus core welfare,
- freedom versus steering,
- state versus municipality,
- representative democracy versus citizen participation.

The regenerative municipality does not dissolve political disagreement. It makes some of the oppositions more precise.

Friction economics can bring several political traditions together:

- The economically responsible tradition can see that tied-up capacity is a real cost.
- The social-democratic welfare tradition can see that relational capacity is the substance of welfare.
- The liberal tradition can see that digital legal safeguards and protection against profiling are questions of freedom.
- The green tradition can see that ecological commons must enter municipal economics.
- The conservative tradition can see that local communities, institutional continuity, and chains of responsibility must be protected.
- Municipal pragmatism can see that small, precise repairs often work better than large, abstract reforms.

The report's political point is therefore:

> *The parties should not abandon their values. They should abandon the habit of treating welfare, economics, freedom, digitalisation, and nature as separate reform tracks.*

14.1 From Negotiation Fatigue to Reform Thinking

When economic negotiations and political proposals lock into classic positions, concrete friction points often become invisible.

The regenerative municipality proposes another track:

— start with concrete friction,
— measure tied-up capacity,
— protect rights,
— involve citizens precisely,
— use AI under protocol,
— reinvest gains,
— document learning,
— scale only what actually makes the field greener.

This is not an ideological third way in the classic sense. It is a practical reform method in which political differences can unfold on a more reality-near basis.

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15. KL's Possible Role

KL can choose to treat friction economics and AI as yet another technical modernisation track. That would be insufficient.

KL can also choose to make this a municipal reform programme.

Why This Is a KL Task

Friction economics is well suited to KL because the problem cuts across municipalities, while the solutions must be tested locally. VIVE's analyses of municipal sickness absence and municipal deregulation/freeing-up reforms support both the need to take organisational capacity seriously and the value of more trust-based local governance forms. [K10] [K13]

The individual municipality can measure its own friction items, but KL can create a shared method, comparable learning, legal guardrails, shared vendor requirements, and a legitimate language in negotiations with central government.

KL's particular role is not to standardise all municipal solutions. KL's role is to standardise the learning framework: definitions, guardrails, gain discipline, legal-safeguard principles, and comparable friction accounts. This enables municipalities to experiment locally without losing shared national accountability.

Without a shared framework, municipalities risk AI, efficiency efforts, and documentation requirements developing in fragmented, vendor-driven, and legally uneven ways.

Risk of Not Acting

If municipalities do not develop a shared friction-economic and legally safeguarded AI practice, digitalisation will probably continue as fragmented efficiency projects. Gains will be harvested too early, employees will carry hidden coordination, citizens will meet more complex self-service, and AI will be introduced without sufficient democratic audit. Amnesty International's report on algorithmic welfare control in Denmark shows why this risk is not merely theoretical. [K8]

The result may be more control, more mistrust, and less capacity — even if the intention was efficiency.

15.1 National Friction Economics Laboratory

KL can establish a laboratory with 5–10 municipalities testing:

— G1/G2/G3 accounting,
— 90-day pilots,
— AI guardrails,
— friction indicators,
— citizens' precise observations,
— democratic dashboard practice,
— public AI/model registration.

15.2 Shared Municipal AI Protocol

KL can develop a municipal AI protocol with the following minimum:

— no independent AI decisions with legal or materially significant practical effect,
— no algorithmic citizen scoring without individual, human, reasoned, and challengeable assessment,
— no hidden profiling,
— no use of friction data for individual employee performance control,
— human bearer of responsibility,
— right to stop,
— public audit,
— model register,
— data minimisation,
— purpose peace,
— critical-friend panel.

15.3 Municipal AI System Register

All municipal AI/ADM systems should be registered with:

— purpose,
— data sources,
— legal basis,
— vendor,
— risk class,
— affected citizen groups,
— decision role,
— audit date,
— responsible public authority,
— stop mechanism,
— complaints option.

15.4 Annual Municipal Friction Report

KL can publish an annual report on:

— friction items,
— municipal capacity gains,
— digital legal safeguards,
— citizen interface,
— organisational capacity,
— ecological commons,
— democratic/relational quality,
— learning from pilots.

15.5 Negotiation with Central Government

KL can bring friction economics into economic negotiations with central government.

Not as a replacement for financing, but as an alternative to flat administrative reduction requirements.

The argument:

> *Municipalities can free capacity through documented friction reduction, but central government must accept that gains must first stabilise operations and legal safeguards before they can be harvested as cash reductions.*

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16. Reform Proposals

The five decisions in the report's front door are the political entry point. The ten reform steps below are the practical unfolding of the same track. KL therefore does not need to adopt all ten points at once; they can be used as an implementation catalogue for a 12-month pilot process.

In this reform track, "regenerative" does not mean a new ideological municipal model. It means a practical governance discipline: the municipality must be able to see whether its operations rebuild or consume the capacities on which future welfare depends.

The report recommends the following ten reform steps, which can be introduced gradually and begin as a 12-month low-risk pilot track:

1. Establish a KL-led Friction Economics Laboratory with 5–10 pilot municipalities.
2. Develop a shared municipal AI protocol based on human responsibility, right to stop, audit, and data minimisation.
3. Introduce G1/G2/G3 accounting as a supplement to classic business cases.
4. Create a public municipal AI system register for all AI/ADM systems in municipal operations.
5. Adopt a municipal principled ban on algorithmic citizen scoring as a governance principle in the core areas of the welfare state, where scoring gains administrative significance without individual, human, reasoned, and challengeable assessment.
6. Introduce friction-based 90-day pilots before larger digitalisation or efficiency programmes.
7. Make the citizen's next step a quality indicator in letters, administrative decisions, and digital contact. This means that after any significant municipal contact, the citizen must be able to see clearly: What should I do now? When? How? Who can help? What happens if I do nothing? And how can I challenge or correct information?
8. Establish critical-friend panels for high-risk AI, sensitive pathways, and larger municipal reform programmes.
9. Prepare an annual Municipal Friction Report focused on capacity, legal safeguards, and democratic learning.
10. Bring friction economics into the economic agreements as an alternative to flat administrative reduction requirements.

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17. How Municipalities Can Begin: A 90-Day Friction Pilot

This chapter translates the report's reform proposals into a concrete municipal working format. The purpose is not to introduce a new governance system, a new major IT programme, or yet another documentation layer. The purpose is to give municipalities a low-risk method for testing friction economics in practice.

A municipality should begin with one field of work, one friction point, a few baseline proxies, and one reversible intervention. The pilot must be capable of being stopped, corrected, and evaluated without major IT procurement.

> *Start small. Read precisely. Measure soberly. Intervene reversibly. Evaluate as G1/G2/G3. Do not harvest gains too early.*

A friction pilot should not prove that the municipality already knows the solution. It should examine where capacity is tied up, how responsibility becomes unclear, and how the municipality can learn without weakening legal safeguards, working conditions, or trust.

Choose One Field of Work

The pilot must not begin with the whole municipality. It must begin where the friction can be seen.

Suitable first fields can be:

— repeat contacts in citizen service,
— letters and administrative decisions,
— handovers between departments,
— sensitive cases with escalation risk,
— transitions in elder care,
— school absence and well-being,
— employment pathways with many actors,
— local water, operations, or nature friction.

The choice of field should be based on three criteria:

1. The friction must be concrete enough to describe.
2. The field must be sufficiently bounded for a small intervention to be tested.
3. Errors or unintended effects must be detectable and correctable quickly.

> *Do not begin where the organisation wants the largest narrative. Begin where a concrete pathway can actually become greener.*

Make a Short Field Map: Flow, Friction, and Sensitivity

Before measuring, the pathway must be drawn. A friction pilot should therefore begin with a 60–90 minute field map in which participants describe the concrete workflow from entry to completion.

Dimension	Question	Example
Flow	What happens when the pathway actually works?	The citizen understands the next step, the employee has mandate, the case moves without unnecessary loops.
Friction	Where is capacity tied up without creating welfare?	Repeat contacts, handover losses, rework, meetings without decisions.
Sensitivity	Where do errors become costly — legally, humanly, or politically?	Complaints, appeals, lost trust, citizen being passed around, employee losing judgement.

Flow, friction, and sensitivity should be used as a listening apparatus, not as judgement. The purpose is not to find blame, but to find the places where capacity disappears or responsibility becomes unclear.

Participants should as a minimum include a frontline employee, a professional manager or coordinator, an economics or analysis person, a lawyer/data-protection officer where needed, a digitalisation person where needed, an HR/working-environment person where needed, and possibly a citizen, user, or relative voice.

If the field is politically or legally sensitive, the pilot should have a critical-friend function from the beginning.

Read the Pilot Through Three Municipal Ledger Themes

A municipal friction pilot should not only measure time use. It should also show how capacity, responsibility, and learning move through the pathway. In this report, the PG Ledger logic is therefore translated into three municipal ledger themes: capacity flows, responsibility flows, and learning flows.

Theme	Municipal question	Typical observations
Capacity flows	Where is capacity tied up, freed, consumed, or rebuilt?	Repeat contacts, rework, meetings, handovers, absence, freed time, better calm.
Responsibility flows	Where does responsibility sit, and can it be followed, challenged, and corrected?	Human bearer of responsibility, last decisive impulse, right to stop, handovers, AI role.
Learning flows	How do experience and error become organisational learning?	Citizen input, employee observations, complaints, red/yellow/green field reading, correction loops.

The point is not to establish a new municipal accounting system. The point is to avoid friction reduction becoming only a question of time and money. A municipality can free capacity and simultaneously lose responsibility or learning. That would be a false gain.

Every pilot must therefore be able to answer three questions: What happened to capacity? What happened to responsibility? What did the municipality learn, and how was that learning preserved?

A gain is only real if capacity is freed without responsibility becoming more unclear, and without learning disappearing from the organisation.

Choose 3–5 Baseline Proxies

The municipality should not begin with a heavy measurement system. It should begin with a few indicators that already exist or can be registered easily.

Proxy	What it can show
Repeat contacts per case	Ambiguity, missing next step, or weak access capacity
Rework rate	How often something must be redone
Number of handovers	Responsibility shifts and coordination friction
Meetings per decision	Meeting inflation and unclear mandate
Complaints, appeals, or deviations	Sensitivity and legal-safeguard risk
Time to first clear next step	The citizen's access capacity
Cases with unclear bearer of responsibility	Responsibility fog

Baseline must be corrected soberly. A change in friction may be due to something other than the pilot. Therefore, as far as possible, the municipality should note simultaneous conditions such as price and wage development, demographics, seasonality, reform requirements, sickness absence, personnel changes, IT changes, changes in case volume, political decisions, and changed legal or documentation requirements.

> *Measure only what can be defended. Do not measure more than the pilot can carry.*

Choose One Reversible Intervention

The intervention must be small, concrete, and reversible. It must not require major IT procurement, organisational restructuring, or permanent governance change.

Friction point	Possible intervention
Unclear letters	Add the field "Your next step is..."
Many repeat contacts	Clearer first response and explicit contact path
Handover losses	Responsibility map with next action and bearer of responsibility
Meeting inflation	Short decision meeting with decision log
Rework in cases	Checklist for missing data before handover
Sensitive cases	Stop button and rereading before decision
Informal AI use	AI may support drafts, but never send or decide

The intervention must be described on one page: what is changed, why, who has responsibility, what the intervention must not be used for, how it can be stopped, how it can be rolled back, what signs indicate that the field is becoming greener, and what signs indicate that the field is becoming redder.

A pilot is only defensible if it can be stopped.

Work in Difficult Fields Without Triggering Defence

The most difficult municipal frictions are rarely only technical. They may be cultural, relational, and governance-related: defensive administrative culture, internal territorial logics, unclear mandates, silos, performance contracts that reward local target achievement at the expense of the whole, legal defensiveness, reform fatigue, and weakened trust between citizens, employees, management, and politicians.

In such fields, friction economics must not begin as criticism of persons or units. It must begin as field reading.

> *Make friction safe to see, but impossible to ignore.*

The pilot should therefore use low-temperature language: not "who is to blame?", but "where does the field become red?" Not "which department resists?", but "where do mandate, budget, data, and responsibility overlap?" Not "why are the employees not delivering?", but "which structural contradiction is the frontline carrying?" Not "how can we save?", but "which capacity is tied up, and what must not be harvested too early?"

In pressured municipal fields, defensiveness is not merely a cultural error. It is often a sign that responsibility, risk, and capacity no longer fit together. Friction work must therefore first make responsibility, transitions, and decision impulses readable before it attempts to make things more efficient.

> *What is the unit rewarded for that the whole pays the price for?*

This question can reveal performance-contract friction: situations in which a department meets its own targets while the citizen, another department, the frontline, or the whole carries the hidden cost.

Local target achievement	Possible whole-system friction
Faster case closure	More repeat contacts or complaints
Lower unit cost	More coordination elsewhere
More digital self-service pathways	More citizens drop out and call
Less administration	More invisible documentation in the frontline
Fewer meetings	More unresolved decisions
Shorter processing time	Lower understanding, more errors, or less legitimate decision

Type	Handling
Local friction	Can be acted on in the pilot
Escalatable friction	Requires management or political decision
Structural friction	Must be documented as a framework problem, not placed as personal error

The purpose is not to make the organisation vulnerable to criticism. The purpose is to make it precise enough to repair what it already spends energy defending itself against.

Use Green/Yellow/Red Friction as Pedagogical Language

Colour	Meaning	Example
Green friction	Necessary resistance that protects quality, professional standards, or legal safeguards	Legal assessment, professional discussion, the citizen's right to objection
Yellow friction	Ambiguity, delay, or repetition that should be examined	Many handovers, unclear letters, repeated meetings
Red friction	Friction that harms capacity, trust, legal safeguards, or working environment	Responsibility fog, defensive documentation, citizen being passed around, employees losing judgement

Red status must never become a person status. Red means that the field requires stop, relief, repair, or human assessment. If red is attached to a citizen, employee, or department as a blame profile, the model has been misused.

Role Distribution in a Friction Pilot

Role	Task
Executive management	Provides mandate and protects against false gain harvesting
Finance	Maintains G1/G2/G3 discipline
Professional director	Chooses concrete task type and ensures operational ownership
Frontline employees	Show where the friction actually lives
Lawyer/data-protection officer	Ensures legal safeguards, data minimisation, and correct legal basis
Digitalisation	Ensures AI and data do not become control architecture
HR/working environment	Reads strain, capacity, and employee sustainability
Citizen/relative voice	Tests whether the next step is actually understandable
Critical friend	Asks whether the field is becoming clearer, safer, and more repairable

The critical friend should not steer the pilot. The critical friend should help the field see what it otherwise risks defending itself against.

Use "Last Decisive Impulse" as a Responsibility Tool

In complex municipal systems, responsibility often becomes diffuse. The pilot should therefore ask: Where did the last decisive push come from?

Was it the professional, the manager, the financial requirement, the lawyer, the IT system, the AI output, the template, political prioritisation, vendor design, informal culture, a performance contract, or an unclear mandate?

The question must not place blame. It must prevent responsibility from dissolving into technical or organisational complexity.

Example: It was not "the caseworker's fault". The last decisive impulse came from a template that made the citizen's next step unclear.

Example: It was not "legal resistance". The last decisive impulse came from missing political clarification of the acceptable risk level.

Stop Criteria

A friction pilot must have clear stop criteria. The pilot must be stopped or corrected if:

- the citizen's access to help is weakened,
- employee strain increases,
- legal safeguards are weakened,
- data is used without a clear purpose,
- AI gains an informal decisive role,
- red fields become red persons,
- the documentation burden exceeds the possible gain,
- the pilot is used as a savings tool before learning,
- the frontline carries more responsibility without more mandate,
- citizen input is used secondarily for control without clear legal authority,
- employee input is used for individual performance control.

Right to stop is not a failure in the pilot. Right to stop is part of the pilot's quality. A municipality that can stop can learn.

Evaluate as G1/G2/G3

Gain type	Question
G1 — freed-up capacity	Has time, calm, clarity, or judgement been freed?
G2 — avoided costs	Have errors, complaints, reconsiderations, absence, or escalations been reduced?
G3 — robustness and political room for manoeuvre	Have prioritisation, responsibility, learning, or trust been strengthened?

Gains must not be booked directly as cash savings. First it must be determined whether the gain stabilises operations, legal safeguards, or working environment.

> *Correct question: What type of gain is this, and what must not yet be harvested?*

> *Wrong question: How much can we save now?*

Three Possible Start Packages

START PACKAGE A — CLEARER LETTERS

Friction: Citizens re-contact the municipality because letters are legally correct but practically incomprehensible.

Intervention: Add a fixed field: “Your next step is…”, state date, action, contact path, and complaint/objection option clearly, and test the letter on one citizen/relative voice or an employee outside the case.

Gain reading: G1 may be fewer clarification calls and more calm in the frontline. G2 may be fewer errors and complaints. G3 may be better legal safeguards, trust, and legitimacy.

START PACKAGE B — HANDOVER STOP

Friction: Cases lose momentum between departments, and the citizen experiences being sent around.

Intervention: Introduce a responsibility map with next action, name a temporary bearer of responsibility, state what is missing before the case may be sent on, and mark the last decisive impulse at the decision point.

Gain reading: G1 may be less time loss and fewer repeated clarifications. G2 may be fewer escalations and complaints. G3 may be clearer responsibility and better cross-sector trust.

START PACKAGE C — AI AS TEXTUAL CLARITY, NOT DECISION

Friction: AI is used informally for text, summarisation, or pattern recognition, but responsibility, legal basis, and boundaries are unclear.

Intervention: Local AI guardrail: AI may support drafts, structure, and linguistic clarity, but must not send, decide, score, or profile. There must be a named human bearer of responsibility, right to stop in case of doubt, data minimisation, and purpose peace.

Gain reading: G1 may be faster drafts and clearer text. G2 may be lower legal-safeguard risk. G3 may be better digital trust and stronger AI governance.

Output After 90 Days

The pilot concludes with a short learning note of 2–4 pages. The note should answer seven questions:

1. Which field was tested?
2. Which friction was identified?
3. Which intervention was tested?
4. What did the baseline and post-measurement show?
5. What are G1, G2, and G3?
6. What should be stopped, adjusted, or scaled?
7. Which legal-safeguard, working-environment, and trust learnings arose?

The purpose is not to document success. The purpose is to document learning.

A pilot showing that an intervention should not be scaled can be a successful pilot. It has prevented false investment, false gain harvesting, or increased strain.

Minimum Manual for Difficult Fields

If there is defensive culture, internal conflict, mistrust, or reform fatigue, the pilot must begin at a lower ambition level.

Do only this:

1. Choose one concrete pathway.
2. Draw the pathway without names.
3. Mark green/yellow/red friction.
4. Ask where responsibility becomes unclear.
5. Choose one small intervention.
6. Agree stop criteria.
7. Write one learning note.

Do not do this:

1. Do not begin with organisational analysis.
2. Do not begin with blame allocation.
3. Do not begin with new technology.
4. Do not begin with savings targets.
5. Do not begin by comparing departments.
6. Do not begin with citizen scoring.
7. Do not begin by promising gains.

> *From armour to precision.*

Defensive administrative culture is often armour: the system protects itself against criticism, error, risk, and complexity. Friction work should not tear the armour off. It should provide enough precision for the armour to loosen.

Appendix / Appendices

The following appendices gather concepts, calculation model, legal guardrails, source basis, and a practical working sheet for municipal friction pilots.

Appendix A — Glossary

The Regenerative Municipality

A municipality that systematically measures, protects, and rebuilds the capacities on which its welfare provision, democracy, and local ecological foundation depend.

Friction

Capacity tied up without creating welfare.

Relational Friction

The unregistered cost of mistrust, ambiguity, and weak chains of responsibility between citizens, employees, departments, systems, and institutions. Relational friction appears, among other things, as extra documentation, parallel control, meeting inflation, handover losses, legal defensiveness, repeat contacts, and escalations.

Friction Economics

Analysis of where time, judgement, trust, relationships, money, and ecological foundations are tied up in unnecessary loops, ambiguity, control, rework, and escalation.

Capacity Account

A supplementary municipal account showing where capacity is tied up, freed, consumed, or rebuilt.

G1 — Freed-Up Capacity

Time and attention that are freed, but cannot necessarily be taken out as cash savings.

G2 — Avoided Costs

Complaints, appeals, escalations, errors, absence, turnover, and damage that are avoided.

G3 — Political Room for Manoeuvre and Robustness

Increased ability to act, learn, prioritise, and absorb pressure.

Red Operations

A state in which the field requires stop, relief, or repair.

Purpose Peace

Data collected for help must not, without clear legal authority and proportionality, be used for control or profiling.

Right to Stop

A real possibility to stop, challenge, correct, or suspend a system, an assessment, or a practice.

Correction Loop

A mandatory process in which error, harm, misalignment, or secondary harm is not treated as defeat, but as regulatory information. A correction loop consists, at minimum, of pause, rereading, a human bearer of responsibility, affected parties' possibility to be heard, correction, and documented learning.

The Citizen's Next Step

A quality criterion for municipal letters, administrative decisions, digital flows, and conversations. After contact with the municipality, the citizen must be able to understand: What should I do now? When? How? Who can help? What happens if I do nothing? And how can I complain, challenge, or correct information?

Precise Democratic Sensing

A municipal practice in which citizens', employees', and local actors' concrete experiences are made decision-relevant at the level where the experience actually exists.

Pixel-Precise Decision

Decision or observation at the precise level where experience, consequence, and responsibility actually exist. Pixel-precision does not mean more data collection about citizens' lives, but more precise reading of the concrete places where experience, consequence, and responsibility already exist.

Critical Friend

An institutional role that is close enough to understand, independent enough to ask questions, and committed enough to require correction.

Digital Repair Architecture

Use of data and AI to make the system's friction, errors, responsibility, and chains of help visible and repairable.

Last Decisive Impulse

A responsibility question in AI-supported decision chains: Where did the last decisive push come from — a professional, a manager, a model output, an interface choice, an automation rule, a vendor configuration, or a political decision? The question must prevent responsibility from dissolving into technical complexity.

Digital Control Architecture

Use of data and AI to make citizens or employees more profileable, governable, or sanctionable.

Appendix B — Calculation Model

Minimum Variables

Variable	Definition
N	Number of cases/pathways
H	Repeat contacts per pathway
T_h	Time per repeat contact
O	Handovers per case
T_o	Time loss per handover
M	Meeting time per week
A	Number of affected employees
F	Absence days
C_t	Internal hourly value
E	Escalations
C_e	Cost per escalation
R	Reduction percentage

Repeat Contact Value

N × H × T_h × C_t = baseline value. Baseline value × R = freed-up capacity.

Handover Value

N × O × T_o × C_t = baseline value. Baseline value × R = freed-up capacity.

Meeting Value

A × reduced meeting time × active weeks × C_t = freed-up capacity.

Escalation Value

E × C_e × R = avoided cost.

Absence Value

Number of employees × reduced absence days × value per absence day = avoided/freed-up capacity.

Appendix C — Legal Guardrail Matrix

Application	Permitted	Not permitted
Textual clarity	AI helps with drafts, explanation, and linguistic precision under human review	AI sends a significant administrative decision without human review
Friction analysis	AI identifies patterns in repeat contacts, handovers, ambiguity, and operational friction	AI scores citizens as problematic, risky, or suspicious
Dashboard	Shows red fields, red transitions, and systemic friction points	Shows red persons or individual blame profiles
Citizen input	Given voluntarily under protocol or processed with clear legal authority	Collected covertly or used secondarily for control without new legal authority
Employee input	Used for field repair, learning, and organisational relief	Used as individual performance control
Decision support	Under a named human bearer of responsibility	Independent automated decision with legal or materially significant practical effect
Audit	Public AI/model registration, responsibility track, and possibility of external control	Hidden models, opaque vendor chains, or non-challengeable outputs

Application	Permitted	Not permitted
Right to stop	System can be suspended, disconnected, or removed from the decision chain	System is unavoidably integrated into operations without real possibility of stopping
Correction loop	System can be paused, reread, corrected, and reopened under human responsibility	Error, bias, or harm is hidden as technical operation, vendor responsibility, or "model behaviour"

Appendix D — Source Basis and Source Keys

The main report's central factual points are based on the key sources below. The main text uses short source markers [K1]–[K22], which can be converted into clickable footnotes or anchors in the HTML version.

D.1 Official Data, Legal, and Policy Sources

The following sources are used as the external basis for economic figures, legal frameworks, authority guidance, and public analyses.

[K1] Ministry of Finance. (2025, 17 January). *Kommunernes og regionernes budgetter for 2025 er opgjort*. Used for the model figure of DKK 324.3 billion in municipal service expenditure and DKK 20.8 billion in municipal capital investments in 2025.

[K2] Ministry of Finance / The Danish Government and KL. (2024). *Aftale om kommunernes økonomi for 2025*. Used for the service framework, increase in service framework, and administrative reduction.

[K3] KL. (2024, 31 May). *Økonomiaftale er et sporskifte i velfærden*. Used for KL's own framing of the economic agreement for 2025.

[K4] Regulation (EU) 2016/679 of the European Parliament and of the Council — GDPR, especially Articles 5, 12–15, and 22.

[K5] Regulation (EU) 2024/1689 of the European Parliament and of the Council — Artificial Intelligence Act, especially Article 6 and Annex III.

[K6] Danish Data Protection Agency. (2023). *Offentlige myndigheders brug af kunstig intelligens — Inden I går i gang*.

[K7] Danish Agency for Digital Government. (2024). *Guide til offentlige myndigheder om ansvarlig anvendelse af generativ kunstig intelligens*.

[K8] Amnesty International. (2024). *Coded Injustice: Surveillance and Discrimination in Denmark's Automated Welfare State*.

[K9] Danish Parliamentary Ombudsman. (2019). *Hvordan digitaliserer vi uden at skade vores retssikkerhed?*

[K10] VIVE. (2024). *VIVEs kommunetal 2024.4: Det kommunale sygefravær falder, men er stadig betydeligt højere end før corona*.

[K11] City of Copenhagen. (2011). *Copenhagen Climate Adaptation Plan*.

[K12] University of Copenhagen / Videntjenesten. *Urban Heat Island 1* and *Urban Heat Island 2*.

[K13] VIVE. (2025). *Kommunal frisættelse*.

D.2 Research and Analysis Basis

Note: [K18] is placed in a separate research category between the official sources and the methodological-lineage sources. The numbering is retained to avoid changing the report's existing in-text source markers.

[K18] Engberg, L. A. (2008). *Den horisontale søjle: Et strategisk udviklingsperspektiv for koordinering af områdeindsatser i Københavns Kommune*. SBi 2008:16. Hørsholm: Statens Byggeforskningsinstitut / SBi Forlag.

D.3 Methodological Lineage and Spiralweb-Related Preparatory Texts

The following texts are not used as external evidence for municipal effects, but as conceptual, methodological, and lineage basis for the report's reform architecture.

[K14] Andelsselskabet EVA. (1990). *Pengene og Livet: EVA's årsberetning 1990*.

[K15] Jespersen, J., & Brendstrup, S. (1994). *Grøn økonomi: En introduktion til miljø-, ressource- og samfundsøkonomi*. Copenhagen: DJØF Publishing.

[K16] Jespersen, J. (1990). Om nationalregnskab, økonomiske modeller og klodens overlevelse. In Andelsselskabet EVA, *Pengene og Livet*.

[K17] Engberg, L. A. (2026). *Eve & Adam, and the Penguins: From Critical Friendship to Penguin Economics — A Lineage Letter on Money, Life, and Living Complexity*. Field Papers, Green Papers: Notes Toward Planetary Guardianship (v1.0, May 2026).

[K19] Engberg, L. A. (2026). *The Correction Loop: AI Governance as Living Practice*. Green Papers: Notes Toward Planetary Guardianship.

[K20] Engberg, L. A. (2026). *Kommunalt Arbejde som Natur*. Green Papers: Notes Toward Planetary Guardianship.

[K21] Engberg, L. A. (2026). *Penguin Dashboard: Legibility as Governance*. Green Papers: Notes Toward Planetary Guardianship.

[K22] Engberg, L. A. (2026). *Regenerative Reciprocity*. Green Papers: Notes Toward Planetary Guardianship.

Appendix E — Municipal Friction Pilot: 90-Day Working Sheet

This working sheet can be used as a minimum format for a municipal friction pilot. It can be completed in 1–2 pages and should not develop into a heavy project-management document.

1. Pilot Field

Task type: [e.g. letters in the social area, handovers in elder care, repeat contacts in citizen service]

Responsible manager: [...]

Participants: [...]

Period: [...]

Why this field: [...]

2. Field Map: Flow, Friction, and Sensitivity

Flow — what works when the pathway is green? [...]

Friction — where is capacity tied up without creating welfare? [...]

Sensitivity — where can errors harm the citizen, employee, legal safeguards, trust, or economy? [...]

3. Municipal Ledger Themes

Capacity flows — where is capacity tied up or freed? [...]

Responsibility flows — where does responsibility sit, and can it be followed, challenged, and corrected? [...]

Learning flows — how do experience, error, and observations become learning? [...]

4. Baseline Proxies

Proxy	Baseline	Data source	Note
Proxy 1			
Proxy 2			
Proxy 3			
Proxy 4			
Proxy 5			

Correct for simultaneous conditions: price and wage development, demographics, seasonality, reform requirements, sickness absence, IT changes, staff changes, changed case volume, or other conditions.

5. Intervention

What changes? [...]

Why? [...]

Who is responsible? [...]

What must the intervention not be used for? [...]

How can the intervention be stopped or rolled back? [...]

6. Guardrails

Guardrail	Yes/no	Note
No independent AI decisions		
No hidden citizen scoring		
No use of employee data for individual performance control		
Data minimisation		
Clear purpose		
Named human bearer of responsibility		
Right to stop		
Correction loop		
The citizen's next step is made clear		
Legal safeguards and complaint/objection options are protected		

7. Green/Yellow/Red Friction

Friction	Colour	What does the colour mean?	Action
Friction 1	Green/yellow/red		
Friction 2	Green/yellow/red		
Friction 3	Green/yellow/red		

Remember: Red means field repair, not blame.

8. Local, Escalatable, or Structural Friction

Friction	Type	Handling
Friction 1	Local / escalatable / structural	
Friction 2	Local / escalatable / structural	
Friction 3	Local / escalatable / structural	

9. Last Decisive Impulse

Where did the last decisive push come from?

— [ ] professional
— [ ] manager
— [ ] financial requirement
— [ ] lawyer
— [ ] IT system
— [ ] AI output
— [ ] template
— [ ] political prioritisation
— [ ] vendor design
— [ ] informal culture
— [ ] performance contract
— [ ] unclear mandate
— [ ] other: [...]

Note: [...]

10. Result Reading After 90 Days

Gain type	Result	Must not yet be harvested because...
G1 — freed-up capacity		
G2 — avoided costs		
G3 — robustness / political room for manoeuvre		

11. Decision

— [ ] Stop
— [ ] Adjust
— [ ] Continue
— [ ] Scale carefully
— [ ] Share learning
— [ ] Requires management decision
— [ ] Requires political decision
— [ ] Requires legal/digital assessment
— [ ] Requires working-environment assessment

Short justification: [...]

12. Learning Note

Write a short note of 2–4 pages:

1. Which field was tested?
2. Which friction was identified?
3. Which intervention was tested?
4. What did the baseline and post-measurement show?
5. What are G1, G2, and G3?
6. What should be stopped, adjusted, or scaled?
7. What did the municipality learn about legal safeguards, working conditions, and trust?

> *The purpose is not to document success. The purpose is to document learning.*

Concluding Recommendation

KL should initiate a national reform track for the regenerative municipality.

Not because municipalities need another buzzword. But because municipalities stand at the precise point where the welfare state's next major question must be decided:

- Can economy be understood as capacity, not only as expenditure?
- Can digitalisation be turned from surveillance into repair?
- Can citizens' experiences become decision-relevant without being exploited?
- Can representative democracy gain better sensory organs?
- Can AI be used without dissolving responsibility?
- Can municipalities protect life capacity before people, relationships, and nature break down?

The report's answer is yes, if the reform track is built on friction economics, digital legal safeguards, precise democratic sensing, and a clear understanding of the regenerative municipality.

The most important sentence is:

> *Municipalities must not simply deliver more welfare. They must learn to see where welfare capacity is already tied up — and free it without turning people, citizens, or nature into raw material for the system.*

This is **The Regenerative Municipality**.

The next step is not to adopt the whole model. The next step is to test it: a 12-month KL-led Friction Economics Laboratory, 5–10 municipalities, clear AI guardrails, a G1/G2/G3 account, and a first Municipal Friction Report within one year.

Related Documents

The report should be read in conjunction with the following Green Papers and Applied Protocols:

- *Eve & Adam, and the Penguins: From Critical Friendship to Penguin Economics — A Lineage Letter on Money, Life, and Living Complexity* — with green economics, bottom-up methodology, polycentric governance, AI disclosure, relational friction, and the methodological background to *The Regenerative Municipality*.
- *Municipal Work as Nature* — earlier Danish municipal AI governance and relational-capacity report.
- *The Correction Loop: AI Governance as Living Practice* — correction, last impulse, AI limitation mapping, and governance repair.
- *Penguin Dashboard: Legibility as Governance* — dashboard logic, stream separation, Go–G6 gates, and legibility without reduction.
- *Regenerative Reciprocity* — value-flow discipline, AnchorPoints, PG Ledger, and support logic.

How to Cite This Report

Engberg, L. A. (2026). *The Regenerative Municipality: How municipalities can free up capacity without weakening legal safeguards, working conditions, or trust*. Field Papers, Green Papers: Notes Toward Planetary Guardianship (v1.0, May 2026). CC BY 4.0. `https://papers.spiralweb.earth/papers/the-regenerative-municipality.html`