



RainGain



*Four cities gain rain
Leuven, Paris, London and Rotterdam*



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YouTube

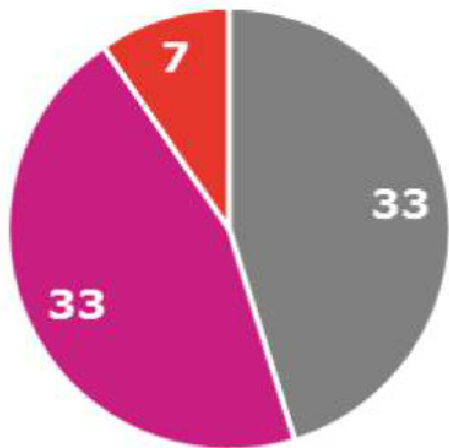


Stakeholder survey

Expectations of the Raingain radar

Analysis of stakeholders and their interests

Expectations of the Raingain radar Results of the questionnaire



- Professionals municipalities
- Professionals waterboards
- Other




Stakeholders and their interests



Stakeholder	Interest
Municipalities	<ul style="list-style-type: none"> • Improvements to water system, both surface and underground system • More efficient investments in sewerage system • Leading role as climate proof city: prevention of water damage • Road management • Communication with inhabitants
Water boards	<ul style="list-style-type: none"> • Improvements to (regional) water system: prevention of water damage • Water quality • Communication with inhabitants
Insurers	<ul style="list-style-type: none"> • More customer-oriented • Advice about preventive actions • Improvement of internal processes
KNMI/ Knowledge institutes	<ul style="list-style-type: none"> • Improvement of weather models • Knowledge of precipitation • Knowledge of climate change
Business parties	<ul style="list-style-type: none"> • Product improvements
Growers	<ul style="list-style-type: none"> • More efficient irrigation • Dynamic water management
Safety region	<ul style="list-style-type: none"> • Little direct benefit, data input and preventive measures are the responsibility of other parties.
Province	<ul style="list-style-type: none"> • Good living environment guarantee

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*Benefits for watermanagement
Monitoring and nowcast data*

Efficient operation of pumps and pumping stations (now)

Improve implementation of water storage and emergency pumps (now)

Effective assessment and settlement of complaints and claims (now)

Understanding of rainfall on sewerage system and better choice of location for storage facilities (monitoring)

Understanding relation between groundwater, surfacewater and sewerage management (monitoring)

Benefits for watermanagement Forecasting (>12 hours)

Activate pumps and pumping stations in a timely manner

Better/Efficient use of storage capacity

- less sewerage overflow and less flooding

Prevention of deployment of unnecessary actions

- less environmental damage



Benefits for road network management



Provide current and specific information about weather conditions to road users

- improved traffic flow, help with decisions

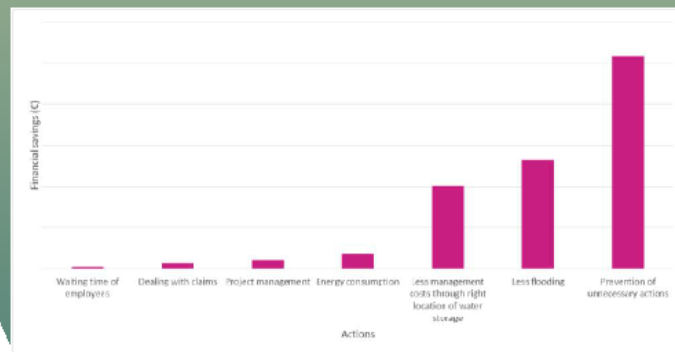
Efficient winter road management: adjust staff and material to weather conditions

Effective support to crowds at events or busy areas

Business case

Important financial savings identified in the survey

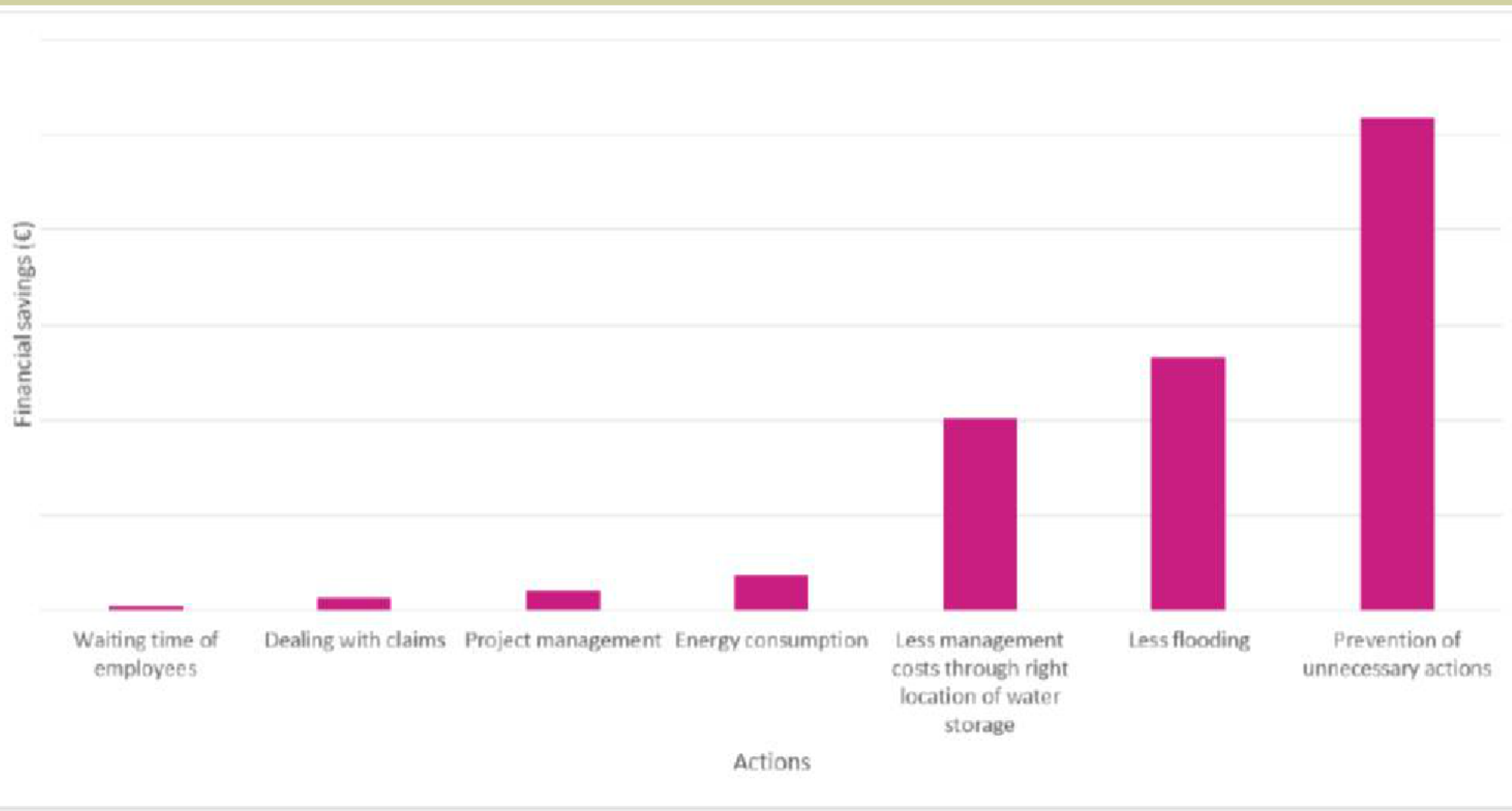
- Fewer floods
- Avoidance of unnecessary actions
- Reduced management costs of water storage areas with correct location
- Overall decrease in the costs of water management due to more effective prevention



Conclusions

Costs	Amount
Investment costs	£ 600,000
Operating costs	£ 130,000
WWE costs	£ 3.2 million
Revenues for Scenario 1	Amount
Savings from fewer sewerage system investments	£ 5.9 million
Avoidance of outflow to water damage	£ 3.7 million
Total revenues	£ 9.6 million
Revenues for Scenario 2	Amount
Savings from these investments in sewerage system	£ 3.2 million
Avoidance of outflow to water damage	£ 3.8 million
Total revenues	£ 7.0 million

- City Council should be proactive in the prevention of flooding in the future
- A risk-based approach to water management is needed
- A risk-based approach to water management is needed
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- A risk-based approach to water management is needed



Conclusies

Costs	Amount
Investment costs	€ 690,000
Operating costs	€ 110,000
Total costs	€ 1.2 million
Revenues for Scenario 1	Amount
Savings from fewer sewerage system investments	€ 5.9 million
Avoidance of costs due to water damage	€ 1.7 million
Total revenues	€ 7.6 million
Revenues for Scenario 2	Amount
Savings from fewer investments in sewerage system	€ 3.2 million
Avoidance of costs due to water damage	€ 0.9 million
Total revenues	€ 4.1 million

- Only two benefits of the radar are estimated and already giving a positive result
- Businesscase positive for nowcast/monitoring only
- Benefits of less flooding are not only financial
- Local government (municipalities) benefit the most
- More parties are probably willing to invest in the future

Possible next actions < 1 year

Involve local politicians to benefits of a radar

Develop business cases for other pilot sites

Recommendations on product development,
applications



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Possible aims and scope

Investigate how we can increase flood resilience by using multilayer safety approach

All scenario's (sea, rivers, rainfall)

Focus on regional scale

Define pilot projects

Products / Output

Better resilience of regions and communities to increasing effects of flooding

Cost effective and innovative solutions

Policy recommendations

Project Structure

- WP 1: resilient areas (layer 2)
- WP 2: resilient communities (layer 3)
- WP 3: recovery (layer 4)
- WP 4: policy recommendations
- WP 5: project management and communication

Raingain stakeholders and business case: input for WP's (?)

Partners and Planning

NL:

Province of Zeeland
Province of South Holland
Zeeland and Delta Directorate-General
Deltares

BE:

Province of West Flanders

GE:

University of Oldenburg
City of Bremen

SWE:

COWI
Karlstad

UK:

Kent County
National Floodforum
Rivertrust

DK:

Region Midtjylland

Preparing draft proposal, based on format of Interreg IV and recommendations given by NSC during Project Development seminar in Gent (sep 2014)

Further definition of scope, PI's, legal and financial

Lead Partner

Nov/dec: meeting with partners