Enhancing Impact Assessment Through Digitization and GIS-Driven Analysis



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Who do we have in the room?

Who loves maps?

Who drafts baseline reports?

Who is often conducting stakeholder engagement? Who uses QGIS?





AI: <u>please</u> visualise Witteveen+Bos

Processing image

Lots of people are creating images right now, so this might take a bit. We'll notify you when your image is ready.











Witteveen+Bos



Made with Canva



NL INCLUSIVE INFRA MANUAL

INCLUSIVE IS THE NEW SUSTAINABLE



5



Today's focus

- **How** can we use GIS tools to create:
 - a **baseline analysis** of new project areas



- overview in collected stakeholder data and improve **data visualisation** Semarang Case
- a platform for participation and design improvement

And by doing so: **improve evidence-based decision making**, but also make it easier for us in the field to **increase the quality and quantity** of engagement activities in IA



Baseline analysis

Data visualisation

Participation Platform









Baseline analysis

All these open online sources..

Expert knowledge

What if..

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Protected Areas Worldwide

Integrated Biodiversity Assessment Tool (IBAT) δ



<mark>Gebiedsfoto filmpje</mark>



Outcome gebiedsfoto



Water As Leverage - Semarang





Experienced problems in collecting stakeholder data

- 1. Collecting stakeholder data can result in **long lists** of information that need to be presented in the ESIA with **low readability;**
- 2. The quantity and the quality of the **respondence is highly reliant on the efforts** of the ESIA specialist.

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Solution 1 : Effectively visualise stakeholder data by using QGIS - the Semarang case

 The project utilizes the QGIS Import Photos plugin to map geo-tagged data from survey respondents, which is then combined with other spatial layers in GIS





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Methods of spatial analysis in the Semarang Case

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Map photos to the project with **Import Photos plugin**

Example of imported geo-tagged photos data point



Methods of spatial analysis in the Semarang Case

Geo-tagged photos and tabular data from the survey were combined through a table join process in QGIS to produce a structured dataset



| ature | Value |
|-----------------------------|-------------------------------|
| gender | Perempuan |
| business_activity | Berjualan Gorengan |
| pos_business | Pemilik |
| other_occupation | pekerjaan utama |
| fam_workforce | Yes |
| num_fam_workforce | 1 |
| area_importance | penting, hanya disini |
| dist_to_house | 1 km - 2 km |
| revenue | 1000000 |
| revenue_period | Harian |
| open_time | 16:30:00 |
| close_time | 20:30:00 |
| flood_freq | Tahunan |
| flood_damage_scale | 1.0 |
| flood_impact | mempengaruhi karena tidak bi |
| flood_community_impact | berdampak karena pkl tidak bi |
| flood_height | 0-10 cm (setinggi mata kaki) |
| flood_damage_area | 100.0 |
| physical_loss | Tidak ada |
| nonphysical_loss | pendapatan |
| flood_financial_loss | 1000000 |
| flood_recover_loss | 0 |
| flood_recovery | Tidak |
| road_importance | penting |
| intervention_livelihood | tidak terlalu berdampak |
| intervention_financial_loss | 0 |
| intervention_fear | khawatir akan kemacetan |
| intervention_aspiration | tidak ada |
| photo_desc | |
| survey_area | |
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Example of data point



Results of spatial analysis in the Semarang Case



Post-export editing in Inkscape significantly improves the readability of maps, especially for project footprint maps.



Using a project footprint layer, GIS can help quantify the number of people affected by the project.



QGIS Post-Export editing





Include all essential spatial layers in the layout, such as the scale bar and legend



Enhance visual readability using Inkscape's design tools



Results

Spatial Density of enterprises and street hawkers stakeholders in the Semarang project



The **information regarding concentration of stakeholders using kernel density tools** enables the impact assessment to gauge the magnitude of construction risks on the economic landscape within densely commercial areas.







InBeeld solution





- Invoegen Inbeeld tutorial





How does it work?





See for yourself!

<u>Gouda (NL)</u> YourView Demo website







Try it

What do you think is the most beautiful place in Bologna?



Password: IAIA2025!

https://jouwproject.inbeeld.app/en/iaia-congres/



Baseline analysis

Data visualisation

Participation Platform













Take home messages

- Think spatial use maps for **data visualisation**, QGIS as a user friendly tool
- Increase your response by using **online engagement tools**





Let's continue the conversation!

Password:

IAIA2025!

Message me your questions or comments in the IAIA25 app.



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