

HEALTH IMPACT ASSESSMENT OF AN URBAN REGENERATION PROJECT IN VITORIA-GASTEIZ

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1. CONTEXT

The city of Vitoria-Gasteiz, with a population of 240,000 inhabitants, is the administrative capital of the Basque Autonomous Community. Among other awards, it has recently been designated European Green Capital for 2012.

It is located on the axis of the Iberian peninsula and the north of Europe, a privileged strategic situation for all transit between the south west of Europe and the rest of the continent.

The project's main objective is to adapt the Arterial Railway Network in Vitoria-Gasteiz to the future railway framework laid down in the Strategic Infrastructure and Transport Plan.

This in particular involves adjusting the Vitoria-Gasteiz network to the new Madrid-Valladolid-Burgos-Vitoria-Gasteiz-Bilbao/French Border high speed service with UIC gauge, by adequately inserting the city in this line and adapting its railway to future customer and goods services.

The project, which has undergone Health Impact Assessment, includes the building of an underground tunnel to reroute the current railway tracks which cross the city centre, and reutilize the released urban surface for a new transport hub in the north of the city.



Figure 1. Graphic description of the underground tunnel project

1.1. BUILDING THE UNDERGROUND RAILWAY TUNNEL AND THE TRANSPORT HUB

The most significant data regarding the underground railway tunnel is:

- Tunnelling from Zabalgana to Zurbano.
- Length: 7 kilometres.
- The project includes 2 two-lane tunnels separating freight from passenger vehicles.
- Creation of a Transport Hub in Juan de Garay Street.

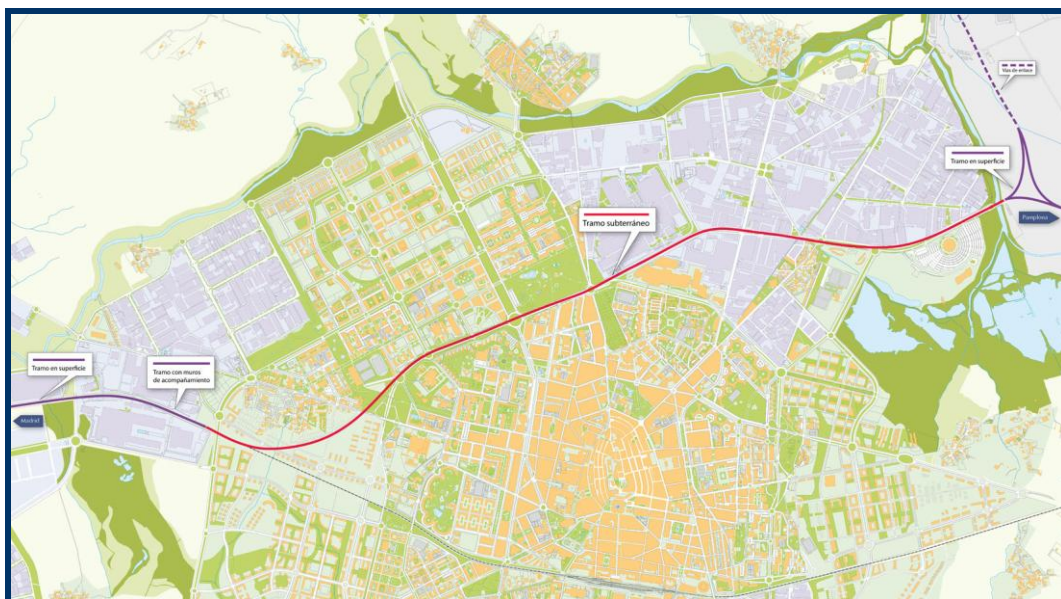


Figure 2. Railway tunnel route in Vitoria-Gasteiz.

1.2. RELEASING URBAN SPACE TO THE SOUTH OF THE CITY

The most important data regarding releasing space in the south is:

- Route distance: 3.4 kilometres
- Predicted number of homes: 1,450
- Residential space: 159,500 m²c
- Tertiary space: 26,825 m²c
- Space suitable for residential building: 0.82 m²c/m²s
- Suitability at tertiary level: 0.35 m²c/m²s

Figures 3, 4 and 5 are a graphic representation of the actions which will be developed in the area.



Figure 3. General view of urban space recovery to the south of the city.



Figure 4. General view of urban space recovery to the south east of the city.

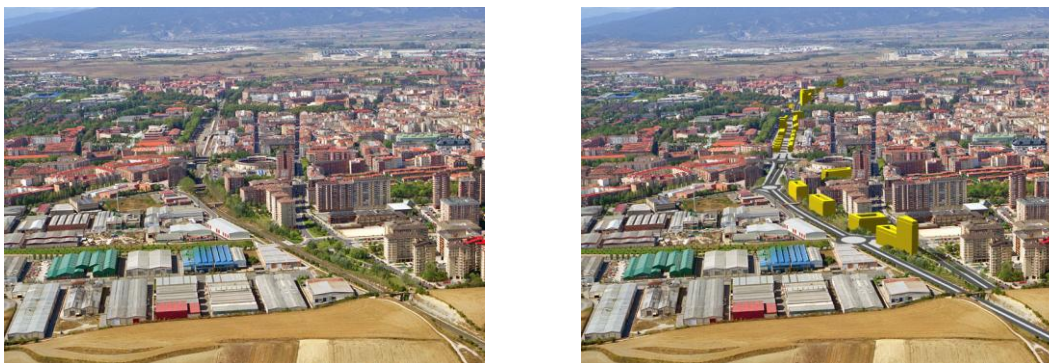


Figura 5 General view of urban space recovery to the south west of the city.

2. RATIONALE

Assessing this Project was essential given its great importance to Vitoria-Gasteiz. The HIA aims to evaluate the potential positive and negative effects of the urban regeneration works on citizens' health, in order to implement corresponding corrective measures.

3. DESCRIPTION

It was considered necessary to carry out some preliminary actions before embarking on the HIA.

The first action consisted in providing the Healthy Cities project coordinator from the Municipal Health and Consumer Services Department with information sessions and training.

Subsequently, Council technicians and politicians from Vitoria-Gasteiz and other cities were offered awareness sessions. Owing to the fact that Vitoria-Gasteiz is a member of the Spanish Healthy Cities Network and the European Healthy Cities Network, these sessions were coordinated and directed by Erica Ison, an HIA advisor for WHO.

Once those directly or indirectly involved in the HIA of the urban regeneration project had been duly informed and trained, an HIA steering group was formed, made up of representatives from the following departments and institutions in Vitoria-Gasteiz:

- Department of Sustainability and Environment.
- Department of Urban Planning.
- Sociedad Ensanche 21
- Environmental Studies Centre.
- Office of Studies and Statistics.
- Department of Social Policies and Intervention.
- Sustainability Observatories.
- Department of Health and Consumer Services.
- Basque Government Department of Public Health.
- Other departments and public institutions (Promotion of Economy and Employment, Public Roads, TUVISA,...)

Finally, it was decided that the HIA steering group would offer the Local Government an information session to outline the most significant aspects of the HIA development process.

The methodology for the HIA process is as follows. Each step is briefly developed along the following lines:

- Project selection.
- Preparatory phase.
- Determination of temporary phases.
- Selection of determinants to be studied.
- Demarcation of affected areas.
- Determination of population groups to be studied.
- Creation of work groups.
- Identification of impacts.

3.1. PROJECT SELECTION

There were three main reasons why the Vitoria-Gasteiz Council decided to carry out a HIA on the regeneration project:

- The evident strategic importance of the Project to the city of Vitoria-Gasteiz
- The population was affected to a relatively large extent.
- It is a Project with potential effects on citizens.

3.2. PREPARATORY PHASE

Once the HIA Project had been selected, it was studied in detail by the intersectoral steering group responsible for the development of the HIA study.

Likewise, an exhaustive bibliographical search was made to support the assessment and development processes and offer evidence of the health impacts to be identified.

3.3. DETERMINATION OF TEMPORARY PHASES

The following temporary phases have been identified for the development of the HIA:

- Current situation.
- Construction phase.
- Final phase (3 years after construction).

3.4. SELECTION OF DETERMINANTS TO BE STUDIED

According to the HIA expert, Erica Ison, the list of determinants of health which may be used to identify the potential health impacts, is relatively extensive.

Faced with all the determinants which a priori could be used in the HIA, the leading intersectoral steering group decided to start by categorising all the determinants in three groups only, in order to make the selection process simpler. As a result, these became the 3 categories:

- Social factors
- Environmental factors
- Economic factors

Subsequently, the steering group revised the list of determinants put forward by Erica Ison together with others which could prove to be relevant. The final list of determinants of health for this HIA appears in Table 1.

Table 1. List of social determinants of health included in HIA.

SOCIAL FACTORS	ENVIRONMENTAL FACTORS
1.- Exercise and physical activity 2.- Social contact 3.- Neighbourhood relations 4.- Self-esteem and neighbourliness 5.- Active travel 6.- Illicit drug and substance use	7.- Housing tenure 8.- Housing conditions 9.- Road safety 10.- Neighbourhood cohesion 11.- Accessibility to services 12.- Air quality 13.- Landscape and biodiversity 14.- Townscape 15.- Building density 16.- Noise and vibration 17.- Threats and hazards 18.- Use and consumption of natural resources 19.- Traffic 20.- Infraestructura 21.- Illicit activities: prostitution, drug-trafficking, gambling 22.- Real and perceived public and personal safety
ECONOMIC FACTORS	
23.- Business activity 24.- Creation of Wealth 25.- Inward investment 26.- Creation of employment 27.- Technological development	

3.5. DEMARCATION OF AFFECTED AREAS

Regardless of the plan, programme or project, HIA must be carried out on a particular proposal and a particular community with its particular living conditions.

For this reason, having selected and defined the determinants of health, the next step was to specify which geographical areas the HIA would focus on. The following areas were pinpointed:

- Land freed up by underground railway tunnel.
- Neighbourhoods adjacent to land released by underground railway tunnel.

- Neighbourhoods affected by underground railway tunnel and new transport hub.
- Peripheral neighbourhoods
- Entire city.

3.6. DETERMINATION OF POPULATION GROUPS TO BE STUDIED

Just as the geographical areas to be studied were specified, the intersectoral steering group considered that as well as identifying certain groups in the general public, it was also necessary to identify vulnerable groups which would require special attention;

- Children under the age of 11.
- Adolescents up to the age of 18.
- Older people.
- Migrants.
- Dependent people.
- Socially underprivileged.
- People with pathologies or ill health.
- Women.

3.7. CREATION OF WORK GROUPS

Once all the afore-mentioned steps had been taken, and in order to make the HIA process more practical, agile and rewarding, participants split into 3 work groups, whose main tasks consisted in:

- Initially assessing the situation of each individual determinant and identifying and selecting their corresponding indicators (city profile).
- Evaluating the impact on determinants of health and the health consequences during the building and final phases.
- Heirarchization of impacts and establishment of corrective and preventive measures
- Timing impacts.
- Determining if impacts are irreversible.
- Making conceptual maps.
- Contrasting evidence.

3.8. IDENTIFYING IMPACTS

A detailed study has been carried out for both the construction phase and the final phase, identifying and quantifying the global impact of every determinant of health and their effects. Based on the initial stage of the project, a scale from -3 to +3 was used which makes it easier to visualise the development of every impact in the study.

Detailed information is collected in the table below:

Table 2. Global impact on determinants of health considered in HIA.

	Determinant	Global impact on each determinant (construction phase)	Global impact on each determinant (final pahase)
1	Exercise and physical activity	-2	+1
2	Social contact	-2	+1
3	Neighbourliness	0	+1
4	Self-esteem and feeling of belonging to neighbourhoods Social cohesion	+1	+1
5	Active travel	-1	+2
6	Use of illicit drugs and substances	-1	-1
7	Housing tenure	0	+1
8	Housing conditions	-1	0
9	Road safety	-2	+2
10	Physical neighbourhood cohesion	-2	+2
11	Physical access	-2	+1
12	Air quality	-2	0
13	Landscape and biodiversity	-2	-2
14	Townscape	-2	+1
15	Building density	0	+1
16	Noise and vibration	-2	+1
17	Threats and hazards	-2	-1
18	Use and consumption of natural resources	-2	+1

	Determinant	Global impact on each determinant (construction phase)	Global impact on each determinant (final pahase)
19	Traffic	-2	+2
20	Infraestructura	-3	+2
21	Illicit activities: prostitution, drug-trafficking, gambling	0	-1
22	Real and perceived public and personal safety	-2	+1
23	Business activity	+1	+2
24	Creation of wealth	+1	1
25	Inward investment	+2	+1
26	Creation of employment	+2	+1
27	Techological development	+1	+1

Likewise, a detailed study has been carried out for both the construction phase and the final phase, identifying and quantifying the potential impacts of every determinant of health and their effects. Priority has been given according to their importance.

Table 3 shows the most important impacts identified for the **Construction Phase**.

Table 1. Principal impacts during Construction phase.

PRINCIPAL IMPACTS DURING CONSTRUCTION PHASE
<ul style="list-style-type: none"> • Re-routing of public transport. • Overground works will destroy townscape and increase noise and respirable dust, making it extremely difficult to open windows in nearby buildings. This will result in a lack of ventilation and comfort. • Creation of physical barriers and interzonal communication problems. Impaired access to adjacent areas. Less use of Arriaga Park due to difficult access from El Pilar. • Increase in heavy traffic owing to road works • Impaired mobility, especially for population groups such as older people and the handicapped, leading to less social support. • Route changes for cars, cyclists and pedestrians. Increase in accident risks. • Problem of providing sufficient space for tunnelling equipment and vehicles. • Possible closure or poor access to walkways and cycle paths. • Increase in active travel and use of public transport as a result of traffic problems. • Impaired access to sports and leisure centres. Occupation of areas designed for physical exercise. • Green corridor may lead to university area becoming isolated. • Older people may be disorientated by road works and need more social support. • There will be a definite increase in the GDP as a result of new infrastructure. • Heavy inward investment from public administration (European Union, Central Government, Basque Government, Diputación Foral de Alava,...) • Job creation: skilled workers, transport, maintenance, trades, catering, construction material

The most significant impacts identified for the **Final Phase** are listed in Table 4.

Table 4. Principal impacts during Final Phase.

PRINCIPAL IMPACTS DURING FINAL PHASE
<ul style="list-style-type: none"> • We predict an increase in active travel owing to the linking of pedestrian networks and cycle lanes, and as a consequence energy saving, better road safety, air quality and less traffic and noise. • We also predict an increase in the use of public transport as a result of the combination of different means of transport and the full development of the Mobility Plan. This will again lead to energy-saving, better road safety and air quality, and less traffic and noise. There will be better access to public transport in all city areas, especially in Salburua and Zabalgana. • Pedestrian areas will increase and pathways will be linked in order to eliminate physical barriers, especially for persons with reduced mobility. • Streets such as Florida and Manual Iradier will become almost traffic-free; air quality, road safety and townscape will therefore improve in these quieter areas, which will make them more attractive for future business investment. • If the southern carriageway is not designed well, it may lead to an increase in private traffic, fuel consumption and less satisfactory road safety. • The corridor will facilitate access to services in the city centre for residents of Salburua and Zabalgana and will increase cohesion between the east and the west of the city. • By eliminating the bus station in Los Herrán, noise and air pollution levels will fall and road safety will rise in nearby districts. • The transport hub may boost tourism and lead to the building of new hotel chains, new investment and an increase in business activity and wealth creation. • The new facilities in the released corridor will increase social contact. • The University will become part of the city and encourage cultural cohesion among the population.. • Linking of cycle network routes.

4. ACHIEVEMENTS

The result of the health impact assessment will be a **FINAL REPORT**.

The **Technical Report** has the following index:

- What is HIA?
- Why carry out HIA?
- Description of Project assessed.
- Current city profile.
- Parts of the Project which underwent HIA.
- HIA methodology used.
- Determinants studied.
- Evidence (search methodology).

In the same way, once the impacts have been identified, the **Public Health Management Plan** includes:

- Priority recommendations.
- A list of recommendations and the department or person who is responsible for implementing them.

Lastly, the **Annexes** provide:

- An information sheet for every determinant identifying impacts, recommendations, evidence, etc
- Conceptual maps of the group work.

4.1. PRIORITY RECOMMENDATIONS

4.1.1 Recommendations for Construction Phase

77 different recommendations have been made priorities for the construction or works phase. The most significant are shown in Table 5.

In short, it may be said that during the construction phase recommendations mainly intend to inform citizens of the road works, reduce noise and air pollution, guarantee safety and design a special mobility plan.

Table 2. Principal recommendations for Construction Phase.

PRINCIPAL RECOMMENDATIONS FOR CONSTRUCTION PHASE
<ul style="list-style-type: none"> • Promote and prioritise public transport. • Organise informative activities related to the Project and road works before construction begins, with a view to encouraging citizen participation. These activities will take place in stages and “travel” around the city • Allow access through road works, create alternative lighted pathways and roads which are integrated in the network..... • Establish routes for heavy traffic and machinery for road Works. In the southern carriageway, evacuation of equipment and material via railway route. • Establish alternative routes for active travel and physical exercise. • Disrupt pedestrian areas and cycle paths as little as possible. • Use aesthetic parameters and establish road safety measures in road works areas. • Work in stages in road works areas. Limit closure of walkways and cycle lanes.

4.1.2 Recommendations for Final Phase

A total of 73 recommendations have been defined for the final phase, and these have been prioritised, like those for the construction phase. The most significant are shown in Table 6.

Basically the recommendations for the final phase of the project are directly linked to traffic, new roads and buildings in released land, facilities in new metropolitan areas and the development of a strategic economic plan which addresses the area created by released land.

Table 3. Principal recommendations for Final Phase.

PRINCIPAL RECOMMENDATIONS FOR FINAL PHASE
<ul style="list-style-type: none"> • A soft mobility corridor must be designed in order to discourage the use of private transport, promote active travel (and therefore physical activity), and public transport. • The district of El Ensanche needs a civic centre, which could be built in the land released by the railway, with cultural and sports facilities. • The promotion of public transport is of utmost importance. A campaign must be launched to make people aware of the added benefits of public transport links, as a result of the new transport hub. • The action plan provides an ideal opportunity to improve links between cycle networks and walkways. • The design of public areas in the newly released land must focus on quality, promote social cohesion, and offer interconnected covered and open-air areas. These areas must include shops, leisure centres, and services for adjacent neighbourhoods. • There should be a study to determine the possibility of utilising part of the land released by the railway tunnel to connect the districts of Salburua and Zabalgana with high-capacity public transport (tram, BRT, etc).

5. CONCLUSION

From the point of view of the city, integrating the railway presents three main aspects: 1. Environmental adaptation, 2. barrier waterproofing without altering the rail height, which involves building countless overpasses, and 3. Edge treatment (longitudinal streets, suitable gates and fencing, landscaping, and good quality urbanism).

This HIA has also made an intersectoral evaluation of the potential repercussions of the Project on the determinants of health and the consequent effects this may bring about. The expert groups have formulated new proposals to improve the project with a view to benefiting citizens, most especially vulnerable populations.

Predicted health outcomes, as a result of impacts during the construction and final phases (tables 3 and 4), are shown below.

Table 4. Health outcomes.

PRINCIPAL HEALTH OUTCOMES (CONSTRUCTION PHASE)
<ul style="list-style-type: none"> • The increase in noise and air pollution may prevent people from opening the windows to air their houses, thereby increasing humidity which could lead to respiratory diseases, allergic rhinitis and asthma, especially among children and elderly people. A lack of fresh air may also produce diarrhoea, headaches, and nervousness. • Not enough physical exercise aggravates different pathologies and increases the risk of cardiovascular diseases, diabetes, obesity, colon cancer, hypertension, osteoporosis, anxiety and depression. • The groups most likely affected by walkway closures are the elderly and the disabled. Walking is currently the most popular physical activity amongst older people; in addition to its health benefits it also encourages and strengthens social contact. Changes which affect daily habits can cause disorientation, and result in a need for more social support during this period. • Changes to the social environment can affect resistance to illness and death, by triggering metabolic changes. Inadequate information or social contact with close friends or family, may lead to distress and illness • According to the Marmot Review “The Solid Facts”, inadequate social relations and strong support networks leads to poor physical and mental health, which can cause an increase in crime and violence¹. • Noise brings about mood swings and extreme discomfort and can cause psychological pathologies, leading to an increase in the consumption of legal drugs such as antidepressants, tranquillisers and sleeping tablets. • Gas emissions from fuel used during construction aggravates cardiovascular and respiratory diseases. • Visual pollution can cause nervous system alterations, an unbalanced state of mind, stress, migraines, distraction while driving, and accidents caused by visual obstructions.

PRINCIPAL HEALTH OUTCOMES (FINAL PHASE)

- Urban design which promotes physical activity not only benefits mental health and social cohesion, but also helps with weight loss, accident prevention (including older people falling), and decreases the threat of chronic diseases.
- Doing physical activity reduces the risk of diabetes, obesity and colon cancer by 50%. It also reduces hypertension, maintains healthy bone mass (avoiding osteoporosis), and increases self-esteem and psychological wellbeing.
- Social opportunities, created by new facilities developed in the area previously occupied by the railway, have positive effects on physical and mental health.
- Morbidity rates are closely related to green living environmentsⁱⁱ. Some of the benefits of having green spaces nearby are: faster recovery from stress-related illnesses and fatigue, better air quality, fewer respiratory diseases and mental disorders such as anxiety and depression, and more physical activity.
- The released land, after the removal of physical barriers, facilitates access to education centres, cultural centres, and sports and leisure facilities. Easy access to outdoor spaces promotes physical activity, especially among young people, better access to shopping areas could result in an increase in consumption of healthy food, and visits to health or education centres fosters self-empowerment.
- Creating safe and stable employment opportunities improves workers' health and promotes healthier attitudes towards work.