

# Example of Information Matrix applied to the planning in the Autonomous Province of Trento



1. The birth of a plan
2. The idea of an information platform
3. The horizon of new applications

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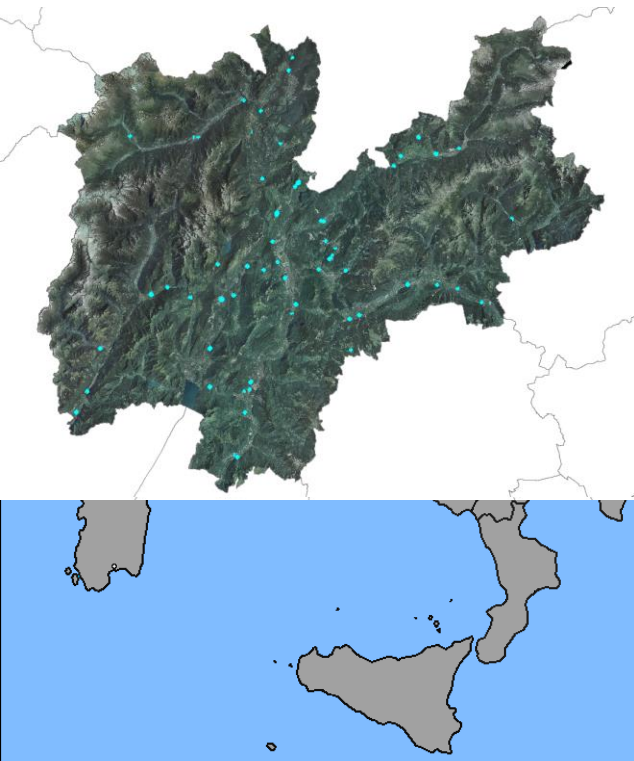
Provincia autonoma di Trento



## 1. The birth of a plan

### The Autonomous Province of Trento - PAT

The Province is a very mountainous area, localized in the north of Italy. It comprehends 217 Municipalities and its population is about 530.000 people.



The Province enjoys a special condition of self-government, granted by the Italian Constitution. The autonomous statute allows more competencies than the ordinary regions.

**Aggregates:** actually there are two distinct plans, regulating the whole aggregates sector.

**Primary aggregates:** the plan considers the materials excavated from quarries. Usually it is called as the “**Quarrying Plan**”. The first version was published in 1980: nowadays it is at the fifth revision. The plan takes into account also the the mining wastes and gives clear directives in order to reduce these waste quantities and to reutilize them in other processes (e.g. construction, recoveries, restoration)

**Secondary aggregates (C&D):** a section of the **Waste Management Plan** is focused on them. The last revision was approved in the beginning of 2013 and considers one of the largest part of wastes, the inert wastes, in terms of recycling.



# 1. The birth of a plan

## Quarrying Plan – Natural Aggregates

The *Quarrying Plan*, established in the 80's, includes the management of 120 areas, which are not all already used: it considers also some reserves

The main products are aggregates but also porphyry stones for pavement and decorative uses

A mandatory form is yearly sent to the extraction companies to collect data

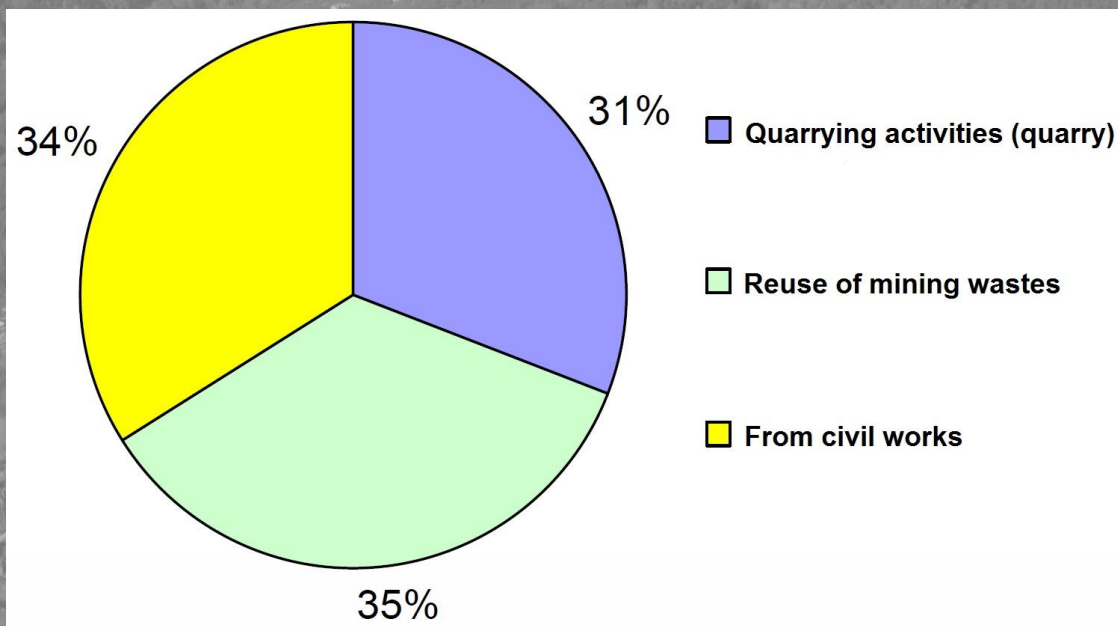
Despite the form, some data are still assessed through estimation such as the quantity of the mining waste deriving from the porphyry extraction



## 1. The birth of a plan

### Quarrying Plan – Natural Aggregates

Origin of the primary aggregates in construction





## 1. The birth of a plan

### C&D plan – a successful history



C&D wastes are materials discarded from activities as:

- construction
- demolition
- minor works (e.g. internal restoration or renovation)

The EU describes these wastes with the EWC series 170000  
(2000/532/EC)

The hazardous wastes are LEFT OUT

The WFD – Waste Framework Directive, 2008/98/EC – declares: by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of **70% by weight. (article 11(2)b)**

## 1. The birth of a plan

C&D plan – a successful history

### How to calculate this rate?

FIRST STEP: in Italy the waste producers have to compile a yearly mandatory form (MUD).

**Not all the C&D producers have the duty to fulfill it.**

SECOND STEP: instead of the produced waste quantities, considering the managed ones. Also focusing on the amounts declared, through the MUDs, by recycling centres and landfills.

THIRD STEP: to validate the MUD data about the managed quantity, involving the stakeholders in the planning process and, thanks to them, distributing an apposite questionnaire for three years

The comparison of the two differently collected quantities (with MUD and the questionnaires) proved that the value of managed waste is the most reliable (instead of the produced one).  
The questionnaires and the stakeholders involvement allowed to get more useful data for the plan

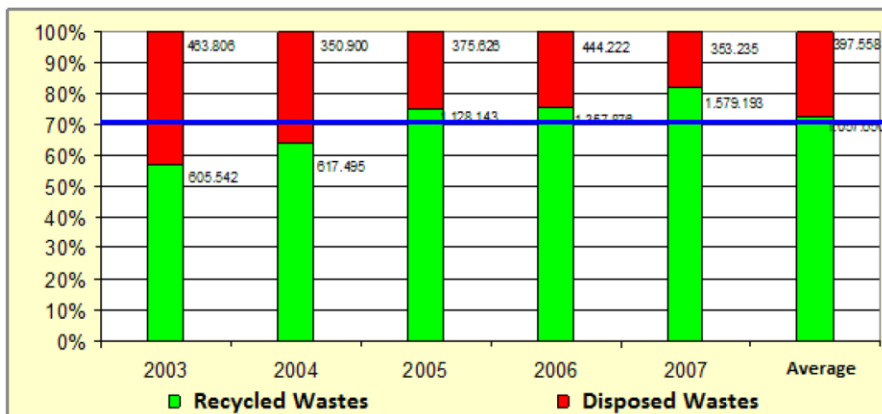
**In 2013 the C&D plan was officially adopted**

Jointly for our common future

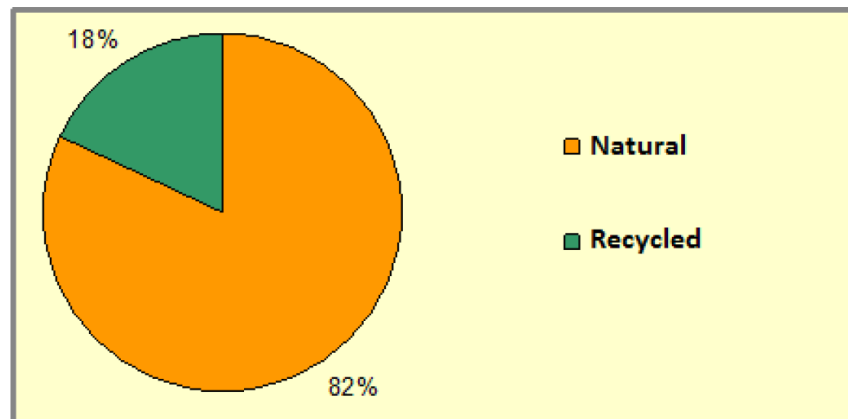
## 1. The birth of a plan

Problems arising

Destination of the managed waste quantities



Origin of the sold materials for construction



Even if the plan demonstrates that the 73% of the C&DW are recycled, the waste quantity the plan is referring to is the managed one.

The WFD and 2011/753/EU clarify that the rate refers to the produced quantity of waste.

## 2. The idea of an information platform

How to look at the natural aggregates and at the recycled ones?

**How to get an overview of the entire production chain?**

It becomes necessary to do a further step toward a more detailed method to get information

The Province takes part in the SNAP-SEE project

As 4.2 activity leader the Province develops a procedural scheme, called **Information Matrix**

The Information Matrix is a holistic approach to the world of the aggregates. It considers:

1. both the primary and secondary ones for a given region;
2. the whole life cycle of the aggregates;
3. the relations between the sectors involved with the aggregates;
4. the sources, the collection methods, the frequency related to the data;
5. and determines the lack of information.

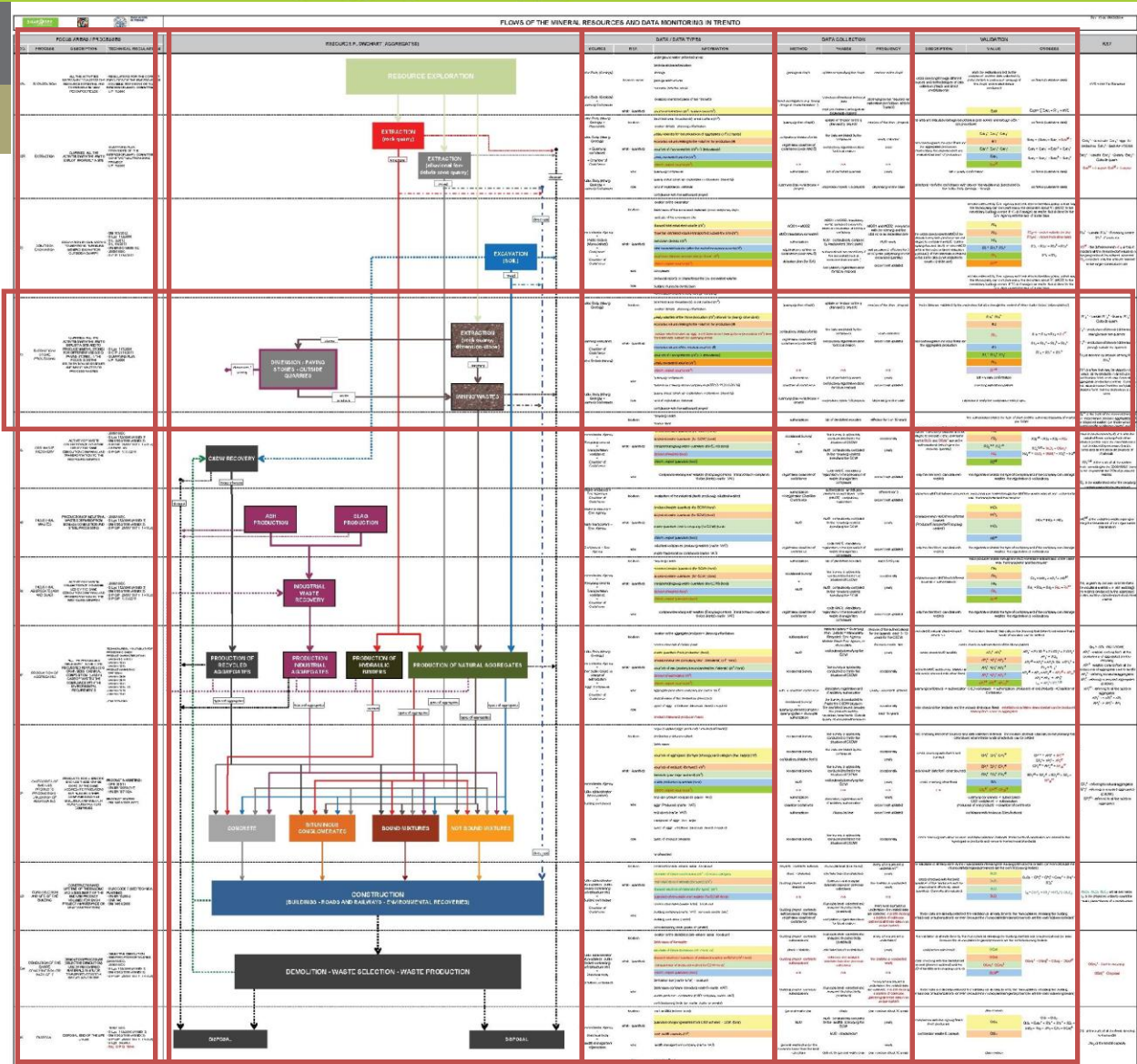


## 2. The idea of an information platform

### Information Matrix

The Matrix presents:

- 2 reading keys, vertical and horizontal
- the vertical reading explains the relations between activities and the material flows
- the horizontal way determines specific fields (e.g. extraction)
- the first column gives the name of the process (or focus area), the technical standards, a brief description
- the third column specifies data, data sources and data types
- the fourth column gives methods, frequencies and phases of data collection
- the fifth column describes the data validation process assigning a parameter and defining the validation knots

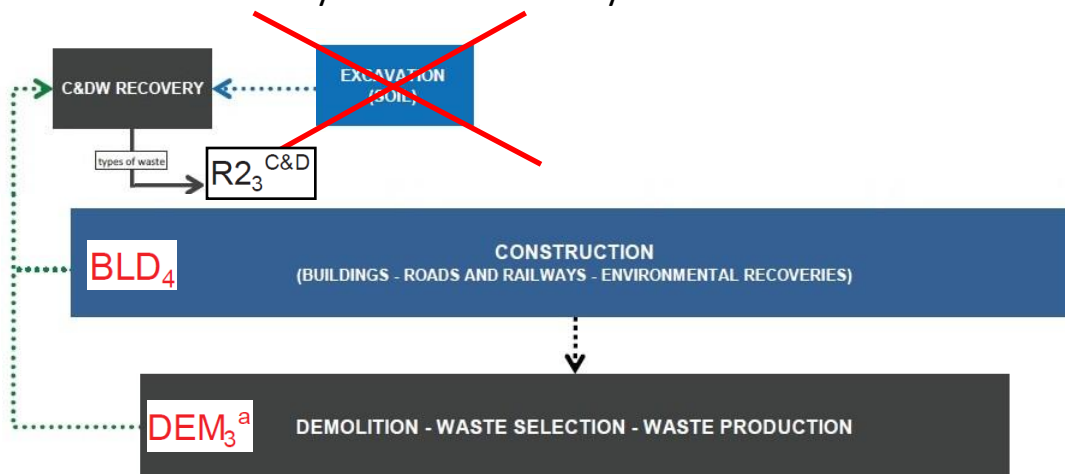


## 2. The idea of an information platform

### Information Matrix

An application of the Information Matrix to the Province of Trento allowed:

- List of all the relevant variable for a comprehensive approach to aggregates, both the quantitative and qualitative data, and assigning a variable
- Highlighting the lacking information (e.g. the demolished quantities made by the producers or the evaluation of the residues and mining wastes of the porphyry extraction companies)
- Determining the connections between all the sectors working with aggregates (till the landfill)
- Writing the validation knots i.e. mass balance equations which can express the vertical connections between the sectors in an easy-mathematical way



$$R2_3^{C\&D} = BLD_4 + DEM_3^a$$

European Index

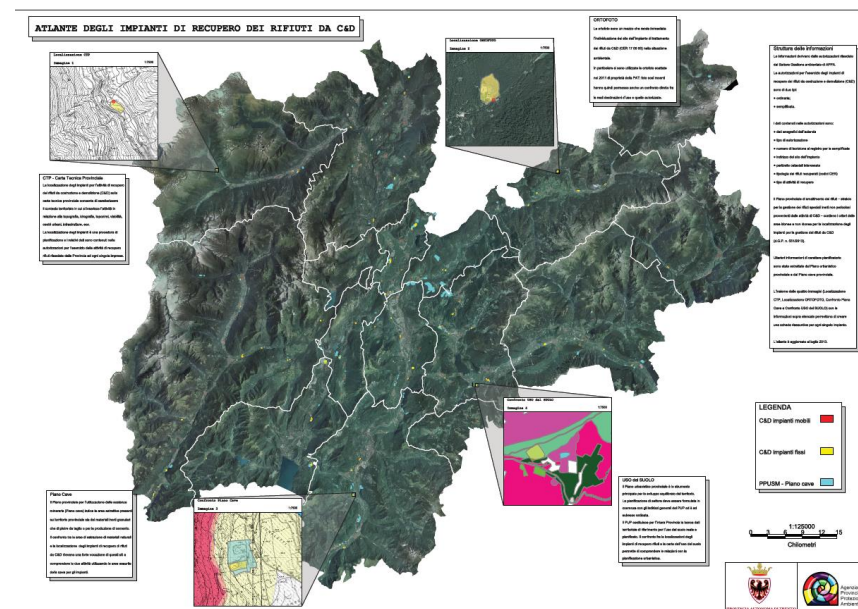
$$I_{EU} = AP_2^r / R2_3^{C\&D}$$

## 3. The horizon of new applications

### New perspectives

The interest aroused during a stakeholders consultation leads to:

1. The idea to publish in an open format some gathered data about the aggregates
2. Planning integration of the various provincial sectors
3. The production chain certification, in order to guarantee high quality recycled products
4. The growing interest of some local IT companies looking for unexplored application field



**Thank you for the attention**