

**Rio Tinto**

# **Rio Tinto Measuring Biodiversity**

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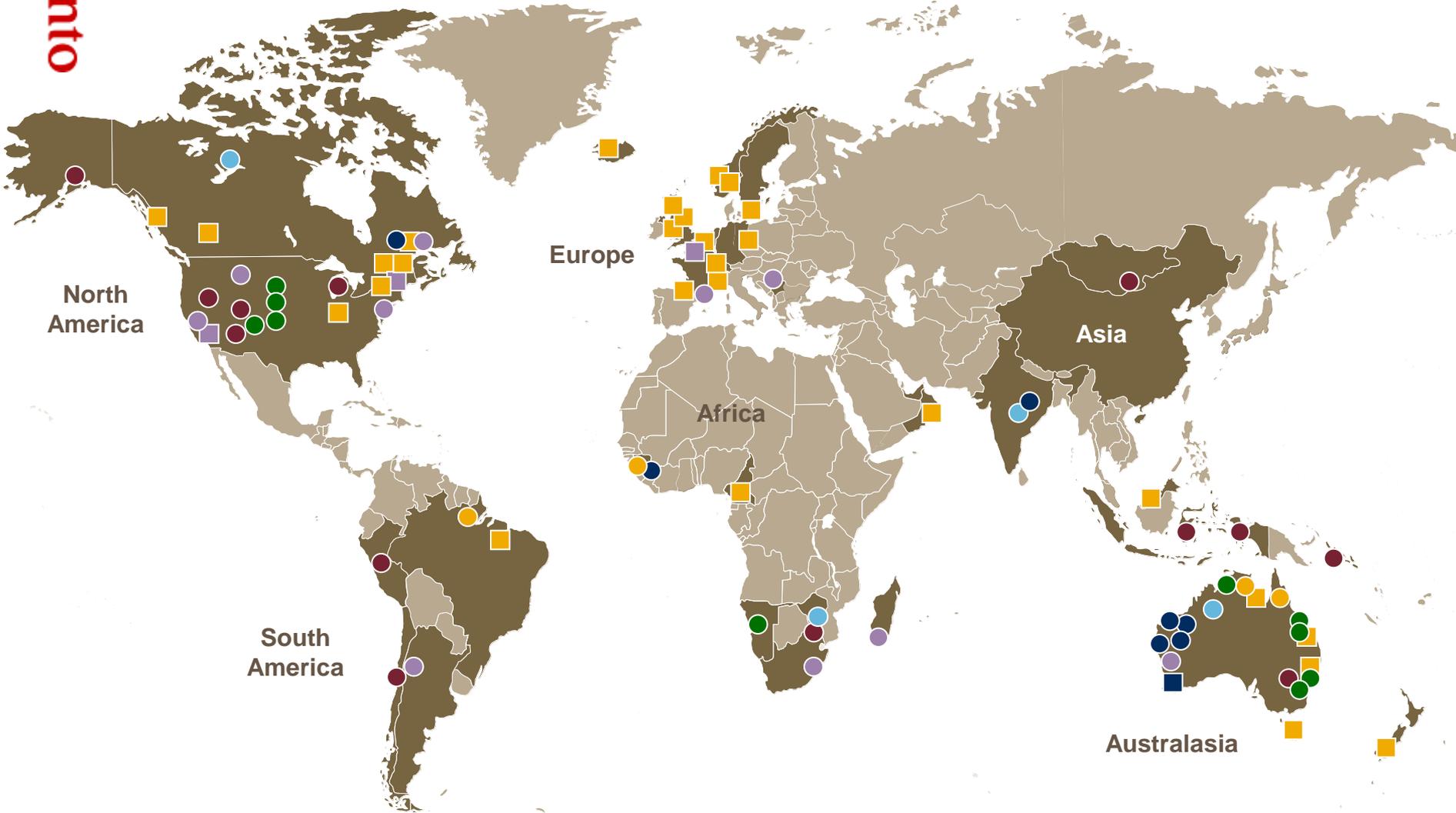


# Where we operate

**Key**

- Mines and mining projects
- Smelters, refineries, power facilities and processing plants remote from mine

**Aluminium**  
**Copper**  
**Diamonds**  
**Energy**  
**Iron ore**  
**Minerals**



# Our goal of net positive impact (NPI)

Rio Tinto's goal is to have a net positive impact on biodiversity.

## Our position statement on biodiversity

Rio Tinto recognises that conservation and responsible management of biodiversity are important business and societal issues. Our goal is to have a net positive impact on biodiversity.

We are committed to the integration of biodiversity conservation considerations into environmental and social decision making in the search for sustainable development outcomes. We recognise that this might mean that we do not proceed in some cases.

We want to be biodiversity leaders within the mining industry, for the competitive advantage and reputational benefit this provides. Our performance on biodiversity conservation and management issues will create benefits for our business.

We are committed to:

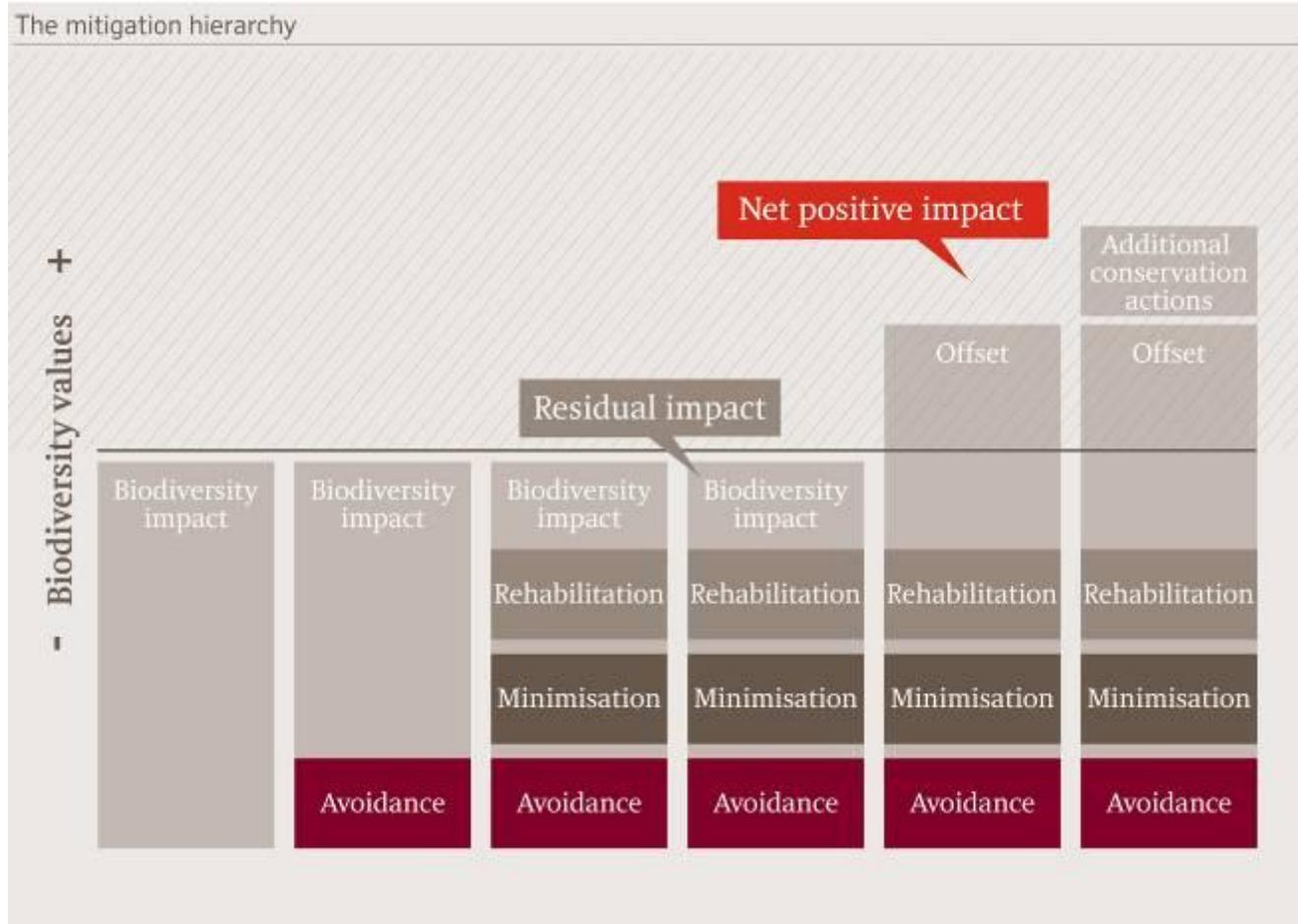
- The identification of biodiversity values impacted by our activities.
- The prevention, minimisation, and mitigation of biodiversity risks throughout the business cycle.
- Responsible stewardship of the land we manage.
- The identification and pursuit of biodiversity conservation opportunities.
- The involvement of communities and other constituencies in our management of biodiversity issues.

## Guiding principles to support our position

- Our goal is to have a net positive impact on biodiversity by minimising the negative impacts of our activities and by making appropriate contributions to conservation in the regions in which we operate.
- We are committed to the conservation of threatened and endemic species and high priority conservation areas, and support local, national and global conservation initiatives.
- We will seek equity and the reconciliation of differing perspectives and ideals in biodiversity decisions and actions.
- We will enhance biodiversity outcomes through consultation, constructive relationships, and partnerships with key stakeholders.
- We will integrate the identification, evaluation, and management of biodiversity issues into the planning, decision making, and reporting processes throughout the business cycle.
- We will apply appropriate expertise and resources to biodiversity issues, building internal and external capacity where necessary.
- Subject to appropriate consent, we promote the collection, analysis, and dissemination of biodiversity information and knowledge.

This means minimising the impacts of our business and contributing to biodiversity conservation to ensure that a region ultimately benefits as a result of our presence.

# The Mitigation Hierarchy



# Measuring NPI: Quality hectares metric

- Rio Tinto's fundamental unit of measurement for biodiversity losses and gains is **Quality Hectares (QH)**
- **Any biodiversity value can be expressed as a combination of its spatial extent and quality (or condition) :**
  - The area over which a species is found combined with the species density or habitat quality in this area
  - The area over which a “non-timber forest product” (e.g. a medicinal plant) is found and some measure of the density of this product or the habitat quality as a surrogate for this density measure.
- For example, 200ha of forest at 50% ‘optimum quality’ is expressed as 100 Quality Hectares.

# Key points on Quality Hectars

- Standardisation to measure loss and gain of biodiversity is essential.
- The hectares of biodiversity value 'lost' is calculated from impacts resulting from
  - land clearance
  - total loss of pre-impact ecological function through pollution, invasive species or habitat conversion.
- The metric does not distinguish between
  - habitat that supports, for example, ten threatened species
  - habitat that supports a single threatened species.
- The methodology is applied to both intrinsic and service biodiversity values

# Multipliers

- The methodology uses multipliers, or weighting factors to:
  - ensure that the assessment accurately reflects Rio Tinto's accountability for any biodiversity losses by taking into account the quality (or condition) of the habitat prior to mining and processing related disturbances
  - drive preferred behaviours (eg avoidance rather than restoration of disturbance)
- There is no single reference that Rio Tinto can use to source suitable multipliers for use in biodiversity 'accounting'. However, the advisory group determined that there are enough stakeholder definitions and controls that will assist in providing some level of equity amongst operations
- Multipliers will be used in a conservative, precautionary manner
- When the site is in doubt of the quality of the habitat the most conservative multiplier will be used

# Quality multipliers

- A multiplier based upon measures of habitat condition is used to standardise loss and gain against variations in pre/post-loss habitat quality and also in the pre-Rio Tinto management quality of habitat used to offset biodiversity losses:
  - Pristine (0.75-1.0);
  - Slightly degraded (0.50-0.75);
  - Degraded (0.25-0.50); and
  - Heavily degraded (0.10 – 0.25)

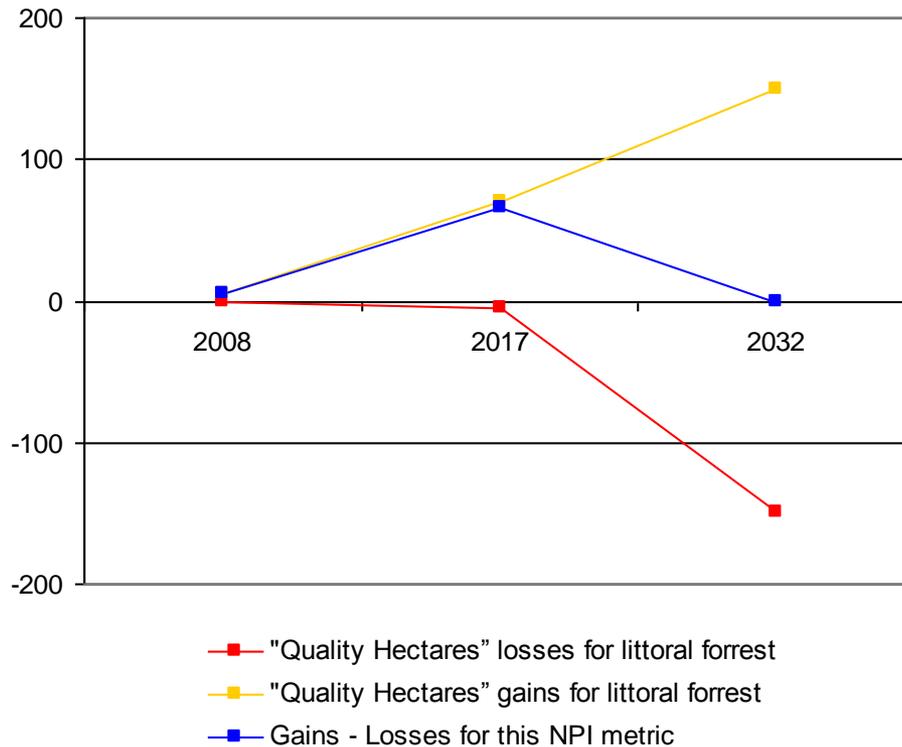
# Measuring NPI at QIT Madagascar Minerals

- The NPI process at QIT Madagascar Minerals (QMM) has required the development of a set of currencies which are appropriate for each group of biodiversity values
  - threatened species,
  - rare habitats
  - non-timber forest products.
- A combination of the area in which a value was found and the quality of that area in supporting the value was found to be a universally appropriate currency for both intrinsic and service values.
- Different measurement methods and metrics were used, as appropriate, for each type of biodiversity feature, to provide data for the “Area x Quality” currency.

# Quality Hectares

- The measurement of the quality of littoral forest required the development of a standardised forest condition metric
  - scaled from pristine to heavily degraded
  - based on habitat structure;
- The density of key reptile species is being determined by pitfall trapping or habitat type;
- The quality of forest for various non-habitat timber forest products was measured using community assisted botanical transects.
- In some of these latter cases the direct human-use natural products can be expressed as volumes or masses, such as “1,000kg charcoal”.

# Quality Hectares of littoral forest gained and lost until 2032.



## By 2008

- few losses of littoral forest
- small gains which come through avoided deforestation at two offset sites (St Luce and Mahabo).

## By 2017

- net impact will be highly positive for littoral forest because avoided deforestation gains have continued (2008-2017) but mining will not clear much forest over this period due to the uneven distribution of forest fragments across the mine path.

## By 2032

- At mine closure, after some mine clearance losses, littoral forest is predicted to be net positive on account of offsets alone.
- This is a precautionary conservative estimate that does not include habitat restoration efforts which are likely to add another 200 hectares of littoral forest to the gains.

# Quality Hectares at QMM

- NPI accounting carried out as part of QMM BAP
- Current analysis shows that, QMM has a Net Positive Impact on forest types in the period 2004-2015 (period 2010 to 2015 predictive).
- As the project progresses post 2015 it may become net negative as biodiversity impact (through clearance becomes greater than present compensation measures
- Additional compensation measures are being developed to counter this clearance

| Habitat type  | Losses (QH) | Gains (QH) | Net Impact 2004-2015 |
|---|-------------|------------|----------------------|
| Fort Dauphin-type littoral forest (Mandena, Petriky, Ste Luce)              | -51         | +124       | +73                  |
| Littoral forest (all the above plus Mahabo and Ambatotsirongorongo)         | -51         | +185       | +134                 |
| Forest - all types (all littoral forest plus Tsitongambarika humid forests) | -51         | +501       | +450                 |

# Corporate ecosystem valuation (CEV)

is *'where both ecosystem degradation and the benefits provided by ecosystem services are explicitly valued and accounted for with the intention of informing and improving business decision-making'*.

The core underlying business benefit of all CEVs :

- provides an additional 'value based' lens to improve decision-making, particularly relating to sustainability.
- Allows quantification of economic, environmental and social issues, and facilitates assessing the complex trade-offs between them by converting impacts into a single metric: money.
- However, CEV also recognises that sometimes qualitative or quantitative values may suffice, and that ecosystem service values will typically only be one input to any decision-making process.

# Rio Tinto and CEV

- **Rio Tinto** has found that application of CEV has presented new opportunities to identify ecosystem values and potential income streams that can be used to:
  - provide long term sustainable income streams for conservation programmes associated with large scale mining operations;
  - provide long term sustainable income streams for local communities that live and work in and around protected areas, who may be disadvantaged by conservation programmes, and;
- demonstrate that Rio Tinto's investment in conservation programmes is transparent, equitable across stakeholders, and commensurate with the value of the biodiversity impacts that are being offset by the particular programmes.
- **Rio Tinto** plans to integrate the CEV approach with their existing biodiversity offset and Net Positive Impact (NPI) planning tool box to improve the rigour of their existing methodology.