



Yes, it is almost Christmas. But “free gifts” have been with us all year.

The message in this issue was written to help those responsible for the difficult task of making grant allocations - but it has as much relevance to those who seek to be grant recipients. Share it with your elected members.

FAIR AND EQUITABLE: a guide for sound project allocation

Penny Burns, Paul Christensen, and Gordon Sparks*

Introduction

Governments today are under pressure to support their economies by increasing their infrastructure spending - but they are also subject to political pressures to do this in a way that is acceptable to their electorates. They are looking for a way to do both - and, especially, they are looking for a way to do it quickly!

Surprising as it may seem, we argue that the old fashioned virtues of fairness and equity may be exactly what is needed in these troublesome times to ensure that our infrastructure spending not only stimulates the economy now, but also generates greater community wealth and sustainable well-being in the future.

*Editor, “AMQ International’s Strategic Asset Management”; Professional Affiliate, Department of Civil Engineering, University of Saskatchewan; Professor, Department of Civil Engineering, University of Saskatchewan, respectively.

Editor: Dr Penny Burns, AMQ International
PO Box 75 Salisbury South Australia 5108
Telephone 61 (0) 8 8359 0559
Email: amqi@amqi.com Website www.amqi.com

Using examples very similar to projects currently under consideration in Canada we show why this is so and suggest a simple framework for guiding project selection based on fairness and equity that generates sustainable, wealth building, cost effective projects.

A matter of interpretation

From early childhood we have a notion of what is fair, but it is always subject to interpretation. Take for example, two siblings on the back seat on a long drive; one a slight 7 year old, the other a solid 10 year old. The younger interprets 'fair' as an equal share, 50% of the seat. This allows her to spread out in comfort whilst her brother squeezes himself into the remaining space. Not surprisingly the older child interprets what is 'fair' as a similar amount for each of 'room to breathe'. For him, fair is a matter of need; for her, a matter of equality. We have the same distinction to make today in the allocation of infrastructure grants.

The Equity Principle

Is it equitable? Are some getting more (or less) than others? If so, why? Our natural instinct for fairness leads us to expect that if projects disproportionately benefit some, at the expense of others, there should be some generally acceptable reason for it. It may be that the beneficiaries are in some way socially disadvantaged and thus the project is 'fair' by going some way to 'even up the scales'. Or it may be that economic advantage to a few will generate projects that will later spread the wealth to others. We are, however, now wary of 'trickle down' claims that have failed to benefit any but the initial few. So we now seek greater reassurance of wider benefits. If we can find no socially acceptable rationale then we are left with the conclusion that the allocation is, in fact, 'unfair' and thus politically unacceptable.

Equity suggests that people should be treated in the same manner. However, we know that people's needs and circumstances differ, so we are prepared to accept an 'unequal' allocation as 'fair' if there are good reasons to support it.

Table 1: Grant Funded Projects (in \$'000 CDN)

How equitable are the projects currently being suggested? And how do we tell?

Consider these example projects similar to ones currently being proposed by various Canadian Provinces.

Infrastructure Investment	Initial Cost	Grant	Local Share
Wastewater lagoon and collection system	9,122	6,081	3,040
Sewage lagoon expansion	2,706	1,804	902
Wastewater lagoon	2,719	1,813	906
Water and wastewater upgrades	5,100	3,400	1,700
Sewage treatment plant upgrades	2,202	1,468	734
Road construction	2,210	1,473	737
Sewage lagoon expansion	3,226	2,151	1,075
Road construction	1,505	1,003	502

Who Benefits?

To test for equity we need to consider who the beneficiaries are. One good indication is how many live in the town or district being allocated the funding. In our sample, the amount per head of population varies significantly and this is also true of actual grants.

Table 2. Who Benefits?

Infrastructure Investment	Initial Cost (\$'000 CDN)	Grant (\$'000 CDN)	Population (#)	Grant / Head (\$CDN)
Wastewater lagoon and collection system	9,122	6,081	647	9,398
Sewage lagoon expansion	2,706	1,804	255	7,075
Wastewater lagoon	2,719	1,813	431	4,206
Water and wastewater upgrades	5,100	3,400	1,081	3,145
Sewage treatment plant upgrades	2,202	1,468	785	1,870
Road construction	2,210	1,473	846	1,741
Sewage lagoon expansion	3,226	2,151	1,341	1,604
Road construction	1,505	1,003	1,501	668

Who Really Benefits?

However not everyone will benefit from every project. A wastewater treatment plant, for example, may be expected to benefit all in the area. But a road extension project would likely provide a benefit to only that percentage of the town's population that would be likely to travel on the road (and to some out-of-towners who do not contribute to the costs but get the benefits anyway). To illustrate the point, let us add to the information in Table 2 a hypothetical estimate, based on the nature of the project, of the likely percentage of townsfolk that would be beneficiaries. We do this in Table 3 where you can see the capital grants allocated to different beneficiaries vary widely between the different projects from just under \$2,000 per beneficiary to over \$10,000.

Does this matter? Well, yes. Where private money is concerned, it does not matter if a project provides all of its benefits to just a few, if those few are also paying the costs. But in the case of public money, it does. This is because there is both an economic and a political dimension to public spending on infrastructure. In public infrastructure, the costs are spread over a large number of ratepayers and taxpayers. Economically we could argue that as long as the project produced benefits greater than the costs, it is irrelevant who gets those benefits. However, for projects to be acceptable to those paying the costs, there needs to be strong argument in support of beneficiaries where those beneficiaries are a subset of the whole. In other words, economics is not interested in fairness and equity as these are not production, but rather distribution concepts. Distribution, however, is definitely a matter of political concern.

Table 3. Who Really Benefits?

Infrastructure Investment	Grant (\$'000 CDN)	Population (#)	Beneficiaries (%)	Grant / Beneficiary (\$CDN)
Wastewater lagoon and collection system	6,081	647	90%	10,442
Sewage lagoon expansion	1,804	255	100%	7,075
Wastewater lagoon	1,813	431	100%	4,206
Water and wastewater upgrades	3,400	1,081	70%	4,493
Sewage treatment plant upgrades	1,468	785	85%	2,201
Road construction	1,473	846	50%	3,482
Sewage lagoon expansion	2,151	1,341	65%	2,468
Road construction	1,003	1,501	35%	1,909

Economics and Politics

But economics and politics may not be as far apart as they seem to be. For one thing, political demands can be, and frequently are, modified by an appreciation of the economics involved.

A case in point is a rural community faced with the problem of having its dust free “paved highway” reverted to “gravelled surface” because the surface could not support the truck traffic and broke up and was a safety problem. The folks didn’t like driving on gravel after they had become used to a “paved” road so there was a lot of pressure locally to upgrade the road from gravel back to a “dust free” pavement. The problem was that it would cost about \$600,000 per km for such an upgrade. The traffic count on the road was low, from about 100 to 350 vehicles per day so that these costs translated into very high costs per vehicle km. In the end it was obvious to all those who were present at the community meeting to debate the issue, that upgrading the road would impose very significant costs on the provincial government for the benefit of only a few. Every one present, including those who had been very vocal supporters of the road upgrade, concluded that it was not *fair* to spend so much money for the benefit of the few.

Is it fair?

Fairness is important to communities, whether the money is coming from the Province or from local funds. After the meeting reported above, participants agreed that it was simply unfair to ask all taxpayers to pay so much for benefits that would be enjoyed by only a small percentage of residents. Both local and provincial politicians in attendance readily recognized the common sense of this.

When we think of fairness the questions that come most readily to mind are: Is it fair that some should get more while others get less? Is it fair that some should pay and not get any benefits? Is it fair that some should benefit and not pay? They all relate to fairness from the point of view of those who are paying, or not receiving (as much).

However, a more interesting question when we are dealing with infrastructure and taking a sustainability viewpoint is to ask the question - *is it fair to the recipient?*

As long as the economic goal is long term, sustainable benefits, economics and politics both need to take account of fairness and equity.

Is it fair - to the Recipient?

Infrastructure is often thought of in terms of the services it delivers, but it actually delivers none! That is, *of itself*, it delivers none.

All infrastructure, from roads to water and waste water, to hospitals and schools, requires - at a minimum - that it be managed and maintained. Without this year-in, year-out attention there is simply no service. A school without teachers, or a hospital without medical staff, is just a building. Medical and educational services only come when the building is maintained, managed, staffed, cleaned, lighted, heated, cooled, and secured. While it may not be quite so obvious, water and wastewater pipes are just underground conduits until the flows are managed. And without regular maintenance, cleaning, water treatment, etc., they are not only lacking in service but actually present a hazard. Roads that are maintained and managed well (traffic control, lighting, maintenance, etc.) provide a useful service, but roads with potholes, slippery surfaces, undulating pavements, etc. are not only not useful but downright dangerous.



Without ongoing attention, infrastructure yields NO service and can become a danger

So we come back to the question: is it fair to the recipient? Because the infrastructure for which the grant has been allocated has to be maintained and managed, all capital grants come with effective strings attached. And that costs money, a lot of money.

When installment purchasing was first introduced, children would give their parents presents on which they had paid the first 10% or 20%, leaving their parents to pay the rest or forgo the item. Many a loving parent struggled to fund their offspring's kind 'gift'.



Grants come with strings attached.

This is much the situation today with infrastructure grants. The grant pays only for the initial installment. Depending on the nature of the capital project and the matching funds that recipients need to contribute to gain the grant, a thousand dollar grant could end up costing recipients as much as an extra \$500 from their own pockets over the next 20 years.

Will the grant recipients end up like the loving parents struggling to fund their share or risk losing the infrastructure? To answer this question it is useful to look again at our hypothetical - but based on reality - examples. And this time we need to look at not just the grant proportions but at the total costs for it is the total cost of the project that determines the ongoing costs required to sustain it.

Initial Costs and Ongoing Costs

Each infrastructure asset has a different proportion of ongoing to initial upfront costs. For schools and hospitals, the ongoing costs of staffing, maintenance, lighting, etc. can be as much as 40% or more of the initial capital cost. The capital cost has only to be paid once, but the ongoing costs have to be paid every year - or the infrastructure fails to provide service and may even become dangerous.

For wastewater, the ratio of ongoing to initial capital costs is around 5.3%, for water, it is rather higher, at 11.2% (ongoing costs cover operations, security, inspections, maintenance and renewal). For roads the figure is around 5% (for inspections, condition audits, ad hoc patching, snow removal, regular maintenance and the renewal of the pavement surface).

So let us now return to the projects in Table 2 but, instead of asking how much is being *given* to the district or region (the grant), let us look at how much we are asking the recipients *to pay* so that they may benefit from the gift, in other words, the ongoing costs.

Based on the midpoint of the range of ongoing costs for the relevant project, Table 4 calculates the impost on each member of the population of these small rural towns to keep their new infrastructure acquisitions operating and operating safely.

The costs range from \$50 to \$747 per person per year. Remember these costs are costs *per head* of population, that is for every man, woman and child in the town. The costs are also *ongoing*. Not just for one year, but for *every* year.

Offsets

Where a capital project is a replacement for an existing asset, there may be some savings to offset against the new costs. For example, an upgrade of a gravel road to a granular pavement will involve the costs of periodic renewal but save on the annual maintenance costs associated with regravelling the old road. These will need to be taken into account. When the new project replaces existing capital, the extra costs are not as high – but then the extra community benefits are not as high, either.

Options for Managing Ongoing Costs

What are the options for communities in receipt of infrastructure grants? Either they increase their tax revenues from their communities or they forgo other activities that they have previously been providing. If they do neither the new infrastructure will fall into disrepair and become a health and safety hazard.

Different provinces apply different sharing formulas whereby the Federal government and Provincial government pays a percentage of the capital funding and the local council pays the remainder. However, even if the local council pays only a fraction of the capital cost - *they still have to pay the whole of the ongoing costs!*

Which raises a slightly different, but related, 'is it fair to the recipient' question. For to get the grant funds in the first place, the recipients need to contribute a portion of the total upfront costs. For the projects here considered, grants provided two thirds of the total cost and the communities were required to pay the remaining one third. So, in terms of up-front capital, communities had to find a matching 50 cents for every dollar of grant offered.

These matching funds may have originally been intended for other projects in the district that will now not be funded. The beneficiaries of those projects are now the losers. Given that the district or local council would have prioritized its expenditure according to its view of what was best for the community - we need to ask again 'is it fair to the recipient' that, in order to receive money from the Provincial Government to kick start the national economy, that their own considered projects be deferred or abandoned?

Table 4 How Much Must the Recipient Pay?

Infrastructure Investment	Initial Cost (in \$'000 CDN)	Population (#)	Annual On-going Costs (in \$'000 CDN)	Annual Costs as % of Initial Cost	Annual Costs per Head (\$CDN)
Wastewater lagoon and collection system	9,122	647	483	5.3%	747
Sewage lagoon expansion	2,706	255	143	5.3%	562
Wastewater lagoon	2,719	431	144	5.3%	334
Water and wastewater upgrades	5,100	1,081	398	7.8%	368
Sewage treatment plant upgrades	2,202	785	117	5.3%	149
Road construction	2,210	846	110	5.0%	131
Sewage lagoon expansion	3,226	1,341	171	5.3%	128
Road construction	1,505	1,501	75	5.0%	50

The Upshot?

Taking into account *both* the matching funds and the annual ongoing costs that need to be provided by recipients, as shown in Table 5, the recipient contribution can be easily more than *double* the original grant fund allocation over a period of 20 years.



Every dollar of grant can cost the recipient two dollars and more

Conclusion

Only if the recipients can afford to pay for the continuing upkeep of the new infrastructure over the long haul, is the infrastructure sustainable. If they cannot, the assets will not be maintained, they will fall into disuse, the services that the assets provided will be lost - and it is likely that there will be extra costs involved to make the now unusable assets safe (e.g. demolition). *Fairness is consistent with Sustainability.*

Only if the benefits of the new infrastructure are greater than the benefits that would have been received by deploying the matching infrastructure grants in some other way, does the infrastructure add to community wealth and well being. Since it is unfair to pressure local government into spending money in ways that are detrimental to their well being, it also follows that Costs Greater than Benefits *result in* Lack of Fairness.

Table 5 The Cost of Grants to Recipients

(in \$'000 CDN except where noted)

Infrastructure Investment	Grant	Initial Cost	Annual On-going Costs	Community Contribution			Community Costs as %'age of Grant
				Capital Costs	On-going Costs over 20 Years	Total Community Costs	
Wastewater lagoon and collection system	6,081	9,121	483	3,040	9,668	12,709	209%
Sewage lagoon expansion	1,804	2,706	143	902	2,868	3,770	209%
Wastewater lagoon	1,813	2,719	144	906	2,882	3,789	209%
Water and wastewater upgrades	3,400	5,100	398	1,700	7,956	9,656	284%
Sewage treatment plant upgrades	1,468	2,202	117	734	2,335	3,069	209%
Road construction	1,473	2,210	110	737	2,210	2,946	200%
Sewage lagoon expansion	2,151	3,226	171	1,075	3,420	4,496	209%
Road construction	1,003	1,505	75	502	1,505	2,006	200%

Projects that spread benefits over a wide range of beneficiaries are more equitable than those that have only a few beneficiaries. This does not necessarily mean that they are preferred on fairness grounds for it may be possible to make a case for the benefiting subset that would be acceptable to the larger group. But the case has to be made. The glib ‘trickle down’ assumption has long since been discredited.



How can these Fairness and Equity Principles be of use in choosing amongst infrastructure projects?

We need to ask just two questions, but ask them seriously - and get answers.

Is it equitable? How many will benefit from the project and what is the grant cost per beneficiary? Where projects represent a very large grant per head of population and/or per head of beneficiary ask “what is the justification that would make this project fair?”

Is it fair to the recipient? What are the ongoing costs to staff, maintain, clean, light, secure, and operate this project? Can the recipients afford to pay these ongoing costs without great hardship to the community?

Old-fashioned virtues of fairness and equity thus have their place in thinking through the wisdom of grant allocations.