

“Sometimes doing your best is not good enough. Sometimes you must do what is required.”

Winston Churchill

The first point is to recognize that we are currently contributing to a global crisis regarding climate change that is already having significant impacts on the well being of New Zealanders, and that the situation is only going to worsen unless we all step up to the challenges and make the changes that are necessary, rather than only the changes that are convenient.

Any inconveniences experienced by doing what is necessary will be minor compared to the inconveniences if climate change continues unabated.

The second point is to view the situation as an opportunity for innovation and creating a future that respects the limits of the global ecosystems upon which our well being depends. It is inevitable that our industrial processes will change, either being destroyed by the problems created by climate change or by our innovations.

Governments should invest in climate compatible alternatives to the current use of fossil fuels of all kinds for industrial processes. Our thinking should extend beyond simply replacing process heat and considering whether there are alternative strategies to produce the goods and services essential to our well being.

Our thinking needs to be big and bold. The use of artificial intelligence and nanotechnologies and 3D printing should be explored to replace some of the current energy intensive processes used in industrial production. Unless NZ embraces these solutions and participates in the required innovation we will be dependent on importing technologies that will enable a sustainable future.

At the same time we should embrace existing technologies even if they are simple but effective, such as passive solar building designs and adequate insulation – i.e., reduce the demand for process heat.

In practical terms the following are necessary as a minimum:

1. End any future investment in fossil fuel plants. Prohibit new fossil fuel plants or major refurbishing of existing plants. Provide practical support of conversions to renewable energy sources.

2. Support a carbon price of at least \$50/tonne with a swift move to \$100/tonne. Revenues from carbon pricing should be redistributed to taxpayers.
3. Measures should also be put in place to ensure that existing fossil fuel powered heat plants are not run beyond the end of their economic life in an effort to avoid replacing fossil fuel energy sources by renewable sources.
4. Where existing fossil-fuel powered heat plant has an economic life that extends past 2030, the Government should put in place legislative and economic measures to ensure that this plant is replaced by heat plant that is powered by renewable energy sources.
5. If hydrogen is used as an energy source for process heat, it must be generated by renewable means, not derived from fossil fuels
6. Replacing one form of fossil fuel energy source with another is completely unacceptable. In particular, the idea that natural gas is **a “transition fuel” away from coal is nonsense. Fossil fuels should** be replaced by renewables, not other fossil fuels.
7. The Government should recognize that disruptions will occur from doing what is necessary and provide supports for affected families, including retraining where appropriate.
8. Electrify where possible and use renewable sources of energy. Explore opportunities for increased efficiencies in industrial production (a ready target for artificial intelligence applications);
9. Explore cogeneration where heat waste is captured and reused rather than being lost. This might involve relocation of some industries to co-locate and capture such waste heat.

Respectfully

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